

DOCUMENTO
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Proyectos en colaboración
internacional financiados a través
de la convocatoria de

Proyectos de Colaboración Internacional –PCI– (2014–2024)

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Científico-Técnicos
Transversales, Fortalecimiento y
Excelencia

Unidad de Proyectos
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MINISTERIO
DE CIENCIA, INNOVACIÓN
Y UNIVERSIDADES



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INTRODUCCIÓN

La coordinación y la colaboración entre los programas de investigación e innovación nacionales y regionales es un elemento esencial del Espacio Europeo de Investigación. La Comisión Europea ha apoyado iniciativas concretas dirigidas a facilitar esta coordinación a través de los Programas Marco de Investigación e Innovación, recibiendo un importante empuje durante el anterior Programa Marco, Horizonte 2020 (2014-2020).

España se encuentra entre los países más activos de la UE en participación en proyectos coprogramados o cofinanciados con la Comisión Europea y otros Estados Europeos. Desde el lanzamiento de la primera ERA-NET en 2004, la posición española en el ranking europeo ha ido aumentando y actualmente, en Horizonte Europa, España lidera los países de la UE27 en términos de participación en iniciativas entre agencias públicas de financiación (datos de ERA-LEARN Country Report Spain, noviembre 2019 <https://www.era-learn.eu/documents/era-learn-country-report-spain.pdf>), participando en más de 50 iniciativas internacionales.

Las agencias de financiación del Ministerio de Ciencia e Innovación, la AEI, el CDTI y el ISCIII, con el apoyo de la FECYT, son responsables de la mayoría de las acciones españolas, aunque es de destacar también la actividad de organizaciones regionales como Innobasque (País Vasco), IDEA (Andalucía) o ACC10 (Cataluña), principalmente.

Las iniciativas e instrumentos de colaboración internacional engloban, entre otros: Redes del Espacio Europeo de Investigación (ERA-NET COFUND), Iniciativas de Programación Conjunta (JPI), y los Programas Europeos Conjuntos Cofinanciados (European Joint Programme Cofund, EJP), y más recientemente, en el marco de Horizonte Europa, los Partenariados o Asociaciones. Dichas iniciativas han reforzado, en áreas científicas concretas, el alineamiento de las prioridades temáticas para la financiación de la investigación y la innovación de los Estados miembros, Estados asociados e incluso de terceros países.

El presente informe recoge exclusivamente las principales actuaciones financiadas por la Agencia Estatal de Investigación en el contexto de la colaboración internacional y las convocatorias nacionales asociadas - Proyectos de Colaboración Internacional -PCI-, anteriormente APCIN, desde el inicio de Horizonte 2020 hasta la actualidad.

También se recogen aquellas iniciativas más allá de la Unión Europea de acuerdos de cooperación y colaboración en I+i de ámbito geográfico y que incluyen proyectos con Iberoamérica, Japón, EE. UU. e India, entre otros.

Este documento de trabajo ha sido realizado gracias al marco de colaboración establecido en el Convenio ente la Agencia Estatal de Investigación y la Fundación Española para la Ciencia y la Tecnología para la colaboración en el desarrollo de iniciativas internacionales

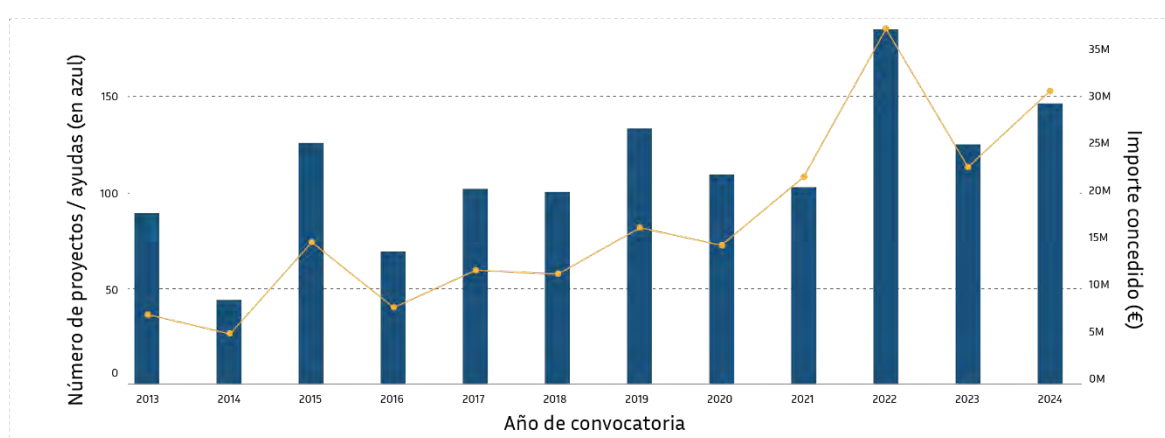
RESUMEN EJECUTIVO

El presente informe recopila los proyectos financiados por la AEI a través de sus convocatorias públicas de investigación Acciones de Programación Conjunta Internacional (APCIN) y Proyectos

de Colaboración Internacional (PCI) y proporciona información detallada de las diferentes ayudas por área de conocimiento o retos.

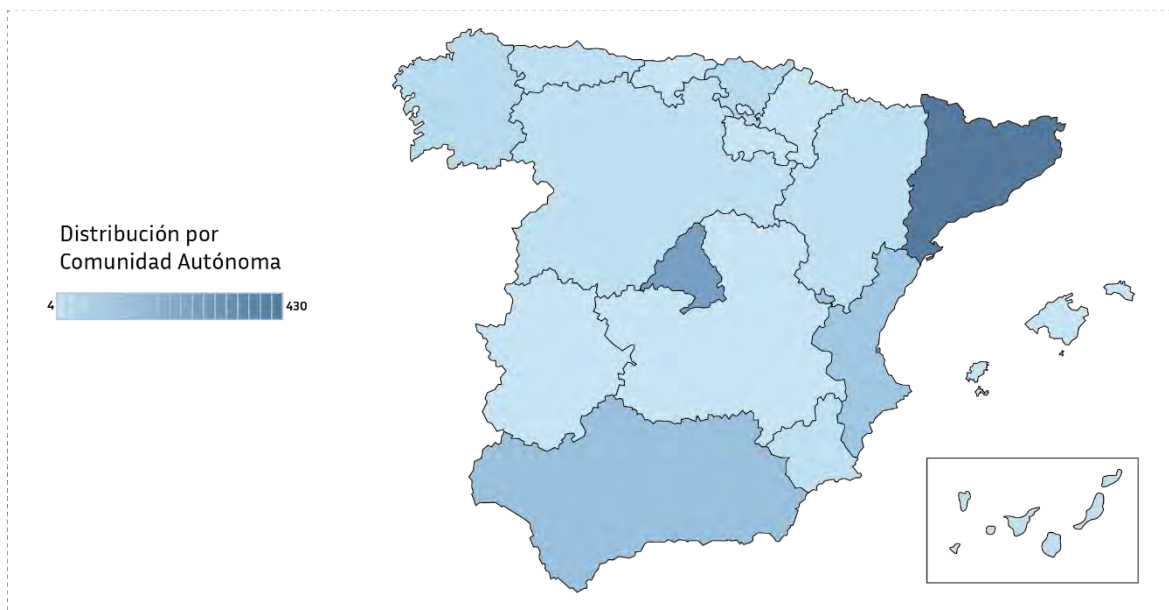
Los datos presentados en este resumen ejecutivo abarcan el periodo 2014-2024 (ambos incluidos). Sin embargo, debido a la provisionalidad de algunos datos relativos a los proyectos financiados, el presente informe no incluye en su detalle la anualidad de 2024.

GRÁFICO 1. Evolución del número de ayudas concedidas, 2014-2024



La AEI ha financiado durante el periodo 2014-2024 un total de 1.331 ayudas procedentes de 1.114 proyectos, con un importe concedido de alrededor de 201.735.709 millones de euros (151.567 mil euros de media por ayuda). En 2024 se han concedido un total de 146 ayudas procedentes de 118 proyectos, importe concedido de 30.801.250 millones de euros (210.967 mil euros de media por ayuda).

GRÁFICO 2. Distribución del número de ayudas concedidas por Comunidad Autónoma, 2014-2024



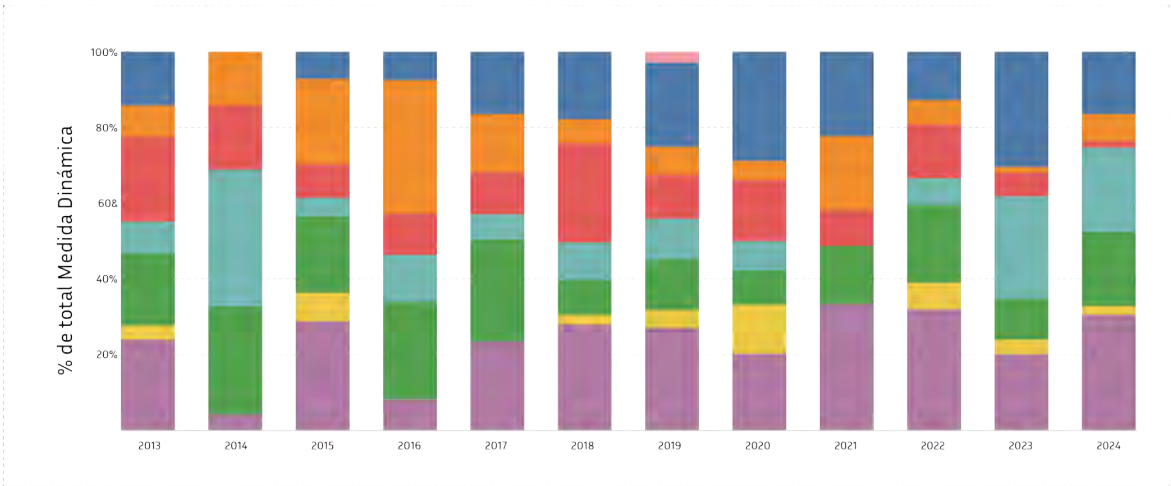
Las entidades receptoras de estas ayudas de la AEI están ubicadas fundamentalmente en Cataluña (430 ayudas), Madrid (275) Andalucía (149) y Comunidad Valenciana (119). Estas 4 comunidades autónomas acumulan el 70% del total de ayudas concedidas durante el período analizado.

Los países europeos con los que la colaboración ha sido más intensa han sido Alemania (697 ayudas), Francia (580), Italia (478), Países Bajos (247). En cuanto a otras zonas no pertenecientes a la Unión Europea, el mayor número de colaboraciones se han llevado a cabo con Estados Unidos, Canadá y Brasil.

En lo referente a las instituciones españolas que participan en las convocatorias PCI, lideran el ranking las universidades públicas (Universidad de Barcelona, Universidad Politécnica de Madrid, Universidad Complutense de Madrid entre otras), el CSIC y el Centro Nacional de Supercomputación de Barcelona.

Finalmente, por retos, tal y como se muestra en el Gráfico 3, resaltan las áreas de Tecnologías Facilitadoras Esenciales con un 34,25 % de las ayudas, Reto 3 Energía segura, eficiente y limpia un 21,23% y Reto 5 Cambio climático y utilización de recursos naturales y materias primas un 18,49%.

GRÁFICO 3. Distribución por RETO



- Ciencia con y para la Sociedad
- Iniciativas geográficas
- Reto 1. Salud, cambio demográfico y bienestar; bioeconomía: sostenibilidad de los sistemas de producción primaria y forestales
- Reto 2. Seguridad y calidad alimentaria, investigación marina y marítima y bioproductos
- Reto 3. Energía segura, eficiente y limpia
- Reto 5. Cambio climático y utilización de recursos naturales y materias primas
- Reto 6. Ciencias sociales y humanidades y ciencia con y para la sociedad
- Tecnologías facilitadoras esenciales: materiales, nanotecnologías, TICs



RETO 1

Salud, cambio demográfico
y bienestar





RETO 1: SALUD, CAMBIO DEMOGRÁFICO Y BIENESTAR

NEURON Cofund - ERA NET in the area of brain-related diseases and disorders of the nervous system	13
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NEURON Cofund - ERA NET in the area of brain-related diseases and disorders of the nervous system

La ERA-NET NEURON Cofund coordina y alinea los programas de financiación de la investigación europeos e internacionales en el área de **enfermedades y trastornos del sistema nervioso relacionados con el cerebro**. La actividad clave es la implementación de convocatorias transnacionales conjuntas de propuestas de investigación, estando la primera de estas convocatorias cofinanciada por la CE. La misión de NEURON se basa en el hecho de que los trastornos cerebrales afectan profundamente a la calidad de vida, son una pesada carga no solo para los pacientes, sino también para sus familias y cuidadores, además de representar un grave problema socioeconómico. Al mejorar la colaboración e implementar una variedad de actividades adicionales (como nuevas convocatorias transnacionales conjuntas y apoyo de científicos de carrera temprana), NEURON Cofund ayuda a disminuir la fragmentación de los programas de investigación y mejora la situación de la financiación para los investigadores de neurociencias, reforzando la búsqueda de nuevos enfoques terapéuticos. NEURON Cofund desarrolla y proporciona planes concretos para promover el intercambio de datos, el establecimiento de registros de pacientes y para involucrar a las partes interesadas, como por ejemplo las organizaciones de pacientes. Los desafíos mencionados se abordan en una red de 28 entidades financiadoras de 22 Estados miembro de la UE, países asociados y terceros países.

Socios: Coordinador Alemania (German Aerospace Center (DLR), Austria (Austrian Science Fund (FWF), Bélgica (National Fund for Scientific Research (FNRS), Research Foundation Flanders (FWO), Canadá (Canadian Institutes of Health Research (CIHR), Fonds de recherche en Santé (FRQS), Finlandia (Academy of Finland (AKA), Francia (National Center for Scientific Research (CNRS), National Institute of Health and Medical Research (INSERM), National Research Agency (ANR), Alemania (Federal Ministry of Education and Research (BMBF), Israel (Ministry of Health (CSO-MOH), Italia (Ministry of Health (MOH/MDS), Letonia (State Education Development Agency (VIAA), Países Bajos (Netherlands Organisation for Scientific Research (NWO), Noruega (Research Council of Norway (RCN), Polonia (National Centre for Research and Development (NCBiR), Portugal (Foundation for Science and Technology (FCT), Rumanía (Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI), Eslovaquia (Slovak Academy of Science (SAS/SAV), **España Ministerio de Economía y Competitividad-Agencia Estatal de Investigación (MINECO-AEI), Instituto de Salud Carlos III (ISCIII)**, Turquía (The Scientific and Technological Research Council of Turkey (TUBITAK), Reino Unido (Medical Research Council (MRC).

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Convocatorias conjuntas internacionales anuales: 7 (2016, 2017, 2018, 2019, 2020, 2021, 2022)
Participación de MINECO/AEI: 7 (2016, 2017, 2018, 2019, 2020, 2021, 2022)

CONVOCATORIA CONJUNTA INTERNACIONAL 2016

Países participantes	Alemania, Austria, Bélgica, Canadá, España (MINECO, ISCIII), Francia, Israel, Italia, Letonia, Países Bajos, Noruega, Polonia, Portugal, Rumanía, Eslovaquia, Suiza, Turquía, Reino Unido
Temáticas	1. Fundamental research investigating consequences of external insults to the central nervous system on a biological and functional level. This may include the development of innovative or shared resources, and new technologies for the prediction, prevention or therapy of disease. 2. Clinical research, including the exploitation of novel and/or existing clinical data sets, to develop new strategies for diagnosis, therapy, and technology-driven neurorehabilitation (e.g. brain computer interfaces, EEG and neuroimaging approaches) for diseases after external insults to the central nervous system.
Presupuesto total	17.900.000€
Presupuesto ES	485.000 €
Proyectos aprobados	19
Proyectos con AEI	4 (1 coordinado)

Nº	Acrónimo y título del proyecto	Países participantes
1	ACRoBAT. Altered Chloride homeostasis in Reactive plasticity upOn BrAin Trauma	Francia, Reino Unido, Alemania, España
2	AxonRepair. Spinal cord repair: releasing the neuron-intrinsic brake on axon regeneration	Países Bajos, Reino Unido, Alemania, Canadá, Eslovaquia
3	BIO-AX-TBI. Developing and validating blood and imaging BIOMarkers of Axonal injury following Traumatic Brain Injury	Reino Unido, Suiza, Italia
4	CERMOD. Non-invasive electrical stimulation of the cervical spinal cord to facilitate arm and hand functional recovery in incomplete traumatic cervical spinal cord injured patients	España, Reino Unido, Noruega
5	ELPIS. Emergence of a spinal micturition reflex after SCI: abolition by silencing of hyper-excited C-fiber bladder afferents by gene therapy to restore continence and micturition	Francia, Italia, España
6	hMRIofSCI. Understanding the mechanisms of atrophy associated with spinal cord injury: the application of MRI-based in vivo histology and ex vivo histology	Suiza, Alemania, Reino Unido, Polonia
7	ICON-TBI. International Collaboration On Neuroinflammation in Traumatic Brain Injury (ICON-TBI)	Reino Unido, Italia, Francia, Canadá

KidBrainIT.		
8	Paediatric Brain Monitoring with Information Technology (KidsBrainIT): Using Information Technology (IT) Innovations to Improve Childhood Traumatic Brain Injury Intensive Care Management, Outcome, and Patient Safety	Reino Unido, Bélgica, España, Rumanía
LEAP.		
9	New therapeutic strategies in the treatment of traumatic brain injury by targeting the LECTin Activation Pathway of complement (*)	Italia, España, Reino Unido, Alemania, Polonia
Micronet.		
10	Cortical microcircuitry after traumatic brain injury: molecules to networks	Bélgica, Alemania, Reino Unido, Alemania, Polonia
NEURONICHE.		
11	Spinal cord repair from endogenous stem cells in the spinal niche	Reino Unido, Francia, Alemania, Bélgica, Polonia
RATER SCI.		
12	Repurposing Acute Therapies for Enhanced Recovery after Spinal Cord Injury	Canadá, Suiza, Alemania, España
REACT NSCs.		
13	Induction of Reactive Neural Stem Cells by Traumatic Brain Injury in the Adult Hippocampus	España, Francia, Bélgica, Países Bajos
ReImpact.		
14	Repetitive Subconcussive Head Impacts – Brain Alterations and Clinical Consequences	Alemania, Bélgica, Israel, Noruega, Eslovaquia, Países Bajos
SCI-NET.		
15	Identification of novel bioactive mediators of tissue scarring, inflammation and extracellular matrix remodeling after spinal cord injury	Reino Unido, Canadá, Alemania, Suiza
SILENCE.		
16	Spinal Cord Injury-induced Systemic Maladaptive Immune Response and Autoimmunity to Central Nervous System Antigens - European Network Approach	Alemania, Austria, Suiza, Italia
SiMPLYReha.		
17	Seeing-Moving-Playing: Early Rehabilitation utilizing visual and vestibular technology following traumatic brain injury	Canadá, Francia, Israel
TAI-MRI.		
18	A New Traumatic Axonal Injury Classification Scheme based on Clinical and Improved MR Imaging Biomarkers	Noruega, Bélgica, Países Bajos, Reino Unido
TRAINS.		
19	Time dependent Remote Alteration after Injury to the Nervous System	Francia, Alemania, Israel, Polonia, Letonia

(*) El proyecto LEAP se financió en la convocatoria APCIN 2017

CONVOCATORIA NACIONAL APCIN 2016

PROYECTO 1. ACRoBAT. Altered Chloride homeostasis in Reactive plasticity upOn BrAin Trauma

The project aims to disclose the mechanisms and impact of trauma-induced changes in inhibitory neurotransmission in the cortex. Our preliminary results allow us to propose a working hypothesis in which a major component of altered inhibitory neurotransmission upon brain trauma is the malfunction of proteins involved in chloride transport in neurons.

IP	CINSERM, Institut de Neurobiologie de la Méditerranée INMED, Francia
Socios	España (Instituto Cajal-Agencia Estatal Consejo Superior de Investigaciones Científicas (IC-CSIC), Francia (INSERM, INSERM-UPMC), Reino Unido (The Francis Crick Institute, MRC), Alemania (University Hospital Jena)
Presupuesto total	1.298.000 €
Concedido ES	140.000 €

PROYECTO 5. ELPIS. Emergence of a spinal micturition reflex after SCI: abolition by silencing of hyper-excited C-fiber bladder afferents by gene therapy to restore continence and micturition

This program aims to develop a gene therapy to treat neurogenic detrusor overactivity (NDO) and ultimately to restore urinary continence and voluntary micturition, which remains an unmet medical need in spinal cord injured patients who are currently emptying their bladder by intermittent catheterization.

IP	Raymond Poincaré Hospital, Université de Versailles Saint-Quentin, Francia
Socios	España (Centro de Biología Molecular Severo Ochoa-Agencia Estatal Consejo Superior de Investigaciones Científicas (CBMSO-CSIC), Italia (Ospedale San Raffaele, Urological Research Institute, MOH)
Presupuesto total	650.000 €
Concedido ES	150.000 €

PROYECTO 13. REACT NSCS. Induction of Reactive Neural Stem Cells by Traumatic Brain Injury in the Adult Hippocampus

This project highlights the importance of considering neurons from neural stem cells (NSCs) and new neurons as novel targets in developing innovative strategic therapies against brain damage. We aim to understand what particular changes are induced in NSCs and newborn neurons by Traumatic brain injury (TBI), and what is the actual impact on brain functioning and behavior of these changes. Then, we will be able to preserve the properties of NSCs and newborn neurons to fight against the neurogenesis-related symptoms of TBI, and thus contributing to improve the quality of life of millions of TBI patients worldwide.

IP	Achucarro Basque Center For Neuroscience Fundazioa, España
Socios	Francia (INSERM, Neurocentre Magendie), Bélgica (Katholieke Universiteit Leuven), Países Bajos (Universiteit von Amsterdam)
Presupuesto total	838.100 €
Concedido ES	195.000 €

CONVOCATORIA CONJUNTA 2017

Países participantes	Alemania, Austria, Bélgica, Canadá, Eslovaquia, España (MINECO, ISCIII), Francia, Finlandia, Israel, Italia, Letonia, Noruega, Países Bajos, Polonia, Rumanía, Suiza, Turquía.
Temáticas	Synaptic Dysfunction in Disorders of the Central Nervous System
Presupuesto total	12.400.000 €
Presupuesto ES	516.000€
Proyectos aprobados	12
Proyectos con AEI	4 (1 coordinado)

Nº	Acrónimo y título del proyecto	Países participantes
1	ADIKHUMICE. VGLUT3 rare mutant and vulnerability to addiction	Canadá, Francia, España, Alemania
2	IPS&Brain. A functional dissection of human nicotinic receptor polymorphisms linked to addiction and schizophrenia	Francia, Países Bajos, Austria
3	KARTLE. Targeting aberrant KAinate Receptors in Temporal Lobe Epilepsy	Francia, Alemania, Bélgica
4	MAGNOLIA. Amygdala synaptic neuromodulatory mechanisms and role of mGlu4 in Autism Spectrum Disorders (**)	Francia, Alemania, España
5	MicroSynDep. Microglial control of synaptic function in stress response and vulnerability to depression	Canadá, Italia, Alemania, Finlandia, Reino Unido, Polonia
6	MISST. Multi-scale investigation of synaptic dysfunction after stroke (**)	Francia, Alemania, Polonia, España, Letonia
7	NMDAR-PSY. Understanding psychosis, cognitive impairment and motor symptoms induced by NMDA receptor dysfunction: from mechanisms to prevention and therapy	Alemania, Suiza, Israel, Noruega, Rumanía
8	SleepLess. Imaging synaptic plasticity in therapeutic sleep deprivation for major depression	Alemania, Bélgica, Canadá
9	SNAREopathy. Mechanisms of neuropsychiatric genetic diseases of the SNARE complex: towards therapeutic intervention	Países Bajos, Italia, Alemania, Noruega
10	SYNSCHIZ. Linking synaptic dysfunction to disease mechanisms in schizophrenia - a multilevel investigation	Noruega, Alemania, Suiza, Finlandia, Países Bajos, Rumanía

11	topdownPTSD. Mapping and interrogating top-down control of the memory engram of the posttraumatic stress disorder	España (2) , Italia, Alemania, Noruega, Polonia
12	TREAT-SNGAP. Synaptic Dysfunction in Intellectual Disability Caused by SYNGAP1. Translational Research to Develop Human Models and Advance Pharmacological Treatments.	España , Alemania, Francia, Canadá

(**) Proyectos financiados en la convocatoria nacional APCIN 2018

CONVOCATORIA NACIONAL APCIN 2017

PROYECTO 9. (tabla anterior). LEAP. New therapeutic strategies in the treatment of traumatic brain injury by targeting the LECTin Activation Pathway of complement (*)

The LEAP project is aimed at blocking specifically the Lectin complement activation Pathway (LP), identified to contribute to the detrimental outcome of Traumatic Brain Injury (TBI). The LEAP programme will first qualify and quantify this mechanism activated following TBI, studying both a mouse model of TBI and the disease events in TBI patients. LEAP will then test a few molecules and drugs that can block or modulate this pathway thus making it less injurious. Previous data obtained by the applicants in other pathological conditions have shown the therapeutic potential of these tools. LEAP will study their therapeutic properties in order to reduce TBI related morbidity and mortality.

IP	IRCCS-Istituto di Ricerche Farmacologiche Mario Negri, Italia
Socios	España (Instituto de Investigaciones Biomédicas de Barcelona (IIBB)), Alemania (Institute of Anatomy and Cell Biology-University Marburg), Reino Unido (University of Leicester), Polonia (Institute of Pharmacology Polish Academy of Sciences)
Presupuesto total	1.273.895 €
Concedido ES	150.000 €

PROYECTO 1. ADIKHUMICE. VGLUT3 rare mutant and vulnerability to addiction

We made the surprising discovery that a small population of neurons from the reward system can use 2 transmitters (namely glutamate and acetylcholine) to communicate with other neurons, suggesting that they are functionally bilingual. Furthermore, we have recently shown that perturbation of these bilingual neurons dramatically increases vulnerability to addiction. The aim of our study is to extend these preliminary results in order to better understand the neuronal mechanisms underlying addiction. This study could lead to the establishment of alternative medications for the treatment of addiction.

IP	Salah Mestikawy, Douglas hospital Research Centre, McGill University, Canadá
Socios	España (Universitat Pompeu Fabra), Francia (INSERM U 955, IMRB, Université Paris Descartes, INSERM), Alemania (Charité Universitaetsmedizin)
Presupuesto total	642.000 €
Concedido ES	142.000 €

PROYECTO 11. topdownPTSD. Mapping and interrogating top-down control of the memory engram of the posttraumatic stress disorder

The proposed project is bound to provide fundamental insights into experience-dependent dynamic changes in the brain to understand part of the posttraumatic stress disorder (PTSD) etiology from bench to bedside. We aim to decipher the mechanisms of maladaptive responses to trauma in animals, with a translational component, that we hope would mobilize efforts in the future to treat PTSD patients.

IP	Mazahir Hasan, Achucarro Basque Center for Neuroscience Research Fundazioa, España
Socios	Italia (Fondazione Santa Lucia), España (Universidad Pablo de Olavide) , Alemania (Center for Stroke Research, BMBF), Noruega (Haukeland University Hospital-University of Bergen), Polonia (Collegium Medicum)
Presupuesto total	1.261.782 €
Concedido ES	90.000 € + 134.000 € = 224.000 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2018

Países participantes	Alemania, Austria, Bélgica, Canadá, Eslovaquia, España (MINECO, ISCIII), Francia, Finlandia, Israel, Italia, Letonia, Noruega, Países Bajos, Polonia, Rumanía, Suiza, Turquía
Temáticas	Mental disorders
Presupuesto total	12.300.000 €
Presupuesto ES	600.000 €
Proyectos aprobados	14
Proyectos con AEI	1 (2 coordinados)

Nº	Acrónimo y título del proyecto	Países participantes
1	ADNPInMED. The pleiotropic effects of ADNP in Mental Disorders	Bélgica , Israel, Italia, Canadá
2	ADORE. Targeting adolescent neurocognitive processes in depression to promote intervention response	Francia , Canadá, Francia, Italia, Rumanía
3	AutoScale. Multiscale analysis of anti-NMDA receptor autoantibody in psychosis	Francia , Alemania, España, Canadá
4	DECODE!. Decrypting Cadherin-13 function in cortico-cerebellar circuitry underlying neurodevelopmental disorders!	Países Bajos , Alemania, Canadá, Francia
5	DiSCoVeR. The DiSCoVeR Project: Examining the synergistic effects of a cognitive control videogame and a home-based, self-administered non-invasive brain stimulation on alleviating depression	Israel , Alemania, Suiza, Lituania

EMBED.		
6	Impact of Early life MetaBolic and psychosocial strEss on susceptibility to mental Disorders; from converging epigenetic signatures to novel targets for therapeutic intervention	Italia , Alemania, Canadá, Rumanía
microSCHIZ.		
7	Microglial activation in Complement C4-stratified schizophrenic patients and in a mouse model of C4 overexpression	Francia , Alemania, Suiza, Letonia
MiGBAN.		
8	Microbiome Gut-Brain interaction in Anorexia Nervosa	Alemania , Austria, Francia, Países Bajos
nEUrotalk.		
9	Disruption of the spatio-temporal dialogue between migrating cortical neurons as underlying factor in Autism Spectrum Disorder	España , Bélgica, Francia, Alemania
OPCphrenia.		
10	Oligodendrocyte precursor cell dysfunction linked to schizophrenia: from mechanisms towards new therapeutic strategies	Francia , Países Bajos, Canadá
Psi-Alc.		
11	Preclinical Phase II Testing of Psilocybin in Alcohol Addiction and Epigenetic and Neuroimaging Studies on the Mode of Action	Alemania , Italia, Francia, Suiza
PSYBIAS.		
12	A novel paradigm for effective and safer treatment of schizophrenia: biased (ant)agonists with a characterized polypharmacological profile	España , Alemania, Canadá
TAO2PATHY.		
13	Targeting TAO2 and its downstream pathway as critical effectors of Autism spectrum disorders in 16p11.2 microdeletion patients	Alemania , Bélgica, Canadá
UNMET.		
14	UNveiling the MEchanism(s) underlying the switch to mania during antidepressant treatment: The role of glutamate	Países Bajos , Bélgica, Alemania, Italia

CONVOCATORIA NACIONAL APCIN 2018

PROYECTO 4. (tabla anterior) MAGNOLIA. Amygdala synaptic neuromodulatory mechanisms and role of mGlu4 in Autism Spectrum Disorders

The understanding of neuronal circuits, synaptic mechanisms and modulatory systems involved in the pathophysiology of autism spectrum disorders (ASD) is needed to identify novel therapeutic targets for their treatment. The present project focuses on investigating amygdala function in two well established mouse models of ASD since accumulating evidence suggests that amygdala dysfunctions may be linked to impairments of emotional responses, social behavior, affective states and pain perception, all symptoms linked to ASDs. Our goal is to decipher the amygdala neuronal network and synaptic components involved in the regulation of the behavioral symptoms of ASD. In particular, we aim at investigating their control by the neuromodulatory system associated with metabotropic glutamate receptor 4 (mGlu4), which we recently identified as a putative target in ASD. To that aim, four research teams with complimentary skills will collaborate to address this question using behavioral and electrophysiological approaches, supported by optogenetics and photopharmacology, an innovative promising approach using light-controlled drugs to decipher the mechanisms of regulation of brain circuits. We expect that our project will outline novel circuit components impaired in ASD, strengthen the hypothesis that mGlu4 is a therapeutic target for treatment of ASD, and eventually lead to the development of new classes of drugs.

IP	Institut de Génomique Fonctionnelle, Univ. Montpellier, Francia
Socios	Alemania (University of Tuebingen), Francia (Physiologie de la Reproduction et des Comportements, INRA UMR0085, CNRS UMR7247, Université de Tours), España (Instituto de Química Avanzada de Cataluña-Agencia Estatal Consejo Superior de Investigaciones Científicas (IQAC-CSIC))
Presupuesto total	877.799 €
Concedido ES	142.000 €

PROYECTO 6. (ver tabla anterior) MISST. Multi-scale investigation of synaptic dysfunction after stroke

Stroke is one of the major causes of death and severe long-term disability worldwide. Stroke leads to local destruction of brain tissue, however, more recently it was recognized that it also causes atrophy of healthy brain regions remote to the injury site. The mechanisms and the significance of this remote action of stroke are unknown yet. Based on preliminary experiments we hypothesize that this phenomenon is caused by spatio-temporal reorganizations of the brain on the level of neuronal dendrites and synapses. Therefore the aim of the current MISST consortium is to investigate the basis of these so far missed consequences of stroke by using a novel clinically relevant mouse stroke model, in vivo super-high resolution STED microscopy, 2-photon microscopy in awake mice, multi-dimensional behavioral phenotyping, and cutting-edge 3D whole neuron and whole brain imaging using tissue clearing and microanatomical reconstruction. These state-of-the-art technologies will be used to examine the structural and cellular changes occurring in the hemisphere contralateral to the infarcted brain over time. Finally, we will analyze how opto- and pharmacogenetic neuronal stimulation, pharmacological inhibition of synaptic degradation, and rehabilitative interventions such as physical activity and enriched environment affect synaptic reorganization thereby outlining new therapeutic strategies for long-term disabilities after stroke.

IP	Institut Interdisciplinaire de Neurosciences (IINS), Université de Bordeaux / CNRS UMR, Francia
Socios	Alemania (University of Munich Medical Center, Institute for Stroke and Dementia Research), Francia (Institut de Neurosciences cognitives et intégratives d'Aquitaine/ Université Bordeaux/CNRS UMR5287), Polonia (Nencki Institute of Experimental Biology), España (Universidad Politécnica de Madrid, Instituto Cajal-Agencia Estatal Consejo Superior de Investigaciones Científicas (IC-CSIC)) , Letonia (University of Latvia, Faculty of Medicine)
Presupuesto total	1.329.537 €
Concedido ES	142.000 €

CONVOCATORIA NACIONAL APCIN 2019

PROYECTO 9. nEUrotalk. Disruption of the spatio-temporal dialogue between migrating cortical neurons as underlying factor in Autism Spectrum Disorder

Although the precise etiology of Autism Spectrum Disorder (ASD) is unknown, one of the most accepted theories is an abnormal proportion of excitatory projection neurons (PNs) and inhibitory cortical interneurons (cINs). During cortical development, migrating PNs and cINs interact in such a way that impaired migration of each of these major classes of neurons affects the number and location of the

other. In the present project we propose an impaired spatio-temporal crosstalk between migrating PNs and cINs as shared pathomechanism in ASD. We will test this hypothesis by studying several ASD-linked genes (Cntnap2, FMR1, Agtppb1) involved in neuronal migration of PNs and/or cINs at different levels, which all show increased PNs/cINs ratio. We will carry out a multidisciplinary approach to study different systems, from animal models to state of the art in vitro cultures including ‘next generation’ patient-derived brain organoids harboring mutations in each of these ASD-associated genes. We will characterize the contribution of these genes to the reciprocal interaction of migrating PNs and cINs by conditionally deleting them in each of these major classes of neurons in animal models. Brain organoids will be used to study patient’s molecular and cellular specific features and their contribution to the abnormal circuit wiring. In short, we will be able provide important new insights into a potential new signature driving neurodevelopmental pathological mechanisms in autism.

IP	Olga Penagarikano, Universidad del País Vasco, España
Socios	Bélgica (University of Liege), Francia (INMED INSERM), Alemania (Max Planck Institute)
Presupuesto total	809.680 €
Concedido ES	€ 190.000 €

CONVOCATORIA INTERNACIONAL CONJUNTA 2020-2

Países participantes	Alemania, Bélgica, Canadá, Eslovaquia, España (MINECO, ISCIII), Francia, Israel, Italia, Letonia, Noruega, Países Bajos, Polonia, Rumanía, Suiza, Turquía.
Temáticas	Sensory Disorders
Presupuesto total	9.600.000€
Presupuesto ES	300.000€
Proyectos aprobados	12
Proyectos con AEI	2

Nº	Acrónimo y título del proyecto	Países participantes
1	AI D. Artificial Intelligence for Diagnosing Retinal Diseases	Alemania , Noruega, Francia
2	CoSySpeech. The Functional Role of Cochlear Synaptopathy for Speech Coding in the Brain	Bélgica , España, Francia, Alemania, Países Bajos
3	DrEYE. Treating inherited blinding disease with a slow released form of the rod, derived cone viability factor protein	Francia , Canadá, Alemania e Israel
4	ICMI. Ion channel modulators to treat itch	Bélgica , Francia, Canadá, y Grecia
5	IMPULSES. Improving postural control by innovative stimulation of the proprioceptive system	Bélgica , Grecia y Francia

	I, See.	
6	Improving intracortical visual prostheses using complex coding and spontaneous activation states	Alemania, Canadá, Suiza
	PreTouch.	
7	Tactile sensory impairment of C, LTMR afferents in preterm children and interventional approaches	Noruega, Alemania, Francia y Hungría
	ReDiMoAMD.	
8	Human organoid system based therapy discovery and development for age, related macular degeneration	Alemania, Canadá, Suiza, Francia
	Rethealthsi.	
9	Gap junctions serve to distribute health, signals among neurons of the diseased retina	Hungría, Italia y Alemania
	SensingASD.	
10	argeting Sensory Dysfunctions in Autism Spectrum Disorders	Alemania, Suiza, Canadá, Letonia
	TRANSMECH.	
11	The role of translational dysregulation in sensory neurons in mediating tactile hypersensitivity in neurodevelopmental disorders	Grecia, Canadá y Alemania
	VELOSO.	
12	Vestibular Loss and Spatial Orientation	Francia, España y Alemania

CONVOCATORIA NACIONAL APCIN 2020-2

PROYECTO 2 CoSySpeech. The Functional Role of Cochlear Synaptopathy for Speech Coding in the Brains

Inner ear (cochlear) synaptopathy is a form of primary neural degeneration which damages synaptic connections between the auditory cells in the cochlea (sensory inner-hair-cells) and auditory-nerve fibers (neurons of the cochlear spiral ganglion). Our knowledge on synaptopathy is largely confined by animal histology studies which have shown that aging, ototoxic drugs and noise exposure can all cause synaptopathy without affecting hearing sensitivity. Consequently, cochlear synaptopathy is expected to affect more than 5% of the world population presently diagnosed with disabling hearing loss (WHO, 2011), urging the development of clinical screening protocols. At the same time, the functional consequences of synaptopathy for sound perception are poorly understood and therapeutic interventions largely non-existent. CoSySpeech aims to unravel, describe and manipulate the cascade of events occurring along the ascending auditory pathways after synaptopathy. This research will result in a unique, comprehensive framework for the functional aftermath of synaptopathy for speech coding in the brain (SCB-model), trendsetting the development of sensitive hearing screening methods and therapeutic interventions. Our consortium uniquely combines expert knowledge from different brain structures (periphery, brainstem, cortex) and spans various research modalities (histology, physiology, behavior, computational, behavior) to answer: “How does synaptopathy affect speech coding in the brain?”

IP	Ghent University, FWO, Belgium
Socios	Alemania Institute for Neurosciences of Montpellier, ANR (France), University of Salamanca, AEI (Spain), University of Tübingen, BMBF (Germany), University Medical Center Groningen (Netherlands)
Presupuesto total	844.909 €
Concedido ES	150.000 €

PROYECTO 12 veloso. Vestibular loss and spatial orientation

The sense of orientation in space is crucial for survival and navigation in the environment. The brain derives spatial orientation from (1) self-motion signals originating in the vestibular system of the inner ear and (2) visual signals encoding orientation relative to external landmarks. Loss of vestibular function, which occurs with 7.4% lifetime prevalence (Agrawal et al., 2013), degrades both the perception of orientation in space and the capacity to navigate even in familiar visual environments. We will ask why and how vestibular dysfunction affects the use of visual cues as landmarks in spatial orientation. We hypothesize that cross-modal integration is degraded; vestibular deficits prevent the brain from binding visual landmarks to particular orientations, thus impeding navigation even in familiar visual environments. Our consortium proposes work in rodent models and non-human primates. We have expertise on the consequences of vestibular deficits, in vivo recordings of neurons in the brain's navigation system, sensory interactions, neuronal circuits and modeling. Anatomical, physiological and theoretical approaches will let us ask how vestibular deficits compromise the sense of spatial orientation. Our results will serve translational initiatives to help improve diagnosis and develop novel re-education strategies for patients with vestibular dysfunction.

IP	CNRS UMR8002, ANR, France
Socios	Universitat de Barcelona, AEI (Spain), PhD Ivan Cohen, CNRS UMR8246, ANR (France), Institute for Neuroscience, BMBF (Germany)
Presupuesto total	890.800 €
Concedido ES	150.000 €

CONVOCATORIA INTERNACIONAL CONJUNTA 2021

Países participantes	Bélgica, Croacia, Estonia, Finlandia, Francia, Alemania, Hungría, Irlanda, Israel, Italia, Letonia, Noruega, Polonia, Portugal, Rumania, Eslovaquia, España, Suiza, Taiwan, Turquía
Temáticas	Neurodevelopmental Disorders
Presupuesto total	19.156.770 €
Presupuesto ES	1.806.144 €
Proyectos aprobados	18
Proyectos con AEI	8 (3 coordinados)

Nº	Acrónimo y título del proyecto	Países participantes
1	AUTONOMIC. Neurodevelopmental impact of epilepsy on autonomic functions in Dravet Syndrome	Francia, Alemania, Bélgica
2	Brain4Sight. Deconstructing gene regulatory networks for improving sight and brain disabilities	España, Francia, Italia, Alemania
3	CASHANK. Involvement of the insula in the Autism neurodevelopmental disorder	España, Alemania, Francia

4	DevInDS. Development of over-inhibition of cortical circuits in Down syndrome	Francia, Portugal, España
5	DynAMoND. Dynamics of Affect Modulation in Neurodevelopmental Disorders	Alemania, España, Italia, Noruega, Suiza
6	EPINEURODEVO. Patient-centered targeting of epigenetic vulnerabilities in neurodevelopmental disorders: a cross-disciplinary platform for druggable disease models	Alemania, España, Italia, Israel, Bélgica, Hungría
7	GDNF UpReg. UpReg. Glial Cell Line-Derived Neurotrophic Factor (GDNF) modulating schizophrenia: a promising target for innovative treatment	Finlandia, Estonia, Alemania
8	InflASD. Physiological and molecular effects of inflammation episode on the severity of Shank3-based ASD phenotype on mouse and hPSC model.	Suiza, Alemania, Italia, Francia
9	MEPIcephaly. Metabolic and epigenetic interplay in neural progenitor cells: investigating neurodevelopmental disorders associated with impaired neural progenitor cell expansion	Finlandia, Bélgica, Alemania, Francia
10	MINERVA. Microglia/neuron crosstalk in autism spectrum disorder: Role of early inflammatory activation	Finlandia, Bélgica, Alemania, Italia
11	MOSAIC. Molecular and circuits bases of epileptogenic mosaic cortical malformations	Francia, Suiza, Alemania
12	MULTI-FACT. Multi-centric study of Fetal Abnormal Cortical Trajectory with standardised and privacy-preserving method on fetal MRI	España, Suiza, Francia, Alemania
13	NDCil. Neurodevelopmental ciliopathies: a multimodel approach from molecular mechanisms to patients variant interpretation and treatment strategies	Italia, Francia, Irlanda, Alemania, Hungría
14	ReDyslexia. Understanding and targeting developmental dyslexia: from animal models to humans	Alemania, España, Suiza, Italia
15	RestoreLeak. Accelerating Research on Neurodevelopmental Channelopathies: from Bench to Bedside	Francia, España, Polonia, Países Bajos
16	ROSSINI. peRsistence Of tranSient neuronS In Neurodevelopmental disorders	Francia, Países Bajos, España, Alemania
17	SHANKAstro. Astrocytes dysfunctions in Phelan McDermid syndrome: from mechanisms towards new therapeutic strategies	Portugal, Suiza, Italia, Alemania, Bélgica
18	UnscrAMBLY. Understanding brain circuit dysfunction in amblyopia using large-scale multimodal recordings in a new visuomotor task applied to animal models and patients	Hungría, Rumania, Noruega, Bélgica

CONVOCATORIA NACIONAL PCI 2021

PROYECTO 2 Brain4Sight. Deconstructing gene regulatory networks for improving sight and brain disabilities

Neurodevelopmental disorders (NDD) are complex conditions frequently arising from failed developmental processes. NDD display heterogeneous clinical features often including vision defects. Conversely, NDD affecting the visual system (VS) display comorbidities affecting the brain, also with variable degrees and frequencies. This makes NeuroDevelopmental Visual Disorders (NDVD) an excellent paradigm to understand NDD phenotypic variability. This variability is often associated with overlapping phenotypes among different NDVD, which further complicates a genetic diagnosis. By delving into the processes of brain assembly, Brains4Sight seeks to understand the region-specific susceptibility and phenotypic variability that emerges as the consequence of monogenic pathogenic variants in SOX2 and NR2F1. These genes encode transcription factors essential for VS development and their mutated versions are respectively responsible for syndromic anophthalmia/microphthalmia and the BBSOA syndrome. Brains4Sight will employ state-of-the-art genomic technologies, mouse models and human cortical and eye organoids to address the mechanisms underlying the symptoms associated with specific variants of these genes. The knowledge gained will be applied to reprogramme endogenous glia cells into neurons with the long-term aim of reconstructing a healthy VS. Thus, Brains4Sight will provide critical knowledge towards NDVD therapeutics, further impacting genetic consulting and thereby health care.

IP	Spanish National Research Council. España
Socios	INSERM (Francia), Istituto Auxologico Italiano (Italia), University Medical Center Johannes Gutenberg University Mainz (Alemania)
Presupuesto total	1.097.500 €
Concedido ES	287.500 €

PROYECTO 3 CASHANK. Involvement of the insula in the Autism neurodevelopmental disorder

Autism spectrum disorder (ASD) is a polygenic heritable multifactorial lifelong disorder and the mechanisms involved are far from being understood. The insular cortex (IC) is an important brain communication hub that seems involved in the pathophysiology of ASD. It contains different cell types, such as astroglial cells, glutamatergic and GABAergic neurons that express endocannabinoids and cannabinoid receptors, which also seem to participate in ASD. Here, we will investigate the cell type-specific involvement of IC endocannabinoid signaling in the mechanisms underlying ASD. We will combine a well-recognized mouse model of ASD, the deletion of Shank3, with complementary experimental approaches, including different genetic mouse models, electrophysiological techniques, behavioral phenotyping, viral strategies to target specific cell types, endocannabinoid dynamics, and bioenergetic studies. These techniques will bring valuable information to better understand the precise mechanisms underlying ASD. Moreover, we will test the translational nature of the mechanisms identified in mice through studies on human cerebral organoids derived from SHANK3-deficient patients and healthy controls. The inclusion of SHANK3 haploinsufficiency/Phelan McDermid patient organization will provide a direct transfer of the results. Our project will add new insights for an in-depth

understanding of the brain pathways involved in ASD, which may open new therapeutical approaches.

IP	Universitat Pompeu Fabra. España
Socios	Leibniz Institute of Resilience Research (Alemania), University Medical Center of the Johannes Gutenberg-University (Alemania), INSERM U 1215 (Francia)
Presupuesto total	847.340 €
Concedido ES	287.500 €

PROYECTO 4 DevInDS. Development of over-inhibition of cortical circuits in Down syndrome

Altered brain excitatory/inhibitory (E/I) balance was proposed to underlie developmental disorders involving intellectual disability and autism spectrum disorder (ASD). Down syndrome (DS), caused by trisomy of human chromosome 21, is characterized by both cognitive deficits and other comorbidities such as ASD. DS subjects exhibit E/I imbalance, but the contribution of specific cortical inhibitory circuits is unknown. We hypothesize that distinct developmental molecular alterations of perisomatic and dendritic inhibitory circuits underlie defective synaptic integration, network desynchronization and thus cognitive and sociability deficits in DS. In this project, we will define interneuron (IN) type-specific identities during pre- and post-natal development in mouse models of DS and, importantly, in human DS brains (prenatal and young adult). We will use single-cell transcriptomics and assess IN migration in DS. These approaches will be combined with ex vivo and in vivo functional investigations in DS mice to probe the activity of specific neuronal circuits at the cellular, microcircuits and network levels. Behavioral tests in mice will be combined with pharmacology and pharmacogenetics to manipulate the activity of specific cortical inhibitory circuits. We aim to pinpoint inhibitory circuit-specific pathophysiological mechanisms and molecular pathways underlying ASD and cognitive deficits in DS, leading to potential novel pharmacological targets.

IP	Institut du Cerveau - Paris Brain Institute. Francia
Socios	Centre Européen de Recherche en Biologie et en Médecine (Francia), University of Minho (Portugal), Fundacio Centre de Regulacio Genomica (España)
Presupuesto total	921.763 €
Concedido ES	201.250 €

PROYECTO 6 EPINEURODEVO. Patient-centered targeting of epigenetic vulnerabilities in neurodevelopmental disorders: a cross-disciplinary platform for druggable disease models

Intellectual disability disorders (IDDs) represent a spectrum of neurodevelopmental disorders characterized by early childhood onset of learning impairment behavior defects. IDD are linked to detrimental factors that affect cortical development. Many mutations that cause IDDs have been identified. They represent pathways linked to synaptic function and epigenetic gene-expression control. Since epigenetic gene-expression is a key process controlling neuronal function in the developing and adult brain targeting the epigenome could be a promising strategy to treat IDDs. Our overarching aim is to better understand the epigenetic vulnerabilities in neurodevelopmental diseases with a specific focus on IDDs that share the genetic and epigenetic de-regulation of H3K4 methylation. We will perform, for the first time, a truly systematic analysis

of H3K4-related processes across the spectrum of IDD ranging from epigenetic gene-expression changes to the corresponding functional consequences. Our consortium is in a perfect position for this task as it combines the unique expertise in epigenetics, brain development, neuronal structural and functional plasticity with ample experience in modeling IDDs in mouse models, iPSC derived human brain organoids in xenograft models. Our results will provide a blueprint for translation research in neurodevelopmental diseases and could have immediate clinical impact.

IP	German Center for Neurodegenerative Diseases. Alemania
Socios	Istituto Europeo di Oncologia (Italia), University of Haifa (Israel), KU Leuven (Bélgica), University of Debrecen (Hungría), Agencia Estatal Consejo Superior de Investigaciones Científicas-CSIC (España)
Presupuesto total	1.389.717 €
Concedido ES	201.250 €

PROYECTO 12 MULTI-FACT. Multi-centric study of Fetal Abnormal Cortical Trajectory with standardised and privacy-preserving method on fetal MRI

Abnormal neurodevelopment (ND) affects approximately 1 in 10 children, potentially leading to neurological disabilities and associated major personal, family and socio-economical costs. In about two thirds of these, changes in brain development are detectable before birth. However, often neurological abnormalities including neurobehavioral and cognitive disorders will only be detected later in childhood. This late diagnosis reduces the opportunity for early intervention and therefore increases the impact in later life. There are several conditions that are related with higher risk of abnormal ND including intrauterine growth restriction (IUGR) as well as Corpus Callosum Agenesis (CCA) Quantitative analysis of the fetal brain in-utero using magnetic resonance imaging (MRI) offers a unique opportunity for improved clinical decision-making and understanding of early brain development. The main goal of MULTI-FACT is to develop tools for the quantification of abnormal cortical development from fetal MRI. These MRI-based biomarkers will enable(1) assessment of the efficacy of intervention for IUGR;(2) improved diagnosis and prognosis for CCA;and (3) population stratification using imaging and multi-omics data to better understand the most relevant causes of abnormal cortical development and its progression with age. To realize the goal, Multi-FACT will develop innovative AI-based technologies for image reconstruction, analysis and interpretation on multi-centric large-dataset.

IP	Fundació Clínic per a la Recerca Biomèdica. España
Socios	Lausanne University (Suiza), Aix-Marseille Université (Francia), Universitat Pompeu Fabra (España), Technischen Universität München (Alemania)
Presupuesto total	1.297.082 €
Concedido ES	201.250 €

PROYECTO 14 ReDyslexia. Understanding and targeting developmental dyslexia: from animal models to humans

Developmental dyslexia (DD) is a neurodevelopmental disorder that affects 5-15% of children world-wide. It is characterized by reading impairment that persists into adulthood with severe consequences for individual well-being and high societal costs. Unfortunately, the

pathophysiological causes for DD are still unknown, there are no biological markers for diagnosis, current treatments are time-consuming and their efficacy not well-proven. Neuroscientific accounts focus primarily on language-related brain networks to explain DD. A growing body of research, however, suggests that key features of DD are associated with alterations in early sensory pathways, particularly in visual and auditory thalamic nuclei and their specific reciprocal connections with high-order sensory cortices. Recent neurostimulation studies showed that targeting these specific areas might improve reading in DD. ReDyslexia brings together unique expertise and novel methods to investigate thalamo-cortical development and function in a translational perspective: mouse models, non-human primates, and humans from child- to adulthood will be studied to reveal the thalamo-cortical loop dysfunction in DD and translate the knowledge to improve targeted neurostimulation therapy. We expect that a stratification of DD based on thalamo-cortical loop functions will be the basis for diagnostic markers and more refined treatment options in the future.

IP	Technische Universität Dresden. Alemania
Socios	Universidad Miguel Hernández (España), University of Fribourg (Suiza), Bambino Gesù Children's Hospital, IRCCS (Italia)
Presupuesto total	972.674 €
Concedido ES	201.135 €

PROYECTO 15 RestoreLeak. Accelerating Research on Neurodevelopmental Channelopathies: from Bench to Bedside

Aim: The overall goal of the project is (i) to decipher molecular mechanisms involved in the etiology of two ultra-rare and severe neurodevelopmental human disorders linked to mutations in the NALCN gene, and (ii) to develop innovative strategies to treat patients. This project involves the combination of specific and complimentary know-hows and expertises from different laboratories in addition to the use of original cell and animal models as well as the association with clinicians and an access to patients. **Work plan:** 3 work packages (WP) aiming at deciphering NALCN localization & regulation properties to provide novel insights about its physiological roles (WP1), deciphering the pathophysiological defects from both patients and animal models (WP2), and to develop both pharmacological and gene therapy approaches to treat patients (WP3). **Exploitation of Results:** Results will be disseminated through publications in high-impact factor scientific journals with open access as well as to a more general audience through the Libellas Foundation, a nonprofit patient advocacy organization dedicated to improving the life of children affected by NALCN ion channel-related diseases. Every procedures and specific data generated by this project will be estimated along with the offices for intellectual property of each partner institution in order to estimate whether patent(s) could be filled or partnership with companies could be established before publications in academic journals.

IP	Centre National de la Recherche Scientifique. Francia
Socios	Foundation INCE from the Hospital Ruber (España), Centro de Investigación Príncipe Felipe (España), Military Institute of Medicine (Polonia), University of Copenhagen (Países Bajos)
Presupuesto total	768.854 €

Concedido ES	259.509 € (Fundación iniciativa para las neurociencias 102.350 €), (Fundación de la Comunidad Valenciana Centro de Investigación Príncipe Felipe 157.159 €)

PROYECTO 16 ROSSINI. peRsistence Of tranSient neuronS In Neurodevelopmental disorders

Abnormal cortical development underlies the pathophysiology of multiple neurodevelopmental disorders (NDDs). Programmed cell death (PCD) is emerging as a key player in cortical development. Three neuronal populations almost completely disappear from postnatal neocortex, including Cajal-Retzius neurons (CRs). Persistence of CRs in postnatal cortex and hippocampus is detected in various forms of epilepsy and schizophrenia. We produced the first mouse model in which CRs survive to adulthood and showed they display neuronal hypertrophy and unbalanced excitatory/inhibitory ratio, leading to dysfunction of cortical circuits and increased seizure susceptibility. We will explore how persistent CRs contribute to anomalous activities underlying NDDs. Specifically, we will study i) CR evolution in the developing human cortex and their altered PCD in NDDs associated with epilepsy, ii) how anomalous CR persistence influences neuronal and network activity to promote rhythmopathies and epilepsy, iii) the molecular mechanisms underlying PCD of various CR subtypes and their alteration in the pathology. Our project relies on a unique blend of human and mouse studies involving molecular genetics, single-cell transcriptomics, in vitro and in vivo electrophysiology, functional assays and behavioral phenotyping. It will both lead to development of new mouse models for cortical malformations and identification of new candidate genes for analysis of human pathology and therapeutic intervention.

IP	Institut IMAGINE. Francia
Socios	Amsterdam University Medical Center (Países Bajos), Institut du Fer à Moulin (Francia), Instituto Cajal (España), Institute of Physiology J. Gutenberg (Alemania)
Presupuesto total	1.011.231 €
Concedido ES	166.750 €

CONVOCATORIA INTERNACIONAL CONJUNTA 2022

Países participantes	Bélgica, Canadá, Croacia, Estonia, Francia, Alemania, Hungría, Israel, Italia, Noruega, Letonia, Polonia, Rumania, Eslovaquia, España, Suiza, Taiwan, Turquía
Temáticas	Cerebrovascular Diseases
Presupuesto total	11.700.000 €
Presupuesto ES	693.597 €
Proyectos aprobados	14
Proyectos con AEI	3 (1 coordinado)

Nº	Acrónimo y título del proyecto	Países participantes
	ANCE4STROKE.	
1	Autologous neurovascular cell ecosystems (ANCE) to repair ischemic stroke in mice, primates and humans.	Suiza, Francia, España
	BiotaBB.	
2	Modulation of brain barrier function by microbiota-derived factors in cerebral ischemia	Alemania, Turquía, Suiza
	CH-Stroke.	
3	Clonal Haematopoiesis in Ischemic Stroke	Alemania, Israel, Polonia, Francia
	COHDICH.	
4	COnsequences of Haemostatic Defects after IntraCerebral Haemorrhage	Francia, Alemania, Taiwan
	CRESCENDO.	
5	CiRculating mEdiators of Stroke reCurrENce and aetiOlogies	Alemania, España, Suiza
	DeCoDis.	
6	Deciphering Cellular and Acellular Barrier Dysfunction in Cerebrovascular Diseases	Alemania, Suiza, Francia
	IMatrix.	
7	Theragnostic targeting of extracellular matrix metalloproteinases and blood brain barrier disruption in subacute ischemic stroke	España, Alemania, Francia, Hungría
	MatriSVDs.	
8	Multidimensional interrogation of microvascular matrisome abnormalities in cerebral small vessel diseases	Francia, Alemania, Suiza
	MECACCM.	
9	Preclinical study targeting mechanosensitive calcium channels for Cerebral Cavernous Malformations therapy and early diagnosis.	Francia, Bélgica, Alemania, Italia, Eslovaquia
	MeniSPYs.	
10	The meninges as a new player in post-stroke recovery	Francia, Alemania, Hungría
	MICROBLEEDs.	
11	MICROglia as modulators of brain BLEEDs	Alemania, Canadá, Israel, Italia
	STROKE-POCK.	
12	Comparative study of the mechanism of action of Dry Needling and Botulinum Toxin type A as a treatment for lower limb post-stroke spasticity: a proof-of-concept controlled trial	España, Canadá, Bélgica
	TACKLE-CSVD.	
13	Targeting Autophagic networks and the lysosome in Cerebral Small Vessel Disease	Alemania, España, Israel
	VasOx.	
14	Role of oxidative stress for neuro-vascular function	Alemania, Francia, Turquía

CONVOCATORIA NACIONAL PCI 2022

PROYECTO 1 ANCE4STROKE. Autologous neurovascular cell ecosystems (ANCE) to repair ischemic stroke in mice, primates and humans.

More than a 100 million people suffer the consequences of stroke worldwide, yet without an approved treatment. We have developed a therapy based on autologous neurovascular cell ecosystems (ANCE). These neural ecosystems can be integrated into the damaged cerebral regions, and mediate significant improvement of skilled hand function in nonhuman primates (NHP). We hypothesize that ANCE improves blood brain barrier tightness and angiogenesis, supports tissue repair, promotes motor cortex reorganization, and improves functional recovery after stroke. Here, we propose to leverage the respective strengths of our consortium to address the following aims: Aim 1: Investigate the barrier and angiogenesis function-promoting properties of ANCE in 2D/3D in vitro assays. Aim 2: Quantify the integration of ANCE perilesionally using dynamic vascular flow and neuronal dynamics in the sensorimotor cortex in mice. Aim 3: Demonstrate that ANCE mediates tissue repair, sensorimotor reorganization and functional recovery in mice, NHPs, and humans following stroke. Therapies developed in rodent models often fail in clinical trials. We aim to bridge this translational gap with the detailed understanding of the mechanisms through which ANCE promotes tissue repair and functional recovery in rodents, NHPs and humans, using both in vitro and in vivo assays. We believe that the advantages of autologous transplantations combined with our detailed assessments of their biological and functional properties.

IP	Departement des neurosciences cliniques. Institut IMAGINE. Suiza
Socios	Ctre for interdisciplinary research in biology (Francia), SV BMI UPCOURTINE Center for Neuroprosthetics (Suiza), Faculty of medicine and health sciences (España)
Presupuesto total	694.345 €
Concedido ES	186.099 €

PROYECTO 7 IMatrix. Theragnostic targeting of extracellular matrix metalloproteinases and blood brain barrier disruption in subacute ischemic stroke

Despite the remarkable progress in the care of acute stroke with thrombolysis and mechanical thrombectomy during last years, the clinical management of subacute ischemic stroke still remains limited due to the lack of effective treatments. Hence, establishing novel theragnostic 19F nanoprobe targeting the neurovascular unit can contribute to accelerate the approval of promising therapies for clinical subacute stroke. For this reason, the aim of IMatrix is to explore the diagnostic and therapeutic potential of targeting matrix metalloproteinases on Blood-Brain Barrier disruption (BBBd), vascular inflammation, leucocyte infiltration and haemorrhagic transformation during secondary ischemic damage using fundamental and clinical research approaches. Likewise, the evaluation of the dynamic of subacute ischemic stroke in humans is a necessary preliminary step for future clinical trials targeting these pathophysiological mechanisms. Together with the use of a large portfolio of specific imaging and contrast agents able to image BBBd and the use of human blood biomarkers will help us to gain new insights into

the potential of targeting neurovascular unit as novel therapeutic approach for subacute ischemic stroke. Finally, the knowledge obtained in the framework of IMatrix has a strong translational potential that can easily be transferred to other neurological and neurodegenerative diseases with consequently benefits to patient quality of life and potential treatment cost savings.

IP	Neuroimaging and Biomarkers of Inflammation Laboratory. España
Socios	Biochemistry and Molecular Biology (España), Dpt. of Experimental Neurology and Center for Stroke Research Berlin (Alemania), PhIND "Physiopathology and Imaging of Neurological Disorders", Institut Blood and Brain (France), Faculté des Sciences Jean Perrin, Laboratoire de la barrière Hémato-Encéphalique UR 2465 (Francia), In Vivo Imaging Advanced Core Facility (Hungría)
Presupuesto total	1.268.007 €
Concedido ES	320.415 € (Achucarro Basque Center For Neuroescience Fundazioa 175.275 €), (Universidad del País Vasco 145.140 €)

PROYECTO 13 TACKLE-CSVD. Targeting Autophagic networks and the lysosome in Cerebral Small Vessel Disease

Cerebral small-vessel disease (CSVD) refers to a spectrum of sporadic or hereditary chronic pathological alterations of cerebral arterioles, capillaries and venules mostly within the white matter, which lead to vessel rarefaction, demyelination, blood-brain barrier (BBB) dysfunction, glial activation and axonal loss. CSVD is responsible for ~30% of ischemic strokes and is a common cause of functional disability and cognitive impairment, imposing an enormous socio-economic burden. Thus, there is the urgent need to develop new therapeutic approaches to treat CSVD. While the majority of studies have focused on characterizing the vascular changes occurring in CSVD, the contribution of cells of the neural parenchyma to the disease remain incompletely understood. In this proposal we hypothesize that lysosomal-autophagy impairment centrally contributes to demyelination, glial activation and neuronal loss in CSVD. To work on this hypothesis we propose an innovative approach to understand and define translational pathways for CSVD, by combining expertise and knowledge of 4 research groups, ranging from the fields of neurology, vascular biology, neurovascular biology and lysosomal biology. Research in this proposal combines CSVD patient samples and mouse models, zebrafish models and in vitro and biochemical approaches. This work will provide the much-needed knowledge on the mechanisms underlying CSVD pathophysiology, as well as new opportunities for targeted therapies.

IP	Institute for Neurovascular Cell Biology. Life & Brain Center. Alemania
Socios	Vascular Neurology Research Laboratory (Alemania), Universidad del País Vasco (UPV/EHU) (España), Biological Regulation (Israel)
Presupuesto total	638.128 €
Concedido ES	187.083 €

EURONANOMED III -ERA-NET on Nanomedicine

EuroNanoMed III (ENM III) se basa en los fundamentos de los proyectos anteriores EURONANOMED I y II que, desde 2009 lanzaron 7 convocatorias de proyectos conjuntos, financiando 51 proyectos de investigación colaborativos con 269 socios de 25 países/regiones por un valor de 45,5 M€. El consorcio ENM III, que se ha reforzado con 12 nuevos socios de Europa, Canadá y Taiwán, se compromete a fomentar la competitividad de los actores europeos de la nanomedicina teniendo en cuenta los cambios recientes en el panorama actual y los nuevos grupos de interés y desafíos, tal como se identifica en la agenda estratégica de nanomedicina (SRIA). La primera convocatoria conjunta de propuestas fue cofinanciada por los socios de ENM III y la CE. Además, se lanzarán tres convocatorias transnacionales adicionales y se realizarán actividades estratégicas en colaboración con iniciativas clave en el área. Las acciones de ENM III se centran en la traslación de los resultados del proyecto a las necesidades clínicas y de la industria.

Socios: Coordinador: España (Instituto de Salud Carlos III (ISCIII), Bélgica (National Fund for Scientific Research, FNRS), Canadá (Fonds de recherche du Québec – Santé, FRQS), Estonia (Estonian Science Foundation, ETAG), Francia (National Research Agency, ANR), Alemania (Federal Ministry of Education and Research, BMBF; Technologiezentrum GmbH, VDI TZ), Grecia (General Secretariat for Research and Technology, GSRT), Irlanda (Science Foundation Ireland, SFI), Israel (Ministry of Health, CSO-MOH), Italia (Ministry of Education, University and Research, MIUR), Ministry of Health, MOH/MDS), Letonia (State Education Development Agency, VIAA), Lituania (Research Council of Lithuania, LSC/LMT/RCL), Países Bajos (Foundation for Technical Sciences, STW), Noruega (Research Council of Norway, RCN), Polonia (National Centre for Research and Development, NCBiR), Portugal (Foundation for Science and Technology, FCT), Rumanía (Executive Agency for Higher Education, Research, Development and Innovation Funding, UEFISCDI), National Authority for Scientific Research and Innovation (ANCSI), Eslovaquia (Slovak Academy of Science, SAS/SAV), **España (Centro para el Desarrollo Tecnológico Industrial, CDTI), Ministerio de Economía y Competitividad-Agencia Estatal de Investigación (MINECO-AEI),** Taiwán (Ministry of Science and Technology, MoST Taiwan), Turquía (Scientific and Technological Research Council of Turkey, TUBITAK)

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Convocatorias conjuntas internacionales: 3 (2017, 2018, 2019)

Participación de MINECO-AEI en convocatorias: 3 (2017, 2018, 2019)

CONVOCATORIA CONJUNTA INTERNACIONAL 2017

Países participantes	Bélgica, Canadá, Estonia, Francia, Alemania, Grecia, Irlanda, Israel, Italia, Letonia, Lituania, Países Bajos, Noruega, Polonia, Rumanía, Eslovaquia, España, Taiwán, Turquía
Temáticas	Regenerative medicine; Diagnostics; Targeted delivery systems
Presupuesto total	15.166.397 €
Presupuesto ES	752.460€
Proyectos aprobados	16
Proyectos con AEI	5 (3 coordinados)

Nº	Acrónimo y título del proyecto	Países participantes
1	TEMPEAT. Temperature-responsive polypeptide nanocarriers for abdominal therapies	Países Bajos, Bélgica, España, Francia
2	SPEEDY. Surface-enhanced Raman scattering with nanophotonic and biomedical amplifying systems for an early diagnosis of Alzheimer's disease pathology	Israel, Italia, Polonia
3	RESOLVE. SuppRESSion of immunopathology by nanOparticle deLiVEry of mRNA to monocytes	Alemania, Francia, Italia, Noruega
4	NSC4DIPG. NanoSonoChemotherapy for Diffuse Intrinsic Pontine Glioma	Alemania, Países Bajos, Noruega
5	NANO-SCORES. NANOstructured oSteoChOndral scaffold: novel biomimetic tRiggErS for enhanced bone regeneration	Francia, Irlanda, Italia, Letonia, Países Bajos
6	NANOpheles. Development of nanovectors for the targeted delivery in Anopheles mosquitoes of agents blocking transmission of Plasmodium parasites	España, Bélgica, Grecia, Países Bajos, Portugal
7	NanoGSkin. Transversal tissue engineering and nanomedicine approach towards an improved chronic wound therapy	España, Francia, Irlanda, Italia
8	MAGneTISe. Magnetic Particle Imaging for the Treatment and Imaging of Stroke	Alemania, Irlanda, Italia
9	MAGBBRIS. New MAGnetic Biomaterials for Brain Repair and Imaging after Stroke	España, Francia, Italia, Polonia, Eslovaquia
10	INTRATARGET. NANO-IMMUNOTHERAPY: INTRACELLULAR TARGETING OF CANCER CELLS AND TAMs	España, Italia, Noruega, Turquía
11	INAT. Inhaled Nanocarriers with Antisense Therapy for Lung Fibrosis	Bélgica, Alemania, Francia
12	GLIOGEL. Prevention of glioblastoma recurrence by injection in the resection cavity of a hydrogel formed by targeted lipid nanocapsules loaded with anticancer drugs	Bélgica, Canadá, Francia
13	EXIT. Exosomes Isolation Tool with nanofluidic concentration device	Estonia, ESPAÑA, Países Bajos, Noruega
14	ARROW-NANO. New Approaches to Rare Respiratory Orphan fibrotic diseases With locally administered targeted NANOparticles	Austria, España, Francia, Italia
15	AMI. Antidrug-antibody and drug Molecular detection in Inflammatory diseases with organic electronics platform	España, Francia, Italia
16	4NanoEARDRM. NANOfabricated NANOcomposite NANObioact-ive and NANOfunctional rEplacements of tympaniC membrRane as advanced DRUG delivery and regenerative platforMs	Alemania, Italia, Países Bajos, Turquía

CONVOCATORIA NACIONAL APCIN 2017

PROYECTO 1 TEMPEAT. Temperature-responsive polypeptide nanocarriers for abdominal therapies

The TEMPEAT project aims to overcome a major drawback in nanomedicine, namely the need to efficiently release active compounds from the carrier at the site of action, by developing targeted, thermo-responsive polypeptide particles for cancer treatment that combine a set of unique features: Temperature responsive, Functionalized for targeting, Dual drug loading for efficacy. We will focus on tumours in the peritoneal cavity, which constitute an enormous problem in metastasized ovarian cancer. This specific location allows in vivo cooling and laparoscopic illumination.

IP	Eindhoven University of Technology, Países Bajos
Socios	Países Bajos (Stichting Katholieke Universiteit Nijmegen), Bélgica (Ablynx), España (Universidad Autónoma de Madrid (UAM)), Francia (University of Bordeaux)
Presupuesto total	538.400
Concedido ES	138.000 €

PROYECTO 6 NANOpheles. Development of nanovectors for the targeted delivery in Anopheles mosquitoes of agents blocking transmission of Plasmodium parasites

The objective of NANOpheles is to design polymeric nanovectors for the delivery of antimalarial agents to Plasmodium stages in the mosquito, and to characterize the efficacy of nanovectors and antimalarial agents to reduce mosquito infectiousness. This objective will be achieved through synthesis of nanocarriers capable of encapsulating antimalarials; engineering of targeted nanovectors capable of delivering their antimalarial contents to Plasmodium stages in the Anopheles mosquito; and evaluation of the effect of selected nanovectors (loaded with antimalarial agents) on the mosquito stages of Plasmodium and their transmission capacity in a murine model of malaria. NANOpheles unites groups which are leading laboratories in nanoparticle synthesis, targeted drug delivery to Plasmodium-infected cells, molecular and cell biology of malaria, mouse models and mosquito vectors of malaria, and clinical aspects of malaria.

IP	Fundació Institut de Bioenginyeria de Catalunya, España
Socios	Bélgica (CEntre Interfacultaire des Biomatériaux (CEIB)), España (Barcelona Institute for Global Health (ISGlobal)), Grecia (Foundation for Research and Technology – Hellas (FORTH)), Países Bajos (University of Twente (UT)), MESA+ Institute for Nanotechnology), Portugal (Universidade Nova de Lisboa)
Presupuesto total	977.440 €
Concedido ES	150.000 €

PROYECTO 9 MAGBBRIS. New MAGnetic Biomaterials for Brain Repair and Imaging after Stroke

MAGBBRIS will demonstrate that growth factors, secreted by endothelial progenitor cells, with proved potential to induce tissue repair, can be encapsulated in magnetic biomaterials and be successfully and safely transplanted into mouse brains to induce tissue repair. In the ischemic brain, the secretome will be retained by an external magnetic field in the vasculature, improving vascular remodelling and neurogenic tissue regeneration after stroke. Our approach will provide

an advanced therapy that could be translated to a clinical stage as noninvasive, safe and available to most stroke patients.

IP	Vall d'Hebron Research Institute, España
Socios	España (Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC), Francia (University of Artois), Italia (Ospedale San Raffaele IRCCS), Polonia (Pure Biologics Ltd), Eslovaquia (Slovak Academy of Sciences, SAS)
Presupuesto total	1.459.590 €
Concedido ES	93.500 €

PROYECTO 10 INTRATARGET. Nano-Immunotherapy: Intracellular Targeting of Cancer Cells and TAMs

The objective of the 2-INTRATARGET proposal, is to address the challenges related to new cancer immunotherapies aimed to target cancer cells as well as immune cells by engineering Multifunctional Polymeric Nanocarriers (MPNs) aimed to deliver: 1) monoclonal antibodies (mAb) into cancer cells, thus targeting intracellular oncoproteins in the tumor or in their metastatic niches and 2) RNA molecules into the Tumor Associated Macrophages (TAM), to re-educate them and switch the tumorpromoting immune suppressive microenvironment to one that kills tumor cells and promotes adaptive immune responses. These potential nanomedicines, administered separately or in a combined form may represent a breakthrough in the advancement of cancer immunotherapy.

IP	Universidade de Santiago de Compostela, España
Socios	España (Universidad de Navarra (UNAV), Italia (Humanitas Clinical and Research Center (ICH), Noruega (SINTEF Materials and Chemistry), Turquía (ILKO Pharmaceuticals)
Presupuesto total	1.462.115 €
Concedido ES	100.000 € + 150.000 € = 250.000 €

PROYECTO 15 AMI. Antidrug-antibody and drug Molecular detection in inflammatory diseases with organic electronics platform

The vision of AMI is a nanoscale platform for the assessment of the immune reaction against biologicals targeted to inflammatory pathologies. RA and SLE will be taken as prototype diseases; anti-TNF- α infliximab and Lupuzor as prototype drugs, respectively.

AMI platform measures ADAs and drug levels in plasma samples and has the following advantages that fill the gaps of competing technologies. The translational focus of the research will be implemented by assessing AMI on samples selected from patient bio-banks in a clinical research environment. AMI breakthroughs will increase life quality and expectancy of patients, improve their condition, and restore their relationships and productivity with important socio-economical fallouts. AMI also addresses the needs of pharmaceutical companies that will be endowed with a tool for high throughput screening of the immunogenicity of biologicals.

IP	Università degli Studi di Modena e Reggio Emilia, Italia
Socios	España (LEiTAT, DropSens S.L.), Francia (Université de Strasbourg, ImmuPharma)
Presupuesto total	917.340 €
Concedido ES	120.960 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2018

Países participantes	Bélgica, Canadá, Estonia, Francia, Alemania, Grecia, Italia, Letonia, Lituania, Polonia, Rumanía, Eslovaquia, España, Taiwán, Turquía
Temáticas	1. Regenerative medicine 2. Diagnostics 3. Targeted delivery systems
Presupuesto total	9.750.000€
Presupuesto ES	490.000€
Proyectos aprobados	12
Proyectos con AEI	3

Nº	Acrónimo y título del proyecto	Países participantes
1	ABISens. Monitoring of Acquired Brain Injury and recovery biomarkers by the combined label-free nanoSensing of multiple circulating molecules	España, Francia, Italia
2	ANNAFIB. Antimicrobial Nano-Functionalization of Peptide-enriched Silk Fibroin matrices to prevent bone infections and to enhance implant osseointegration in orthopaedics and dentistry	Grecia, Israel, Italia, Rumanía
3	CONCORD. Cationic Gold nanoparticles mediated mRNA cytoplasmatic-targeted delivery for production of CAR-T lymphocytes for Chronic Lymphoid Leukemia immunotherapy	España, Italia, Israel
4	CurcumAGE. Ferritin- nanocages for the anti-aging treatment based on curcuminoids	Italia, Grecia, Estonia
5	LIQD-CORNEA. A liquid corneal glue-filler as an alternative to transplantation in high risk patients	Canadá, Estonia, Francia, Lituania
6	METASTARG. Targeted multifunctional nanoemulsions to interrupt metastasis progression	España, Italia, Francia, Rumanía
7	MoDiaNo. MOlecular DIAgnostic of brain disease mutations in human embryonic stem cells derived 2D- and 3D- neuronal cultures, using intracellular naNOParticle tracking, synapse naNOscopy, and microcircuit calcium imaging	Taiwán, Alemania, Francia,

8	NANO-VERTEB. Next generation Antibacterial Nanostructured Osseointegrated customized VERTEBRAL replacement	Italia, Rumanía, España, Taiwán
9	NANOSIM. Biodegradable nanoparticles of simvastatin as new therapeutic tool for chronic liver disease.	España, Francia, Israel
10	PANIPAC. Photoactivable nanoparticles to immunostimulate the tumour microenvironment in pancreatic cancer	España, Italia, Francia
11	TARBRAINFE. Nanosystems conjugated with antibody fragments to target/treat brain infections	España, Francia, Polonia, Eslovaquia, Grecia
12	nAngioDerm. Ion-release materials to promote angiogenesis on dermal regeneration	España, Grecia, Francia

CONVOCATORIA NACIONAL APCIN 2019

PROYECTO 3 CONCORD. Cationic Gold nanoparticles mediated mRNA cytoplasmatic-targeted delivery for production of CAR-T lymphocytes for Chronic Lymphoid Leukemia immunotherapy

CAR T cell therapy is a type of immunotherapy based in the ex-vivo engineering of patient T-lymphocytes to produce special receptors on their surface called chimeric antigen receptors (CARs) that target the T-lymphocytes specifically towards the tumour when reintroduced in the patient. CAR T cell therapy targeting CD19 is showing very promising results with recurrent and refractory chronic lymphocytic leukaemia. However, since today's CAR T lymphocytes stay active indefinitely, patients experience long-term eradication of normal B-cells and require monthly infusions of immunoglobulins. One more limitation of CAR T cell therapy is that T-cells are modified using lentiviral vectors, which, though acceptably safe, they are not free of oncogenic insertional mutagenesis risk and cleaner approaches would be desirable. mRNA transfections are used as a tool for protein overexpression that involves no risks of insertional mutagenesis and is expressed only transiently. However, mRNA is easily degraded inside the cell and protein levels quickly decline after 24-48h, requiring repeated boost of fresh mRNA. Moreover, current methods for mRNA delivery, especially lipofectamine or electroporation, are quite toxic to the cell, when they cross the cell membrane. We propose to bind the mRNA to gold nanoparticles (NP) functionalized with amine terminated groups as a safer way to target the cytosol via endocytosis. More importantly, we will induce a slow release of the mRNA inside the cell, therefore extending the mRNA half-life and protein expression. Gold NPs are of special interest for genetic material delivery due to their biocompatibility, tuneable surface chemistry where a combination of therapeutic and targeting moieties can be loaded, and their special optical and electronic properties that allow fine monitoring of the evolution, distribution and modifications of their chemical environment. Therefore, they seem ideal candidates for safe transport and slow release of mRNA.

IP	Catalan Institute of Nanoscience and Nanotechnology, España
Socios	España (Hospital Clínic de Barcelona, Applied Nanoparticles), Italia (IRCCS-Istituto di Ricerche Farmacologiche "Mario Negri"), Israel (Tel Aviv University, Sackler School of Medicine)
Presupuesto total	586.465 €
Concedido ES	155.000 €

PROYECTO 10 PANIAC Photoactivable nanoparticles to immunostimulate the tumour microenvironment in pancreatic cancer

There is a pressing medical need to develop innovative therapeutic approaches that improve the outcome and survival of pancreatic cancer patients. The development of immunotherapies has represented a breakthrough that has revolutionized oncology treatments, but with little effect in pancreatic tumors since they are considered non-immunogenic tumors or with a tolerogenic/ immunosuppressive tumor microenvironment (TME). Turning pancreatic tumors to immunogenic could open new avenues making them candidates for immunotherapies. This can be achieved by integrating techniques from two Key Enabling Technologies (KETs), nanotechnology and photonics. Nanoparticles have shown preferential accumulation in tumor sites through (i) the enhanced permeability and retention effect (EPR), and (ii) the receptor-mediated internalization when they are opportunely functionalized with specific ligands. Moreover, nanoparticles can also be designed to penetrate into the tumor stroma, interact with both tumor pancreatic cancer cells and cells of the TME, and efficiently release their cargo at the targeted site allowing to achieve a particular therapeutic response. We propose the development of photoactivable nanoemulsions composed by bioactive sphingolipids for a dual action aimed to increase the immunogenicity of pancreatic tumors by i) reverting the tolerogenic/ immunosuppressive tumor microenvironment of pancreatic cancer by modulating the phenotype of tumor associated immune cells (e.g. tumor-associated macrophages), and ii) mediating the infiltration of T effector lymphocytes (Teff), to reset the immunogenicity of pancreatic tumors, and make them candidates for the development of combinatory therapies with checkpoint inhibitors and/or other immune therapies such as bispecific antibodies.

IP	Consorcio Centro de Investigación Biomédica en Red, M.P. (CIBER), España
Socios	España (Universidad Autónoma de Madrid), Italia (IRCCS Ospedale San Raffaele), Francia (CNRS, University Paris-Sud, Holochem)
Presupuesto total	879.958 €
Concedido ES	145.000 €

PROYECTO 12 nAngioDerm. Ion-release materials to promote angiogenesis on dermal regeneration

nAngioDerm will develop nanostructured ion-release platforms and devices that promote the in situ regeneration of damaged skin without the need of cells or growth factors. nAngioDerm's innovative approach is based on the controlled release of bioactive ions (Zn^{2+} , Ag^+ , Ca^{2+}) from biodegradable polymeric nanocarriers, which will be developed using a nano-precipitation technique.

e. These bioactive ions will promote cell recruitment and colonization and provide an antibacterial effect, as well as triggering the synthesis of angiogenic factors and extracellular matrix components that will facilitate wound healing. Depending on the type of skin injury, the ion-releasing nanocarriers will be: 1) combined with 3D printed collagen-based scaffolds as filling and guiding biomaterials for chronic wounds such as diabetic or pressure ulcers; or 2) dispersed in a spray based on a thermos-responsive collagen gel for acute wounds related to burns. The devices and platforms proposed here will be assessed in vitro and in suitable preclinical in vivo models as per EMA guidelines, bringing them to technology readiness level 4-5, close to clinical translation and market transferability stages. The comprehensive nAngioDerm project will equip recruited researchers with a transferable and multidisciplinary skill set to enable them to adapt quickly to the challenging needs of the medtech sector and affording them rapid ascent to key

leadership positions in the field. In the long-term, the technologies developed will be implemented in other clinical areas, resulting in increased European-based knowledge, innovation, competitiveness and leadership in the field.

IP	Institute for Bioengineering of Catalonia, España
Socios	España (Hospital Universitario Vall d'Hebrón), Grecia (University of Ioannina), Francia (Université Grenoble Alpes, Microlight SAS)
Presupuesto total	747.304 €
Concedido ES	190.000 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2019

Países participantes	Bélgica, Canadá, Estonia, Francia, Alemania, Grecia, Italia, Letonia, Lituania, Polonia, Rumanía, Eslovaquia, España, Taiwán, Turquía, República Checa.
Temáticas	1. Regenerative medicine 2. Diagnostics 3. Targeted delivery systems
Presupuesto total	10.200.000€
Concedido ES	300.000€
Proyectos aprobados	13
Proyectos con AEI	2

Nº	Acrónimo y título del proyecto	Países participantes
1	NANO4GLIO. Nanomedicine for glioblastoma therapy	Canadá, España , Francia, Taiwán y Letonia
2	GOTTARG. Glutamate Oxaloacetate Transaminase Nanoparticles targeted to the Brain for Neuroprotection in Ischemic Stroke	Canadá , España, Noruega y Turquía
3	DRNANODALL. Nanodiagnosis for Betalactam Hypersensitivity	España , Italia, Francia
4	CELLUX. CeO2 Nanoparticles-assisted stem-cell therapy: an innovative nanopharmaceutical approach to treat retinal degenerative diseases	República Checa, España , Francia, Italia y Noruega
5	NAN-4-TUM. Development of CXCR4 targeting-nanosystem-A1:LK39 for molecular	República Checa, España , Francia, Italia , Taiwán y Noruega
6	REASON. Regenerating the diabetic heart and kidney by using stress-specific thyroid hormone nanocarriers	Bélgica, Francia, Grecia, e Italia
7	TENTACLES. TEmperture-responsive Nanogels for TARgeted delivery of miCroRNAs in wound heaLing and tissue rEgeneration applicationS	España, Francia, Italia , Polonia, Letonia y Eslovaquia

8	IMPLANTNANO. Nano-delivery system for one-shot regenerative therapy of peri-implantitis	Letonia, Francia y Canadá
9	NANOLIGHT. Photosensitive nanotools for neuronal stimulation and rescue of degenerative blindness	España, Francia, Italia y Rumanía.
10	GLIOSILK. Exosomes as innovative Nanomedicine Approaches to reverse obesity and its METabolic and Psychotic complications with specific targeting of the hypothalamus	España, Italia, Francia
11	ENAMEP. Nanosystems conjugated with antibody fragments to target/treat brain infections	España, Francia, Noruega
12	NANONET. Targeting breast tumors with anti-Netrin-1 A1:LK39 as a promoter of immunity	Francia, Italia y Taiwán
13	RUNNING. Gut-targeted RNA-based nanoparticles for fibrostenotic Crohn's Disease: a novel therapeutic approach	Francia, Grecia, Italia y Noruega

CONVOCATORIA NACIONAL APCIN 2019-2

PROYECTO 3 DRNANODALL. Nanodiagnosis for Betalactam Hypersensitivity

Betalactam (BL) allergy is self-reported by approximately 10% of the population with adverse drug reactions (ADR), being most frequently induced by an IgE mediated mechanism. This ADR has implications for patient safety and Health Systems costs since prescription of alternative antibiotics could induce bacterial resistance, could be more expensive and could potentially be more toxic. IgE-mediated BL allergy varies among patients, with some reacting to only one BL and others to several; it tends to change over time and differs between European countries, depending on BL consumption. BL allergy diagnosis is challenging, relying on patient clinical history, where previous BL-ADR evidence are often inaccurately reported, and on drug provocation and/or skin tests, which are not risk-exempt and require specialized healthcare professionals for results interpretation and patient management. In vitro testing stands out as the more rational alternative diagnostic method, showing however various limitations, such as low sensibility. Immunoassay for quantifying specific IgE is the most used, although limited to few BLs. Basophil activation test is also used, although the lack of knowledge about the activation mechanisms has hampered a wider clinical application. Thus, nowadays these tests do not fulfil the clinician's needs. DrNanoDAll proposes the development of nanoparticles decorated with BL dendrimeric antigens, innovative solutions to surpass the current limitations. In order to offer new in vitro tools for BL-allergy accurate diagnosis, this proposal will combine nanotechnological and immunological approaches with BL-allergy clinical expertise, implementing a multi-omics workflow and involving the industry for scaling up nanomaterials and clinical test validation steps. This European-wide collaboration will be crucial to generate a new BL-allergy diagnosis tool suitable for personalized medicine, which will impact positively on the European Health Systems.

IP	Instituto de Investigación Biomédica de Málaga, España
Socios	España (Univ. de Málaga y el Laboratorio de Diagnósticos y Aplicaciones Terapéuticas DIATER, S.A), Italia (IRCCS - “Associazione Oasi maria SS”), Francia (Inserm and University of Lorraine)
Presupuesto total	748.485 €
Concedido ES	149.640 €

PROYECTO 9 NANOLIGHT. Photosensitive nanotools for neuronal stimulation and rescue of degenerative blindness

The grand challenge in biomedical engineering is to develop methods for interfacing light stimuli with the nervous system. nanoLight will exploit the revolutionary concept of focalized neuronal stimulation without using microelectrodes or planar prosthetic devices and avoiding genetic manipulations. The goal is to compensate for nervous system pathologies in which neuronal degeneration has induced a specific loss of function. This will be achieved by the use of novel photosensitive nanotools (PNTs) that can be delivered to the tissue with minimally invasive microinjections and anchored to the membranes of target neurons to convert light stimuli into an electrical stimulation. The project will focus on three parallel strategies exploiting both organic and inorganic PNTs: (i) organic PNTs based on conjugated polymers (oPNTs); (ii) inorganic PNTs based on silicon photodiodes (iPNTs); and (iii) hybrid PNTs based both on inorganic semiconductors (e.g., CdSe) and conjugated polymers (hPNTs). PNTs will be surface-functionalized to stably interact with the plasma membrane and will mediate light-evoked activation of neuronal circuits. Preliminary results show that 1st generation iPNTs and oPNTs are not endocytosed and preserve their extracellular location in cells for long time. We also have preliminary clues on the role of photogenerated charges in the photo-transduction process and in the resulting neuronal activation. In view of therapeutic applications to human diseases, nanoLight PNTs will target photoreceptor degeneration in Retinitis Pigmentosa (RP) and age-related macular degeneration (AMD). Preliminary results indicate that subretinally injected PNTs are effective in rescuing light sensitivity and spatial discrimination in an animal model of RP. This will guide nanoLight biomedical engineering to develop new methods for interfacing optical stimuli with the nervous system for healing pathologies in which neuronal degeneration has induced a specific loss of function.

IP	IRCSS - Ospedale Policlinico San Martino (Italia)
Socios	International Centre of Biodynamics (Romania), Sorbonne Université (Francia), Consejo Superior de Investigación Científica (CSIC) (España), 5 SOLEMS S.A.(Francia) y Arrays-for-cell Nanodevices S.L. (España)
Presupuesto total	1.004.447 €
Concedido ES	150.000 €

The Joint Programming Initiative (JPI) “More Years, Better Lives – The Potential and Challenges of Demographic Change”

La Iniciativa de Programación Conjunta (JPI) “*More Years, Better Lives – The Potential and Challenges of Demographic Change*” busca mejorar la coordinación y la colaboración entre los programas de investigación europeos y nacionales relacionados con el cambio demográfico.

Las áreas afectadas por el cambio demográfico cubren una amplia gama de campos de investigación y temas de políticas que van desde la salud al bienestar social, la educación y el aprendizaje, el trabajo y la productividad hasta la vivienda, el desarrollo urbano y rural y la movilidad. La JPI “*More Years, Better Lives*”, por lo tanto, sigue un enfoque transnacional y multidisciplinar reuniendo a diferentes programas de investigación e investigadores de diversas disciplinas para brindar soluciones a los desafíos futuros y aprovechar el potencial del cambio social en Europa.

Socios de la JPI: **Coordinador: Alemania**, Austria, Bélgica, Canadá, Dinamarca, Finlandia, Francia, Italia, Países Bajos, Noruega, Polonia, España, Suecia, Suiza, Reino Unido.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número de convocatorias conjuntas internacionales: 5 (J-AGE I 2015, J AGE II 2016, J AGE III, 2017)

Participación de MINECO-AEI en convocatorias conjuntas: 5 (2015, 2016, 2017)

CONVOCATORIA CONJUNTA INTERNACIONAL 2015

Países participantes	Austria, Bélgica, Canadá, Dinamarca, Finlandia, Francia, Alemania, Países Bajos, España, Suecia, Reino Unido
Temáticas	Extended Working Life. Its Interaction with Health, Wellbeing and beyond 1.Modern work factors 2.Longer working life & Inequality 3. Health challenges 4. Caring responsibilities
Presupuesto total	7.780.000 €
Presupuesto ES	300.000 €
Proyectos aprobados	5
Proyectos con AEI	1 proyecto

Nº	Acrónimo y título del proyecto	Países participantes
1	WORKLONG. Impact of interventions and policies on prolonging working life in good health: an international study	Países Bajos , Suecia, Reino Unido
2	FACTAGE. Fairer ACTIVE AGEing for Europe	Bélgica , Austria, Alemania, España , Reino Unido

3	LOGLIVES: Policies for longer working lives: understanding interactions with health and care responsibilities	Alemania , Dinamarca, Francia, Reino Unido
4	EXTEND. Social inequalities in extending working lives of an ageing workforce	Alemania , Alemania, Dinamarca, Países Bajos, Reino Unido, Finlandia
5	THRIVE. Tackling health inequalities and extending working lives	Reino Unido , Canadá, Suecia, Dinamarca

CONVOCATORIA NACIONAL APCIN 2015-2

PROYECTO 2 FACTAGE: Fairer ACTIVE AGEing for Europe

More active ageing is an unmistakable trend across the EU Member States, even in times of economic crisis and austerity. It is attributed to a steady extension of working careers since the mid-1990s, and due mainly to the closing of pathways to early retirement and better labour market incentives towards longer working careers. Yet, there remains a gap in terms of a comparative assessment of the impact of policy reforms on inequalities in later life and on fairness between generations. The concept of well-being in later life will reflect multiple dimensions, including pension incomes and health. FACTAGE will provide a toolbox for and implement a comparative assessment of differential mortality risks, health and labour market inequalities. It will recommend evidence-based policy scenarios for a more equitable allocation of labour and retirement across populations and generations. A key problem in repair and functional regeneration following myocardial infarction is the lack of potential of the heart muscle to efficiently regenerate under conditions of increased strain caused by the reduced contractibility of the damaged heart. This frequently leads to continuous loss of functional cells, further increase of the infarct area through adverse remodeling and finally complete loss of heart function. The aim of this project is to explore new therapeutic possibilities based on nanotechnology, biomaterials and stem cell therapy. We will investigate the regeneration capability of factors stimulatory for stem, progenitor cells, angiogenesis and myogenesis (IGF and HGF) while administering these factors as sustained release nanoparticles.

IP	Centre for European Policy Studies, Bélgica
Socios	Austria (Statistics Austria), Reino Unido (National Institute of Economic and Social Research), España (Universidad del País Vasco) , Alemania (University Koblenz-Landau)
Presupuesto total	954.429 €
Concedido ES	50.000 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2016

Países participantes	Austria, Bélgica, Canadá, Finlandia, Francia, Israel, Italia, Noruega, Portugal, España (MINECO, ISCIII), Países Bajos
Temáticas	Welfare, Wellbeing and Demographic Change: Understanding Welfare Models” 1. Understanding and measuring wellbeing and welfare across the life-course

	2. Evaluating the adequacy and sustainability of different welfare models
Presupuesto total	
Presupuesto ES	452.000€
Proyectos aprobados	5
Proyectos con AEI	4 (2 coordinados)

Nº	Acrónimo y título del proyecto	Países participantes
	AgeWellAccounts.	
1	Age-Specific Wellbeing- and Transfer Accounts: Evaluating Intergenerational Support	Austria , Francia, Italia
	CIRCLE.	
2	Care and Income Redistributive Cycles in the Lives of Europeans	Italia , España, Bélgica
	CREW.	
3	Care, retirement and wellbeing of older people across different welfare regimes	España , Países Bajos, Bélgica, Italia, Canadá
	EMMY.	
4	European Welfare Models and Mental Wellbeing in Final Years of Life	Finlandia , Noruega, España, Italia
	WELTRANISM.	
5	Demographic change and intra and intergenerational distribution: Modelling the impact of different welfare models	España , Austria, Finlandia

CONVOCATORIA NACIONAL APCIN 2016

PROYECTO 2 CIRCLE. Care and Income Redistributive Cycles in the Lives of Europeans

The aim of CIRCLE is to provide new empirical evidence of the impact of the interaction between the economic and demographic changes and the welfare systems on the distribution of the resources, rights and responsibilities between generations. In many EU countries welfare provisions addressed to older people are pay as you go financed and fast population ageing boosts redistribution from the young to the old. However compensatory mechanisms redistributing resources from the old to the young, are often implemented at intra-household level, mainly through inter-vivos transfers and informal care provisions. The analysis takes both redistributive flows into account and covers a variety of EU welfare state models, giving a strong base for generalizing the results and deriving useful policy implications.

IP	CeRP - Collegio Carlo Alberto (CeRP-CCA), Italia
Socios	Bélgica (Centrum voor Sociaal Beleid Herman Deleeck), España (Universidad de Alcalá de Henares)
Presupuesto total	382.086 €
Concedido ES	74.000 €

PROYECTO 3 CREW. Care, retirement and wellbeing of older people across different welfare regimes

Our project fills key policy-relevant gaps in existing research, ultimately contributing to knowledge which inform policies to enhance successful ageing for both men and women and for people of different socio-economic groups. Our communication plan includes a variety of tools and ideas to inform the scientific community, policy makers, non-governmental bodies, and the wide public about our findings. Using rich, comparative, longitudinal data, the analyses will explore how important experiences during later life, such as caregiving and retirement, affect older people's health and well-being. This will provide policy makers with a clearer picture of the challenges and opportunities faced by an ageing society. The outputs of the project will inform policy makers in four specific areas: identifying key determinants of health and well-being in later life, the Consequences of Caregiving, the interrelationships between Work, Care and Well-being, the Consequences of Ageing Alone.

IP	Universidad Pompeu Fabra (UPF) España
Socios	Países Bajos (Netherlands Interdisciplinary Demographic Institute (NIDI), Bélgica (Université Catholique de Louvain (UCL), University of Padua (UNIPD), Italia (University of Florence (UFL), Canadá (University of Western Ontario (UWO)
Presupuesto total	922.554 €
Concedido ES	144.000 €

PROYECTO 4 EMMY. European Welfare Models and Mental Wellbeing in Final Years of Life

The EMMY Project is an interdisciplinary and mixed methods comparative study on impact of welfare systems on mental wellbeing among the oldest old in Finland, Italy, Norway and Spain, including aspects such as equity, social inclusion, empowerment and participation. The project will delineate the concept of mental wellbeing at old age by qualitative methods, and will dissect the links between welfare systems and mental wellbeing by quantitative methods. It will support the exchange of good policies between EU Member States by performing case studies of existing welfare policies and systems in the four participating countries, and it will develop a new research-based tool for assessing the mental wellbeing impact of welfare policies in old people.

IP	National Institute for Health and Welfare (THL), Finlandia
Socios	Finlandia (Åbo Akademi University), Noruega (SINTEF), España (Universidad Autónoma de Madrid (UAM), Italia (Università di Verona (UNIVR)
Presupuesto total	1.070.606 €
Concedido ES	90.000 €

PROYECTO 5 WELTRANISM. Demographic change and intra and intergenerational distribution: Modelling the impact of different welfare models

The WELTRANSIM project aims to explain the distributional effects induced by the ageing process and how welfare models contribute to mitigating such effects and securing wellbeing across the life cycle (from childhood to old age). Undoubtedly, population ageing changes the distribution of income, public resources and time use. In this respect, different welfare models induce different costs for actors and influence life course risks differently. WELTRANSIM places special emphasis on the

distributional effects of education; the potential generational conflict and the possible political pressure of the elderly on shifting resources from the young to the old; the effects of changes in family structures and fertility trends in time and money transfers over the life cycle and particularly from/to old people; and the relationship between fertility, public and private transfers, and ageing.

IP	Universitat de Barcelona (UB), España
Socios	Austria (Austrian Institute for Economic Research (WIFO), Finlandia (Finnish Centre for Pensions (FCP), VATT Institute for Economic Research)
Presupuesto total	538.613 €
Concedido ES	144.000 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2017: "AGEING AND PLACE IN A DIGITISING WORLD"

Países participantes	Alemania, Austria, Bélgica, Canadá, Finlandia, Irlanda, Italia, España (MINECO, ISCIII), Suecia, Países Bajos
Temáticas	1.Technology Applications 2.Place 3.Learning in relation with Technology
Presupuesto total	
Presupuesto ES	221.500€
Proyectos aprobados	8
Proyectos con AEI	2 (1 coordinado)

Nº	Acronimo y título del proyecto	Países participantes
1	ACCESS. Supporting digital literacy and appropriation of ICT by older people	Austria, Finlandia, Alemania, Italia, Japón
2	COORDINATES. TeChnology tO suppORt DecIsioN making about Ageing aT home	Canadá, Suecia, Países Bajos
3	ORIENT. Use of care robots in welfare services: New models for effective orientation	Finlandia, Alemania, Suecia
4	VoiceAdapt. Voice Adaptive Training for older adults with Aphasia	Austria, Canadá, Alemania
5	MCI@work. Dementia or mild cognitive impairment: @work in progress	Canadá, Finlandia, Suecia
6	HARVEST. eHealth and Ageing in Rural Areas: Transforming Everyday Life, Digital Competences, and Technology	Finlandia, Italia, Suecia
7	BCONNECT@HOME. Being Connected at Home – Making use of digital devices in later life	Canadá, España, Suecia, Países Bajos
8	PAAL. Privacy-Aware and Acceptable Lifelogging services for older and frail people	Canadá, Alemania, Italia, España , Suecia

CONVOCATORIA NACIONAL APCIN 2017

PROYECTO 7 BCONNECT@HOME: Being Connected at Home – Making use of digital devices in later life

This project investigates fundamental changes in the contemporary experience of later life, at the intersection of digital infrastructures, place and the experience of “being connected”. We address a research gap by exploring and theorizing the role of digital communication devices (such as smartphones (that will be tracked), tablets, PCs, apps, fitness trackers, pedometers, or “brain games”) in relation to the modern life course. And we combine this theoretical approach with a practical goal of making our insights actionable through co-design by involving older people and other relevant stakeholders in “Academic Work Places” in The Netherlands, Spain, Sweden and Canada.

IP	Utrecht University, Países Bajos
Socios	Canadá (Trent University), España (Universitat Oberta de Catalunya) , Suecia (Royal Institute of Technology, KTH)
Presupuesto total	571.032 €
Concedido ES	95.500 €

PROYECTO 8 PAAL: Privacy-Aware and Acceptable Lifelogging services for older and frail people

The aim of this project is manifold: to increase the awareness of the ethical, legal, social, and privacy issues associated to lifelogging technologies; to propose privacy-aware lifelogging services for older people, evaluating their acceptability issues and barriers to familiarity with technology, to elaborate on possible strategies for overcoming them, promoting the use of technologies of all kinds, and opportunities to learn; and to develop specific applications referred to relevant use cases for older and frail people. The synergies produced by the international cooperation of experts from different disciplines will lead to robust and reliable lifelogging systems, which will provide more valuable and trustworthy services for the end users and will facilitate development and deployment, speeding up route to market for lifelogging solutions addressing older adults.

IP	Universidad de Alicante, España
Socios	Canadá (University of Toronto), Alemania (RWTH Aachen University), Italia (Università Politecnica delle Marche), Suecia (Stockholm University)
Presupuesto total	1.130.679 €
Concedido ES	126.000 €

JPI AMR –Joint Programming Initiative on Antimicrobial Resistance

Esta iniciativa de programación conjunta tiene como misión la coordinación de programas de investigación e innovación relacionados con la resistencia antimicrobiana (AMR), considerada por la Organización Mundial de la Salud como una de las tres mayores amenazas para la salud humana en las próximas décadas.

Para apoyar la investigación en este campo, la Comisión Europea ha financiado el proyecto *EXpansion of the European Joint Programming Initiative on Drug Resistance to Antimicrobials – EXEDRA* (2017-2020), una acción de coordinación y apoyo (CSA) cuyo objetivo es ayudar a la gestión de la JPI-AMR. Cuenta con 14 socios y una contribución de la CE de 2.149.202€.

EXEDRA es la segunda CSA para esta JPI-AMR, continuación de la primera que finalizó en 2016.

ERA-NET COFUND JPI-EC-AMR

La ERA-NET Cofund JPI-EC-AMR, por su lado, tiene como objetivo alinear las prioridades y proyectos financiados en el área de AMR, desentrañando las dinámicas de selección y transmisión de la AMR de acuerdo con el concepto *One Health*. Se han movilizado 23 millones de euros de fondos nacionales, más una cofinanciación de la UE para apoyar programas de investigación transnacionales.

Socios: **Coordinador Suecia** (Vetenskapsrådet Swedish Research Council (SRC), Bélgica (National Fund for Scientific Research (FNRS), Research Foundation Flanders (FWO), Dinamarca (Innovation Fund Denmark (Innofond), Francia (Agence Nationale de la Recherche (ANR), Rumanía (Autoritatea Nationala Pentru Cercetare Stiintifica si Inovare (ANCSI), Institutul National de Cercetare Dezvoltare Pentru Microbiologie si Immunologie (INCDMIC), Alemania (Bundesministerium fuer Bildung und Forschung (BMBF), Deutsches Zentrum fuer Luft-und Raumfahrt EV (DLR), Project Management Juelich / Research Centre Juelich (PTJ/FZJ), Israel (Ministry of Health (MOH), Italia (Ministry of Health (MOH/MDS), Letonia (State Education Development Agency (VIAA), **España (Instituto de Salud Carlos III (ISCIII), AEI-Ministerio de Economía y Competitividad (MINECO)**, Reino Unido (Medical Research Council (MRC), Argentina (Ministerio de Ciencia, Tecnología e Innovación Productiva (MINCyT), Polonia (Ministerstwo Nauki i Szkolnictwa Wyzszego (MINSW), Portugal (Foundation for Science and Technology (FCT), Países Bajos (Zorgonderzoek Nederland (ZonMw), Canadá (Canadian Institutes of Health (CIHR), Noruega (Research Council of Norway (RCN)), Turquía (The Scientific and Technological Research Council of Turkey (TUBITAK)

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número de convocatorias conjuntas internacionales: 5 (2014, 2015, 2016 (2), 2017, 2018)

Participación de MINECO-AEI en convocatorias: 2 (2016, 2018)

CONVOCATORIA CONJUNTA INTERNACIONAL 2016: "THIRD JPIAMR JOINT CALL"

Países participantes	Bélgica, Canadá, Dinamarca, Francia, Alemania, Israel, Italia, Letonia, Países Bajos, Noruega, Polonia, Portugal, Rumanía, España, Suecia, Suiza, Reino Unido, Turquía
Temáticas	Dynamics of transmission and selection of antimicrobial AMR at the genetic, bacterial, animal, human, societal, and environmental levels, in order to design and evaluate preventive and intervening measures for controlling resistance.
Presupuesto total	28.100.000 €
Presupuesto ES	297.260 €
Proyectos aprobados	19
Proyectos con AEI	2

Nº	Acrónimo y título del proyecto	Países participantes
STUDIES ON HUMAN TRANSMISSION		
1	BEAT-AMR. Partnership against Biofilm-associated Expression, Acquisition and Transmission of AMR	Alemania, Suiza, Países Bajos, Reino Unido
2	COLLATERALDAMAGE. Using collateral sensitivity to reverse the selection and transmission of antibiotic resistance	Noruega, Países Bajos, Suecia, Dinamarca
3	EMerGE-NeT. Effectiveness of infection control against intra- and inter-hospital transmission of Multidrug-resistant Enterobacteriaceae – insights from a multi-level mathematical NeTwork model	Alemania, Israel, Países Bajos, Polonia, España
4	MODERN. Understanding and modelling reservoirs, vehicles and transmission of ESBL-producing Enterobacteriaceae in the community and long term care facilities	España , Suiza, Reino Unido, Francia, Alemania, Países Bajos
5	PNEUMO-SPREAD. Mechanisms for acquisition and transmission of successful antibiotic resistant pneumococcal clones pre- and post-vaccination	Suecia, Alemania, Reino Unido
6	Restrict-Pneumo-AMR. Prevention and Restriction of Antimicrobial Resistance in Pneumococci by Multi-level Modelling	Reino Unido, Canadá Alemania, Países Bajos
7	TransPred. Predicting cell-cell horizontal transmission of antibiotics resistance from genome and phenome	Suecia, Francia, Reino Unido, Bélgica
STUDIES OF ONE HEALTH TRANSMISSION		
8	HECTOR. The impact of Host restriction of Escherichia coli on Transmission dynamics and spread of antimicrobial Resistance	Países Bajos, España, Alemania, Reino Unido

JumpAR.		
9	A multi-scale approach to understanding the mechanisms of mobile DNA driven antimicrobial resistance transmission.	Alemania, Suecia, Canadá
MACOTRA.		
10	Combating MRSA; increasing our understanding of transmission success will lead to better control of MRSA	Países Bajos, Francia, Reino Unido
PET-Risk.		
11	Risk of companion animal to human transmission of antimicrobial resistance during different types of animal infection	Portugal, Alemania, Canadá, Reino Unido, Suiza
PREPARE.		
12	Predicting the persistence of resistance across environments	Canadá, Portugal, Dinamarca
SpARK.		
13	Rates and routes of transmission of multidrug resistant Klebsiella clones and genes into the clinic from environmental sources.	Reino Unido, Italia, Francia, Noruega
ST131_ transmission.		
14	Escherichia coli ST131: a model for high-risk transmission dynamics of antimicrobial resistance	Canadá, Francia, España , Suiza, Reino Unido
STARCS.		
15	Selection and Transmission of Antimicrobial Resistance in Complex Systems	Países Bajos, Suecia, España , Francia, Reino Unido, Bélgica
TransComp-ESC-R.		
16	Genomic approach to transmission and compartmentalization of extended-spectrum cephalosporin resistance in Enterobacteriaceae from animals and humans	Canadá, Francia, Alemania, Reino Unido

STUDIES ON ENVIRONMENTAL TRANSMISSION

AWARE-WWTP.		
17	Antibiotic Resistance in Wastewater: Transmission Risks for Employees and Residents around Waste Water Treatment Plants	Países Bajos, Suecia, Alemania, Rumanía
DARWIN.		
18	Dynamics of Antimicrobial Resistance in the Urban Water Cycle in Europe	Dinamarca, Reino Unido, España, Israel
Gene-gas.		
19	Wastewater treatment plants as critical reservoirs for resistance genes	Suecia, Dinamarca, Noruega

CONVOCATORIA NACIONAL APCIN 2016

PROYECTO 8 HECTOR. The impact of Host restriction of Escherichia coli on Transmission dynamics and spread of antimicrobial Resistance

The proposed research aims to identify determinants of host restriction of E. coli and their potential association with antimicrobial resistance transmission and prevalence. We propose a One Health approach using mixed methods, including whole genome sequencing of a large collection of E. coli isolates from human, animal and environmental sources in different geographic areas across Europe and in Vietnam, experimental models to study the role of host restriction determinants in transmission and bacterial fitness, and mathematical modelling. The research should result in a risk-assessment, estimating the contribution of different transmission routes

and predicting the effect of interventions on a single route on the overall prevalence in the different compartments. The consortium is uniquely placed to perform this research as it consists of experts in the field of antimicrobial resistance, who work in human and animal health domains, and represent highly complementary disciplines.

IP	Academic Medical Center, University of Amsterdam, Países Bajos
Socios	España (Universidad Complutense de Madrid (UCM)), Alemania (Robert Koch Institute, Friedrich-Loeffler-Institut), Reino Unido (University of Surrey, Centre for Tropical Medicine and Global Health)
Presupuesto total	1.830.508 €
Concedido ES	147.260 €

PROYECTO 18 DARWIN. Dynamics of Antimicrobial Resistance in the Urban Water Cycle in Europe

In DARWIN, we will undertake a never-previously-performed pan-European examination of the fate of key AMR organisms and genetic determinants in UWSs resulting from discharged hospital and community wastes, including transmission mechanisms in different stages of sewer catchments and receiving waters. We focus on the spread of AMR genes encoding clinically relevant extended spectrum β -lactam (ESBL) and carbapenem resistance in three countries with differing AMR profiles and sewage management practices. We posit that AMR genes readily transmit in UWSs from pathogens and commensal hosts in human wastes (after antibiotic use) to environmental strains better adapted to migrate through the sewer environment, which is driven by local ecologies, conjugal plasmid transfer and phagemediated transduction.

IP	Technical University of Denmark, Dinamarca
Socios	Dinamarca (Copenhagen University), Reino Unido (Newcastle University, University of Birmingham), España (Universidade Santiago de Compostela), Israel (Rambam Health Care Campus – RHCC)
Presupuesto total	1.717.636 €
Concedido ES	150.000 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2018

Países participantes	Israel, Bélgica, República Checa, Egipto, Finlandia, Francia, Alemania, Irlanda, Italia, Letonia, Noruega, Polonia, Rumanía, España, Suecia, Suiza
Temáticas	Innovations against antibiotic-resistant bacteria: New targets, compounds and tools
Presupuesto total	12,8 M €.
Presupuesto ES	465.000 €
Proyectos aprobados	10
Proyectos con MINECO/AEI	3 (1 coordinado)

Nº	Acrónimo y título del proyecto	Países participantes
1	ANTIBIO-LAB. Anti-biofilm therapies using local application of bacteriophages	Suiza , Alemania, Bélgica
2	Anti-Persistence. Fighting antibiotic-resistant superbugs with anti-persister compounds targeting the stringent response	Bélgica , España, Polonia, Francia
3	CRISPRattack. Advancing CRISPR antimicrobials to combat the bacterial pathogen <i>Klebsiella pneumoniae</i>	Alemania , Israel, Francia, Alemania
4	DISRUPT. Fighting antimicrobial resistant infections by high- throughput discovery of biofilm-disrupting agents and mechanisms	Noruega , Suiza, Alemania
5	Explore. Exploration of the TPP riboswitch as a new target for antibiotics	Noruega , República Checa, Alemania, Letonia, Canadá
6	FLAV4AMR. Flavodoxin inhibitors to kill resistant bacteria	España , Francia, Alemania
7	MTI4MDR-TB. Development of novel Mycobacterial Tolerance Inhibitors (MTIs) against MDR/XDR tuberculosis	Suecia , Francia, Noruega, España, Estados Unidos
8	RESET-ME. Restoring <i>E. coli</i> Sensitivity for Antibiotics by blocking TolC-Mediated Efflux	Alemania , Finlandia, Letonia, Italia
9	RIBOTARGET. Development of novel ribosome-targeting antibiotics	Alemania , Francia, Suiza, Suecia, Francia, República Checa, Italia
10	SCAN. Design, synthesis and lead generation of novel siderophore conjugates for the detection and treatment of infections by Gram-negative pathogens	Alemania , Francia, Israel

CONVOCATORIA NACIONAL APCIN 2019

PROYECTO 2 Anti-Persistence. Fighting antibiotic-resistant superbugs with anti-persister compounds targeting the stringent response

Pathogenic antibiotic-resistant “superbugs” are increasing at an alarming pace. Persistence to antibiotics favours the emergence of resistance as mutations increasing antibiotic tolerance favour selection of resistance mutations. Persisters constitute subpopulations of cells that can withstand bactericidal antibiotics and are considered as a primary source of infections since they are difficult or impossible to eradicate with conventional antibiotics. Persister bacteria are encountered in a variety of chronic pathologies, including cystic fibrosis, pneumonia and tuberculosis. Thus the impact of persistence on public health is enormous and there is a pressing need to develop treatments to kill persisters. The existence of a causal link between persisters and persistent infections was demonstrated for *S. typhimurium*, whose survival inside the host relies on ppGpp. Compounds capable of killing persisters could sterilise *S. aureus* cultures and cured methicillin-resistant *S. aureus* (MRSA) infected mice. Thus targeting the enzymes that

regulate ppGpp is an interesting and unexplored route to develop new antibiotics active against persisters. This project aims to target key steps in the mechanism of ppGpp synthesis and hydrolysis in a variety of pathogenic bacteria. In an integrative biochemistry, structural and cellular biology based approach we will uncover novel mechanistic aspects of persistence, deliver novel metabolic biosensors for single-cell analysis and methodologies to study persisters in human pathogens, and discover and validate novel compounds with antipersisters action.

IP	Université Libre de Bruxelles, Bélgica
Socios	España (Universidad Autónoma de Barcelona) , Polonia (University of Gdansk), Francia (Université de Toulouse)
Presupuesto total	766.400 €
Concedido ES	140.000 €

PROYECTO 6 FLAV4AMR. Flavodoxin inhibitors to kill resistant bacteria

This transnational collaboration gathers the expertise and resources required to address lead improvement to the point of producing novel antibiotics ready for clinical trials, and to clarify the overall importance of flavodoxin as a novel drug target. The project has two goals: 1. To culminate the improvement of inhibitors of the flavodoxin from *H. pylori*, which have shown efficacy against reference and clinical strains (including a clarithromycin-resistant one) and in a mice model. 2. To determine the relevance of flavodoxin as a novel drug target to fight bacteria which pose problems associated to antimicrobial resistance.

IP	Universidad de Zaragoza, España
Socios	Francia (Institut Pasteur, Ecole Nationale Vétérinaire de Toulouse), Alemania (Research Center Borstel)
Presupuesto total	1.125.420 €
Concedido ES	185.000 €

PROYECTO 7 MTI4MDR-TB. Development of novel Mycobacterial Tolerance Inhibitors (MTIs) against MDR/XDR tuberculosis

In 2017, WHO published the Global Priority Pathogen lists with the aim to promote research and development of new treatments that are effective against microbes resistant to multiple antibiotics. Among them, multi- and extensively drug resistant *Mycobacterium tuberculosis* caused 48% of new tuberculosis (TB) cases in some countries in 2016. Current regimens for the treatment of TB include a combination of antibiotics developed for their strong efficacy against drug sensitive bacterium. The inadequacies of present TB therapies demand discovery of new agents with unique mechanisms of action to treat *Mtb* infection. Towards this end, we have discovered and developed a new family of ring-fused 2-pyridones (termed Mycobacterial Tolerance Inhibitors, MTIs) that potently sensitise *Mtb* to stresses encountered during infection and restores activity to the frontline antibiotic isoniazid (INH) in otherwise INH-resistant *Mtb* isolates. Our short-term objectives are to demonstrate preclinical proof-of-concept for MTIs to combat *Mtb* infection, optimise the current lead MTIs for translation to a therapeutic, and reveal

new insights into pathways of drug tolerance and resistance. Our long-term objective is to develop a new orally available antibiotic that improves the current regimens for patients with drug-resistant TB. We will also generate a deeper understanding of the MTI's mode of action and their potential in synergistic interactions with other drugs. Importantly, we will also study how likely it will be for Mtb to develop resistance to combinations of MTIs and INH and other antibiotics.

IP	Umeå University, Suecia
Socios	Francia (University of Lille, CNRS, Inserm), Noruega (University of Oslo), España (Centro Nacional de Biotecnología-Agencia Estatal Consejo Superior de Investigaciones Científicas (CNB-CSIC)), Estados Unidos (Washington University School of Medicine)
Presupuesto total	1.398.980 €
Concedido ES	140.000 €

JPI Cultural Heritage, Society and Ethics (JPI CH CHSE)

La convocatoria conjunta Patrimonio Cultural, Sociedad y Ética (JPI CH CHSE) tiene como objetivo promover la comprensión de la relación entre el patrimonio cultural (tangible, intangible, digital y natural) y las principales cuestiones sociales a través de proyectos de investigación transnacionales. Los proyectos financiados por JPI CH CHSE deberían explorar la relación entre estas tres nociones desde una perspectiva de las Ciencias Sociales y las Humanidades, pudiendo así abordar los marcos conceptuales actuales y facilitar el surgimiento de otros nuevos. Deberían crear condiciones para nuevas formas de participación y diálogo entre disciplinas y partes interesadas; estudiar cuál es el impacto de estas nuevas formas en variados contextos culturales. Se anima a los solicitantes a adoptar metodologías y enfoques multidisciplinares y transdisciplinares.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número de convocatorias conjuntas internacionales: 1 (2022)

Participación de AEI en convocatorias: 1 (2022)

CONVOCATORIA CONJUNTA INTERNACIONAL 2022

Países participantes	Bélgica, República Checa, Francia, Lituania, Países Bajos, Noruega, España, Reino Unido.
Temáticas	- Cultural Heritage and economic development - Cultural Heritage and sustainable strategies
Presupuesto total	4.700.000 €
Presupuesto ES	652.190 €
Proyectos aprobados	6
Proyectos con AEI	4

Nº	Acrónimo y título del proyecto	Países participantes
1	ArcHeritage Arctic Heritage: Commodification, Identity, and Revitalisation in the Anthropocene	Noruega , Reino Unido, Países Bajos
2	CUMET Cultural Heritage in the Metropolitan Peripheries	Francia , España Reino Unido
3	DECOPE Destructive Exploitation and care of Cultural Objects and Professional/Public Education for Sustainable Heritage Management	Noruega , España, Reino Unido
4	HerInDep Heritage in Depopulated European Areas	República Checa , Lituania, Reino Unido

5	MalLHoC Museums and Industry: Long Histories of Collaboration	Reino Unido, España, Francia
6	PERCOL Perverse Collections: Building Europe's Queer and Trans Archives	Reino Unido, España, Países Bajos

CONVOCATORIA NACIONAL PCI 2023

PROYECTO 2 CUMET. Cultural Heritage in the metropolitan peripheries

The proposed research aims at analysing two parallel but concurrent phenomena: I) The increasing recognition of the interest for the cultural heritage located in the metropolitan peripheries of European cities by various stakeholders; II) The need for new developments (infrastructure, housing) in the periphery of European metropolises resulting to unprecedented densification pressures and extensive renewal of the existing urban fabric. The conjunction of these trends creates both opportunities and risks for the cultural heritage at the Metropolitan peripheries. Using innovative interdisciplinary methodologies, the project asks the following questions: How can we create value on the heritage of the urban peripheries, encouraging new development scenarios while protecting cultural heritage? What are the necessary mechanisms and tools to involve local societies in the policy making of cultural heritage at the urban peripheries? How can this heritage be used as a means of spatial justice and balance between the different areas of the metropolises? How can heritage in the peripheries play a role of the “cement” of metropolization? The project will have very direct local impacts through co-creation workshops held at key sites of peripheral urban heritage, designed to assist institutional and community stakeholders in imagining and interrogating innovative strategies for (re)developing heritage sites, feeding directly into local initiatives. The empirical and persuasive materials produced through the workshops will be designed with community participation to address the broader community, inviting and promoting “heritage savvy” citizens, willing and able to participate in the processes of both heritagization and metropolisation. In addition, we anticipate that the online observatory platform created through this project can act as an open resource for stakeholders in the many peripheral urban sites that face similar challenges and opportunities.

IP	Université Paris 1 Pantheon-Sorbonne. Francia
Socios	España, Reino Unido
Presupuesto total	560.000 €
Concedido ES	177.870 €

PROYECTO 3 DECOPE. Destructive exploitation and care of cultural object and professional/public education for sustainable heritage management

The war between Russia and Ukraine firmly locates major challenges relating to heritage, society and ethics in areas of armed conflict in the heart of Europe. Against this backdrop, DECOPE aims to investigate how care is mobilised for cultural heritage during armed conflict, identifying the challenges, impacts and effects of local, national and international responses in order to create more effective, competent and targeted support for the work of professionals and communities. When national institutions are severely strained in war zones, alternative, ad-hoc structures emerge. These can help accelerate the impact and effectiveness of care and rapid collaboration

with international institutions providing aid. Yet, the power void created by severe damage to bureaucracy and opaque processes of rapid response makes cultural property vulnerable to expropriation in the name of cultural patrimony and trafficking of cultural property under guise of “rescue”. Exploring these contradictions DECOPE will reveal the consequences of nationally-driven cultural heritage policies for heritage management, community involvement and global responsibility. While tracking Ukrainian heritage “rescue” projects across Europe, the project will pinpoint the challenges of providing aid/assistance and reveal how, and by whom, narratives about cultural heritage are produced and used in different local, regional, national and international contexts. Through online and face-to-face fieldwork, we will work with Ukrainian heritage professionals to understand how they have mobilised to mitigate damage to both the heritage they manage and their professional lives. We will identify barriers, bottlenecks and constraints and produce guidance and resources to create more effective and sustainable collaboration between international and national organisations and those heritage professionals, NGOs and lay communities working ‘on the ground’.

IP	Norwegian Institute of Cultural Heritage Research. Noruega
Socios	España, Reino Unido
Presupuesto total	674.000 €
Concedido ES	183.920 €

PROYECTO 5 MAHILOC. Museums and industry: long histories of collaboration

The starting point of Museums and Industry: Long Histories of Collaboration (MaLHoC) is that museums of science, technology, and medicine (STM heritage) are in a state of upheaval. STM heritage is a child of the industrial revolution; it would not have existed without the patronage of industry. But processes of deindustrialisation, concerns about human impacts on the environment, and the influence of ideas like the degrowth movement, have turned this relationship into a source of controversy. Why does it seem that this long history has only recently been considered unethical? By examining this phenomenon, MaLHoC responds directly to the challenge to ‘explore the relationship between cultural heritage, democratic values, and politics in a historic perspective.’ It examines how and by whom narratives about cultural heritage are produced, used, and communicated in different contexts. To date, while there have been studies of the industrial patronage of the sciences, there is almost nothing on the industrial patronage of STM heritage. MaLHoC addresses this substantial lacuna by examining case studies from France, Spain, and the UK. Drawing on this analysis we will: (i) describe historical attitudes towards industrial patronage; (ii) explore the actual or likely consequences of new approaches; (iii) explore the implicit normativity of existing practices, and (iv) analyse the institutionalisation of ethics in STM heritage. MaLHoC’s consortium of universities, museums and publishers will disseminate a range of interdisciplinary research outputs through a wide variety of scholarly, public and media channels. While ethical dilemmas cannot ever be finally resolved, MaLHoC will both generate new understandings and build our social capabilities for a better informed, and more participative deliberation of the relationships between STM heritage and its industrial patrons. Keywords: sponsorship; industry; ethics; science museums; World Expositions

IP	Science Museum Group. Reino Unido
Socios	España, Francia
Presupuesto total	601.000 €
Concedido ES	121.000 €

PROYECTO 6 PERCOL. Perverse collections: Building europes queer and trans archives

Perverse Collections' (PERCOL) asks: how can a critical and nuanced understanding of the evolution of Europe's LGBTQ+ archives be used by scholars, queer and trans community members, and GLAM (Galleries, Libraries, Archives, Museums) sector workers to forge sustainable strategies for protecting LGBTQ+ history, and in what ways might this have transformative potential for cultural heritage politics and policy more broadly? To this end, the project will map the growth of Europe's queer and trans archives, from the 1970s to the present; it will comparatively explore the workings of these collections, including their relations to forms of state support, the understandings of LGBTQ+ history they promote locally, nationally, and internationally, and the alternative models of archiving some embody. PERCOL will identify the implications of queer and trans collections for other subaltern archives, as well as the wider cultural heritage sector, in terms of the challenges they present to dominant historical and political narratives, the complex polyphonic community politics they can reveal, and their creative handling of ephemeral experiences. Working with an array of European cultural heritage institutions, as well as a broad cross-section of invested stakeholders, the project team will draw from the history of Europe's queer and trans archives to model innovative strategies for preserving and sustaining LGBTQ+ cultural heritage. The project is situated in a live political context: as homophobic and transphobic acts of violence and discrimination rise across Europe, fomented in some countries by the prejudicial rhetoric of right-wing political groups, the project will argue for the social, cultural and political value of archiving LGBTQ+ lives and experiences, and for the wider ethical significance of supporting and maintaining a transnational ecology of subaltern collections. Keywords: LGBTQ+ history and politics; queer and trans archives; communities; memory; citizenship.

IP	University of St Andrews. Reino Unido
Socios	España, Países Bajos
Presupuesto total	709.430 €
Concedido ES	169.400 €

JPI HDHL –Joint Programming Initiative “A Healthy Diet for a Healthy Life”

Las políticas de investigación de salud pública europeas se centran en el envejecimiento saludable, sobre todo en prevenir y posponer la aparición de enfermedades relacionadas con la dieta. Se debe hacer hincapié en la prevención en lugar de curar estas enfermedades, retrasando el proceso de inicio. La mala alimentación, las opciones de estilo de vida y la obesidad son determinantes clave para muchas enfermedades crónicas. Las estrategias de nutrición y actividad física deben tener como objetivo promover la salud y prevenir deficiencias nutricionales, la inactividad y las enfermedades crónicas como enfermedades cardiovasculares, diabetes tipo 2 y cáncer. La JPI HDHL financia proyectos de investigación e innovación que den respuesta a los desafíos planteados por el objetivo de lograr un envejecimiento saludable.

Socios: Coordinador Países Bajos; Austria, Bélgica, Canadá, Dinamarca, Finlandia, Francia, Alemania, Irlanda, Italia, Nueva Zelanda, Noruega, Polonia, Rumanía, Eslovaquia, España, Suiza, Turquía, Reino Unido.

Observadores: Chipre, República Checa, Estonia, Israel, Letonia, Eslovenia, Suecia.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número de convocatorias conjuntas internacionales: 3 (2014, 2015, 2016)

Participación de MINECO-AEI en convocatorias: 2 (2014, 2015)

CONVOCATORIA CONJUNTA INTERNACIONAL 2014

Países participantes	Austria, Bélgica, Canadá, Dinamarca, Francia, Alemania, Irlanda, Italia, Países Bajos, Noruega, Polonia, España, Suiza.
Temáticas	Biomarkers for Nutrition and Health
Presupuesto total	5.100.000 €
Presupuesto ES	150.000 €
Proyectos aprobados	2
Proyectos con AEI	1

Nº	Acronimo y título del proyecto	Países participantes
1	MIRDIET. Circulating microRNAs as markers of dietary intake	Francia , Suiza, Países Bajos
2	FOODBALL. The Food Biomarker Alliance	Bélgica, Canadá, Dinamarca, Francia, Alemania, Irlanda, Italia, Noruega, España, Suiza, Países Bajos , Nueva Zelanda

CONVOCATORIA NACIONAL APCIN 2014

PROYECTO 2 FOOTBALL. The Food Biomarker Alliance

Foodball proposed to carry out a systematic exploration and validation of biomarkers to obtain a good coverage of the food intake in different population groups within Europe by: applying metabolomics to discover biomarkers; exploring the use of easier sampling techniques and body fluids; revising the current dietary biomarker classification and developing a validation scoring system; applying these on selected new biomarkers; and exploring biological effects using biomarkers of intake.

IP	Wageningen University, Países Bajos
Socios	Bélgica, Canadá, Dinamarca, Francia, Alemania, Irlanda, Italia, Noruega, España (Universidad de Barcelona) , Suiza, Países Bajos, Nueva Zelanda
Presupuesto total	4.400.000 €
Concedido ES	150.000 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2015

Países participantes	Canadá, Francia, Países Bajos, Alemania, Gran Bretaña, Irlanda, Italia, Dinamarca, España
Temáticas	Dieta y producción de alimentos - <i>Microbiomics</i>
Presupuesto total	6.400.000€
Presupuesto ES	311.000 €
Proyectos aprobados	6
Proyectos con AEI	2 (1 coordinado)

Nº	Acrónimo y título del proyecto	Países participantes
1	ArylMUNE. Aryl hydrocarbon receptor and immunity: Activation by diet, microbiota and probiotics	Canadá, Francia , Países Bajos
2	DINAMIC. Diet -induced Arrangement of the gut Microbiome for improvement of Cardiometabolic health	Francia, Alemania , Reino Unido, Irlanda, Italia, Países Bajos
3	EarlyMicroHealth. Impact of early life diet on microbiome development & later health	Irlanda, España , Italia, Países Bajos
4	EarlyVir. Influence of diet on early life gut virome - a key player in shaping the gut microbial	Dinamarca , Canadá, Francia
5	GI –MDH. From infancy to childhood: the intersect ion of gastrointestinal microbial, communities, diet and health	Canadá, Alemania, Países Bajos
6	MaPLE. Gut and blood microbiomics for studying the effect of a polyphenol-rich dietary pat tern on intestinal permeability in the elderly	Italia , España , Reino Unido

CONVOCATORIA NACIONAL APCIN 2015

PROYECTO 3 EarlyMicroHealth. Impact of early life diet on microbiome development & later health

Microbial colonization of the immature gut of a new-born is essential for the development of its physiological homeostasis. The aim of the EarlyMicroHealth project is to develop early-life interventions to promote the establishment of a healthy microbiota. The consortium will evaluate factors that negatively impact early-life microbiota development. A dietary intervention study will determine the efficacy of early nutritional interventions in minimizing the impact of these factors.

IP	Instituto de Productos Lácteos de Asturias-Agencia Estatal Consejo Superior de Investigaciones Científicas (IPLA-CSIC), España
Socios	España (Universidad Complutense de Madrid (UCM)), Irlanda (University College Cork), Italia (Università degli Studi di Parma), Países Bajos (Wageningen University)
Presupuesto total	1.368.273 €
Concedido ES	108.000 € + 85.000 € = 193.000 €

PROYECTO 6 MaPLE. Gut and blood microbiomics for studying the effect of a polyphenol-rich dietary pattern on intestinal permeability in the elderly

The aim of the MaPLE project is to test the hypothesis that altering the diet of elderly subjects with established intestinal permeability (IP) by increasing consumption of polyphenols will cause beneficial changes in their gut microbiota, IP reduction in and decreased translocation of inflammogenic bacterial factors into the blood, lowering systemic inflammation. Polyphenol-rich diet versus control diet will be assessed in a randomised, controlled cross-over design. Peripheral blood, urine, and faecal samples will be collected before and after each intervention period to evaluate blood bacterial and LPSloads, blood and faecal microbiota composition, short chain fatty acids and polyphenol-derived metabolites, urine metabolites, and markers of inflammation, oxidative stress and endothelial function.

IP	Università degli Studi di Milano, Italia
Socios	España (Universidad de Barcelona), Reino Unido (Institute of Food Research-Norwich)
Presupuesto total	598.188 €
Concedido ES	118.000 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2015

Países participantes	Austria, Bélgica, Francia, Alemania, Irlanda, Italia, Países Bajos, Polonia, España, Reino Unido
Temáticas	Interacción entre la nutrición y la función cognitiva - NutriCog
Presupuesto total	5.000.000€
Presupuesto ES	2.033.023 €
Proyectos aprobados	5
Proyectos con AEI	3

Nº	Acrónimo y título del proyecto	Países participantes
1	AMBROSIAC. A Menu for Brain Responses Opposing Stress-Induced Alterations in Cognition	Irlanda , Francia, Alemania, Italia, Países Bajos, Reino Unido
2	iCASE. individualized Cognitive, Affective and Social Enhancement in nutritional interventions for longevity and well-being	Alemania , España, Países Bajos
3	D-CogPlast. Identification of dietary modulators of cognitive ageing and brain plasticity and proof of concept of efficacy for preventing/reversing cognitive decline	Reino Unido , Austria, Francia, Países Bajos, España
4	MiTyrAge. Targeting the mitochondria-tyr kinase axis to prevent age-associated neuronal decline (*)	Alemania , Italia, España
5	SELENIUS. Selenium in early life to enhance neurodevelopment in unfavourable settings	Italia , Francia, Alemania, Reino Unido, Polonia

(*) Financiado en APCIN 2016

CONVOCATORIA NACIONAL APCIN 2015

PROYECTO 2 iCASE. individualized Cognitive, Affective and Social Enhancement in nutritional interventions for longevity and well-being

Partners will investigate the role of food supplements affecting serotonin levels and examine effects on cognitive ageing processes, with social and affective cognition in particular. Using a multidisciplinary and translational approach, the work will include clinical approaches, brain imaging techniques, genetic, epigenetic and neurochemical analyses to elucidate mechanisms underlying the interactions between brain, nutritional intervention and social behavior, to explain individual differences in response to dietary interventions, and to investigate epigenetic alterations.

IP	Central Institute of Mental Health, Alemania
Socios	Alemania (University of Bonn), España (Universidad de Extremadura) , Países Bajos (University of Leiden)
Presupuesto total	957.076 €
Concedido ES	109.000 €

PROYECTO 3 D-CogPlast. Identification of dietary modulators of cognitive ageing and brain plasticity and proof of concept of efficacy for preventing/reversing cognitive decline

The consortium will examine the role of dietary bioactives affecting brain plasticity for cognitive ageing processes. Furthermore, different age groups will be studied to investigate a sensitive population responsive to dietary interventions. In addition, exposure to stress and genetic predispositions will be considered. D-CogPlast is a translational project across nutrition, epidemiology, and neurosciences, ranging from studies in rodent models to human data.

Innovative methods will be employed, such as food metabolomics, in-vitro approaches to study brain plasticity in humans and cognitive ageing models in rodents.

IP	King's College London, Reino Unido
Socios	Reino Unido (King 's College London), Austria (Paracelsus Medical University), Francia (Université de Bordeaux, INRA), Países Bajos (University of Amsterdam), España (Universidad de Barcelona)
Presupuesto total	1.105.423 €
Concedido ES	122.000 €

CONVOCATORIA NACIONAL APCIN 2016

PROYECTO 4 **MiTyrAge. Targeting the mitochondria-tyr kinase axis to prevent age-associated neuronal decline**

The consortium will investigate the role of dietary components for mitochondrial function and cognitive decline with age. A complementary set up of basic research approaches using a variety of model systems, such as in-vitro mechanistic studies in cells and in-vivo studies in worm and rodent models, combined with epidemiological research in humans to deliver biological outputs that may suggest novel molecular mechanisms and preventive strategies for future clinical research.

IP	Natascia Ventura, Heinrich Heine University, Alemania
Socios	Alemania (IUF–Leibniz Research Institute for Environmental Medicine), Italia (University of Rome “Tor Vergata”), España (Centro de Biología Molecular Severo Ochoa- Agencia Estatal Consejo Superior de Investigaciones Científicas (CBMSO-CSIC)
Presupuesto	818.600 €
Concedido ES	140.000 €

ERA-NET COFUND ERA-HDHL – Biomarkers for Nutrition and Health implementing JPI HDHL objectives

ERA-HDHL es una ERA-NET Cofund en el campo de la nutrición y la salud para apoyar la JPI Healthy Diet for a Healthy Life (JPI HDHL). Su objetivo es proporcionar una plataforma sólida para implementar proyectos conjuntos de investigación e innovación que aborden los desafíos que se identifican y describen en la Agenda de Investigación Estratégica y los Planes de Implementación de la JPI HDHL. Los objetivos de ERA-HDHL incluyen mejorar la coordinación y reducir la duplicación entre los fondos nacionales y de la UE en campos relevantes de investigación, lograr una masa crítica y asegurar un mejor uso de recursos limitados en campos de interés mutuo.

La primera actividad de financiación conjunta de ERA-HDHL fue una convocatoria en el campo de los biomarcadores de nutrición y salud cofinanciada con la Comisión Europea. Su objetivo fue financiar consorcios de investigación transnacionales multidisciplinares que utilizarán enfoques innovadores y científicos para aumentar el conocimiento sobre el desarrollo y la validación de biomarcadores para la nutrición y la salud y crear una red transnacional de investigadores que colaboran en estos campos. Esta primera convocatoria transnacional se publicó en febrero de 2016.

Las actividades adicionales de ERA-HDHL se basan en los Planes de Implementación de la JPI HDHL. ERA-HDHL tiene una duración de cinco años, desde 2016 hasta 2021.

Socios: **Francia (National Research Agency (ANR))**, Austria (Federal Ministry of Science, Research and Economy (BMWFW)), Bélgica (Public Service of Wallonia (SPW)), Canadá (Canadian Institutes of Health Research (CIHR)), Dinamarca (Innovation Fund Denmark (Innofond)), Alemania (Federal Agency for Agriculture and Food (BLE), Federal Ministry of Food and Agriculture (BMEL), German Aerospace Center (DLR)), Irlanda (Department of Agriculture, Food and the Marine (DAFF), Science Foundation Ireland (SFI)), Italia (Ministry of Agricultural food and Forestry Policies (MIPAAF), Ministry of Education, University and Research (MIUR)), Países Bajos (The Netherlands Organisation for Health Research and Development (ZonMw)), Polonia (National Centre for Research and Development (NCBiR)), Rumanía (National Authority for Scientific Research and Innovation (ANCSI)), **España (Instituto de Salud Carlos III (ISCIII), Agencia Estatal de Investigación (AEI))**, Turquía (The Scientific and Technological Research Council of Turkey (TUBITAK)), Reino Unido (Biotechnology and Biological Sciences Research Council (BBSRC))

Número de convocatorias conjuntas internacionales: 2 (2016 y 2018)

Participación de MINECO-AEI en convocatorias conjuntas: 2 (2016 y 2018)

CONVOCATORIA CONJUNTA INTERNACIONAL 2016

Países participantes	Austria, Bélgica, Canadá, Dinamarca, Francia, Alemania, Irlanda, Italia, Países Bajos, Polonia, Rumanía, España, Turquía, Reino Unido
Temáticas	Biomarkers for Nutrition and Health implementing JPI HDHL objectives
Presupuesto total	11.200.000 €
Presupuesto ES	447.656 €
Proyectos aprobados	12
Proyectos con AEI	3

Nº	Acronimo y título del proyecto	Países participantes
1	ALPHABET. Early life programming of childhood health: a nutritional and epigenetic investigation of adiposity and bone, cardiometabolic, neurodevelopmental and respiratory health	Irlanda, Reino Unido, Francia, Polonia, Países Bajos, Estados Unidos
2	BioFn. Biomarkers for Infant Fat Mass Development and Nutrition	Reino Unido, Países Bajos, Dinamarca
3	BioNUGUT. Gut Metabotypes as Biomarkers for Nutrition and Health	Alemania, Canadá, Austria
4	CABALA_Diet&Health. Circulating Bile Acids as biomarkers of metabolic health - Linking microbiota, Diet and Health	Italia, Irlanda, Reino Unido, Israel
5	DERIVE. Development of Riboflavin biomarkers to relate dietary sources with status, gene-nutrient Interactions and Validated health Effects in adult cohorts	Canadá, Irlanda, Reino Unido, Suiza
6	FAME. Fatty Acid Metabolism – Interlinking Diet with Cardiometabolic Health	Alemania, España, Reino Unido
7	FiberTAG. TAGging dietary Fiber intake and their interest for health by measuring biomarkers related to the gut microbiota	Bélgica, Francia, Alemania, Canadá
8	HEALTHMARK. Metabolic HEALTH through nutrition, microbiota and tryptophan bioMARKers	Alemania, Irlanda, Italia, Francia
9	OXYGENATE. Oxylipins signature to monitor the cardiometabolic status and its response to dietary intervention	Francia, Dinamarca, Polonia, Alemania, Estados Unidos,
10	SALAMANDER. SALivAry bioMARKers of mediterranean Diet associated with long-term protection against type 2 diabetes mellitus	Francia, Reino Unido, España
11	SALIVAGES. Innovative Technological Approaches for validation of Salivary AGEs as novel biomarkers in evaluation of risk factors in diet-related diseases	Italia, España, Irlanda, Rumanía, Alemania
12	VALID. Valerolactones and healthy Ageing: Linking Dietary factors, nutrient biomarkers, metabolic status and inflammation with cognition in older adults.	Reino Unido, Irlanda, Italia

CONVOCATORIA NACIONAL APCIN 2016

PROYECTO 6 FAME. Fatty Acid Metabolism – Interlinking Diet with Cardiometabolic Health

FAME aims to a) identify novel lipidomics biomarkers as biomarkers of fatty acid status and of future cardiometabolic clinical events, b) establish relationships between whole diets and specific foods with tissue status of fatty acids as explanatory factors for diet relationships with cardiometabolic health, and c) to investigate genetic determinants of fatty acid status and metabolism which modify the physiological effects of dietary intake. Lipid metabolites as novel biomarkers will be identified in prospective studies on type 2 diabetes. Potential for dietary modification will be tested in controlled trials. Specific FAs and novel lipid metabolites will be tested as biomarkers of dairy fat

intake and as markers of cardiometabolic health. Polyphenols and candidate genes as determinants of response to FA intake will be evaluated in the trials and cohorts.

IP	German Institute of Human Nutrition, Alemania
Socios	España (Universidad de Córdoba, Universidad de Navarra), Reino Unido (University of Reading, University of East Anglia)
Presupuesto total	986.477 €
Concedido ES	99.656 € + 100.000 € = 199.656 €

PROYECTO 10 SALAMANDER. SALivAry bioMarkers of mediterranean Diet associated with long-tERm protection against type 2 diabetes mellitus

Saliva offers the advantages of simple and non-invasive sampling and is a rich source of biomarkers thanks to the high diversity of its microbiome, proteome and metabolome. Saliva composition is also dependent on diet. The SALAMANDER project aims at identifying and validating salivary signatures indicative of healthy dietary choices (adherence to a Mediterranean diet) with a positive long-term health outcome (protection against T2DM). Using the UKBiobank resource, subjects will be categorized based on their health status (T2DM) and diet. The saliva microbiome, proteome and metabolome of selected subjects will be analyzed, and analytical data integrated to define a multimarker signature of a healthy Mediterranean diet associated with protection against T2DM. The validation phase will also include elderly subjects of the ENRICA and 3City-Bordeaux cohorts, to verify whether such signatures are conserved with ageing.

IP	Institut National de la Recherche Agronomique, Francia
Socios	Francia (Université de Bordeaux), Reino Unido (King's College London), España (Universidad Autónoma de Madrid (UAM))
Presupuesto total	1.175.750 €
Concedido ES	100.000 €

PROYECTO 11 SALIVAGES. Innovative Technological Approaches for validation of Salivary AGEs as novel biomarkers in evaluation of risk factors in diet-related diseases

Recent findings convincingly demonstrate that Advanced Glycation End Products (AGEs) are modifiable by diet and reflect changes in healthy state. SALIVAGES will investigate whether that diet-induced AGEs can act as reliable biomarkers of changes in health status and/or risk, focusing on the most highly accessible source of AGEs, the saliva. SALIVAGES will provide innovative and original tools for assessing status and efficacy of interventions, namely biosensors, metabolomics and biomimic approaches. It will also deepen our understanding of the early events leading to the changes in health status, by multidisciplinary approaches based on the integration of preclinical biological and molecular studies, analytical and food chemistry, information technologies, and glycomic analyses.

IP	University of Turin, Italia
Socios	España (Universidad de Oviedo) , Irlanda (National University of Ireland Galway), Rumanía (University of Cluj-Napoca), Alemania (Technische Universität Dresden)
Presupuesto total	1.168.270 €
Concedido ES	148.000 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2018

Países participantes	Canadá, República Checa, Francia, Alemania, Irlanda, Israel, Letonia, Países Bajos, Polonia, España (MINECO e ISCIII), Reino Unido
Temáticas	Nutrition & the Epigenome: 1. Establishing cause-and-effect relationships between diet, the epigenome and metabolic health Identifying risk factors and early stage epigenetic change 2. Epigenetic effects across the lifespan and inter (and potentially trans) generational epigenetic effects 3. Investigation of modifiable factors that could be involved in epigenetic regulation 4. The effect of diet and nutritional status on the intra-uterine environment
Presupuesto total	Más de 8.000.000 €
Presupuesto ES	501.000 €
Proyectos aprobados	6
Proyectos financiados por AEI	4

Nº	Acrónimo y título del proyecto	Países participantes
1	DIMENSION. Dietary induced methylome and transcriptome dynamics assessing nutrition impacts on cardiovascular and metabolic health	Reino Unido, Alemania, Países Bajos, España, Francia
2	PREciSE. A precision nutri-epigenetic approach to tackle the mother-to-child transmission of impaired glucose metabolism	Reino Unido, Alemania, España, Francia, Países Bajos, Australia
3	NutriPROGRAM	Países Bajos, Reino Unido, Canadá, Alemania, España
4	EpiBrain. Epigenetic effects of B-vitamins on brain health throughout life: scientific substantiation and translation of evidence for health-improvement strategies	Canadá, España, Reino Unido
5	HEROS	Francia, Alemania, España
6	DIFAMEM. Dietary Intervention in Food Allergy: Microbiome, Epigenomic and Metabolomic interactions	España, Francia, Alemania

CONVOCATORIA NACIONAL APCIN 2018

PROYECTO 1 DIMENSION. Dietary induced methylome and transcriptome dynamics assessing nutrition impacts on cardiovascular and metabolic health

Cardiovascular and metabolic diseases are a primary cause of morbidity and mortality worldwide. Diet is a major risk factor for cardio-metabolic health, but is challenging to study in part because metabolic response to diet is highly individualised. Characterising the molecular pathways that mediate personalised responses to diet is critical to effectively tackle the current epidemic. Epigenetic mechanisms are key regulators of gene function that can change in response to external stimuli, including diet. However, longitudinal studies of epigenetic dynamics in response to diet are rare. Our hypothesis is that the identification of dietary induced epigenetic marks together with epigenetic signatures of cardio-metabolic traits explain inter-individual variability in metabolic response to diet and its downstream effects on health. The DIMENSION consortium will test this hypothesis by investigating dynamically the causal impacts of dietary intake on epigenetic regulation of gene function across tissues, and their impact on subsequent cardio-metabolic health outcomes. The proposal will explore the gene regulatory and functional pathways that occur immediately following food intake in the postprandial state, as well as with habitual dietary intakes. We will be testing postprandial metabolic responses that have been largely overlooked, despite revealing multiple aspects of diet induced metabolic health that would not be detectable from studying fasting status alone. Further, humans spend the majority of their lives in the postprandial glycemic and lipaemic state, which are themselves independent risk factors of cardiovascular disease.

IP	King's College London, Reino Unido
Socios	Alemania (Helmholtz Zentrum München, Ludwig-Maximilians-Universität (LMU)), Países Bajos (Leiden University Medical Center), España (Fundación IMDEA Alimentación) , Francia (INSERM U974 Center of Research in Myology)
Presupuesto total	1.689.646 €
Concedido ES	144.000 €

PROYECTO 2 PRECISE. A precision nutri-epigenetic approach to tackle the mother-to-child transmission of impaired glucose metabolism

There is a long-standing tracking of the risk of impaired glycaemic health being transmitted from one generation to another that is hypothesised to causally link exposure to adverse glycaemic health in pregnancy and the offspring glycaemic health via epigenetic mechanisms. The potential biological and nutritional pathways underlying the paradigm can be of paramount importance to understand, prevent or reverse the consequences of gestational diabetes for life-long obesity, glycaemic adversity and type 2 diabetes; the key outcomes here.

PREcisE project joins a consortium with complementary domains of expertise and data to uncover DNA methylation markers sensitive to variation by maternal glycaemic health in pregnancy, considering pre- and postnatal dietary exposures as possible modulators, and characterise their importance in explaining the mother-to-offspring transmission of impaired glycaemic health. We integrate human data spanning from pre-conception to age 50 years with dense DNA methylation data in the mother, the newborn and the adult with repeated measure to challenge the question of replicability, specificity and persistency. Precisely, PREcisE consortium will organise its working plan into three workpackages to i) perform epigenome wide association study on glucose level exposure

in utero followed by downstream analysis in a biobank of liver, skeletal muscles and adipose tissues, ii) infer the primary role of pre- and postnatal dietary exposures in modulating the association of methylation with adiposity and glycaemic health outcomes and iii) integrate its findings further into a life-course model for adiposity and glycaemic health outcomes trained in large birth cohort data.

PRECisE will aim to answer the expected impact of the call focusing on causality, nutrition and tissue specificity. Causality will be tested by three complementary design: randomised control trial, mendelian randomisation and causal modelling including triangulation to validate results. Tissue-specific molecular pathways will be addressed by a unique transcriptomic-DNA methylation approach. PREcisE project will aim to bring sufficient evidence to three key exploitable results: DNA methylation risk scores at maternal glucose response loci for precision epigenetics, dietary recommendations to help optimising the DNA methylation at these loci and a life-course model to inform policy on the long-lasting effects and opportunity to promote life-long glycaemic health.

IP	Imperial College London, Reino Unido
Socios	Alemania (Helmholtz Zentrum München), España (Universidad de Granada) , Francia (Universite de Lille), Países Bajos (Erasmus Medical Center), Australia (University of Melbourne)
Presupuesto total	1.400.231 €
Concedido ES	144.000 €

PROYECTO 3 EPIBRAIN. Epigenetic effects of B-vitamins on brain health throughout life: scientific substantiation and translation of evidence for health-improvement strategies

Low or imbalanced dietary and biomarker status of folate and interrelated B-vitamins (methyl donor nutrients) perturb 1-carbon metabolism, and adversely affect brain development in early life and brain function in later life. Human studies show that improved maternal folate status during pregnancy is associated with improved cognition in the offspring, whilst optimal folate and related B-vitamin status may prevent cognitive decline in later life. The biological mechanisms explaining these relationships are not clear but may involve DNA methylation of epigenetically-controlled genes related to brain development and function. A better understanding of the mechanisms linking relevant B-vitamins and the epigenome with brain health at critical stages of the lifecycle is necessary to support evidence-based health improvement strategies. The EpiBrain project aims to investigate the nutrition-epigenome-brain relationship across the lifespan, focusing on methyl donor nutrients and their related epigenetic effects in relation to brain outcomes. We will conduct new epigenetics analysis on biobanked samples and data from existing well characterized prospective cohort studies (n=181 maternal-offspring pairs) and randomized controlled trials in pregnancy and aging adults, in Canada and in Europe. Differentially methylated regions will be determined in genomic DNA extracted from prenatal, offspring and older adult blood samples by genome-wide methylation analysis (850K EPIC array). Further, intergenerational epigenetic associations will be explored in subsets of samples from fathers and placentas. Dietary, nutrient biomarker and epigenetic data will be linked with cognition in children and older adults from validated tests. Brain function assessment will include neuroimaging data using state-of-art magnetoencephalography (MEG) conducted in early and late life B-vitamin trial participants, directly measuring neural activity and novelly applied here to study effects of nutrients on brain functioning. The EpiBrain project will lead to improved understanding of the role of B vitamins, their epigenetic effects and brain function in childhood and older age, with expected results anticipated to provide scientific substantiation to support nutritional strategies for sustaining better brain health through the lifespan. The consortium

has strong expertise in B vitamin nutrition and epigenetics and a track record of working together across our institutions in Canada, UK and Spain.

IP	The University of British Columbia, Canadá
Socios	Reino Unido (Ulster University), España (Universitat Rovira i Virgili) , Canadá (University of Calgary)
Presupuesto total	682.898 €
Concedido ES	95.000 €

PROYECTO 4 DIFAMEM. Dietary Intervention in Food Allergy: Microbiome, Epigenomic and Metabolomic interactions

Cumulative evidence suggests that food allergy (FA) is associated with a multitude of environmental factors including hygiene habits, antibiotic use, lifestyle changes and in particular, diet. Changes in nutrition can result in dysbiosis of the skin, gut and lung microbiota and generate changes in microbial metabolites produced, which may in turn produce epigenetic modifications. Current evidence supports the view that epigenetic mechanisms are involved in immune regulation and may represent a key-missing piece of the etiological puzzle for FA, at the interface between the environment and the genome. Dietary fibre can change the gut microbiota composition and therefore cause epigenome changes promoting health. Pectin is one type of dietary fibre that can exert immune regulation and mouse studies have shown its potential in preventing and even curing respiratory allergies.

DIFAMEN aims to investigate the effects of FA treatment through intervention with a prebiotic dietary component, pectin, and using peach allergy as a model. This intervention should be safer than allergen immunotherapy. To verify this, DIFAMEN will (i) identify how different structural types of pectin affect regulatory immune responses, using mouse models, (ii) assess pectin effects on FA patients, and (iii) develop predictive probabilistic multivariate models for the treatment of FA via integrative analysis of epigenomic, microbiomic, metabolomics and immunologic profiles related to immune modulation. These profiles will be compared to those of patients treated with peach sublingual immunotherapy using samples stored at the IBIMA-Biobank. This project will advance our understanding on how the interaction between dietary components and gut microbiota composition leads to epigenetic changes that provoke the immune modulation, and establish new strategies for dietary intervention in FA, with potential applications for other immune-related diseases.

IP	Hospital Regional de Málaga-Instituto de Investigación Biomédica de Málaga (IBIMA), España
Socios	Francia (INSERM U 954, University Regional Hospital Center of Nancy), España (Fundación Universitaria San Pablo CEU) , Alemania (Paul-Ehrlich-Institut, Federal Institute for Vaccines and Biomedicines)
Presupuesto total	857.404 €
Concedido ES	118.000 €

JPI HDHL-INTIMIC COFUND - Interrelation of the Intestinal Microbiome, Diet and Health

Existe una creciente evidencia científica de que la microbiota intestinal y su composición influyen en gran medida en los procesos metabólicos y, por lo tanto, afectan la aparición y el desarrollo de enfermedades relacionadas con el estilo de vida. Sin embargo, los mecanismos subyacentes de estas interrelaciones son aún en gran parte desconocidos. Sobre la base de los logros anteriores de la acción conjunta JPI HDHL Intestinal Microbiomics “HDHL-INTIMIC” se mejorará la colaboración entre los países miembros de HDHL, la JPI y la Comisión Europea (CE), así como el establecimiento de redes de investigación que traspasen fronteras y disciplinas.

En HDHL-INTIMIC (INtesTInal MICrobiomics) participan 14 organizaciones financiadoras de 9 países socios de la JPI HDHL, con el fin de financiar proyectos de investigación y apoyar el establecimiento de una Plataforma de Conocimiento transnacional y transdisciplinar. Tanto los proyectos de investigación como la Plataforma de Conocimiento se centrarán en las interrelaciones entre el microbioma intestinal y la dieta y los efectos en la salud.

Socios: **Coordinador Alemania (German Aerospace Center (DLR)**, Austria (Austrian Research Promotion Agency (FFG), Federal Ministry of Science, Research and Economy (BMFWF), Bélgica (Institute for Agricultural and Fisheries Research (EV-ILVO), National Fund for Scientific Research (FNRS), Francia (National Research Agency (ANR), Alemania (Federal Agency for Agriculture and Food (BLE), Federal Ministry of Food and Agriculture (BMEL), Israel, Ministry of Science, Technology and Space), Italia (Ministry of Agricultural food and Forestry Policies (MIPAAF), Ministry of Education, University and Research (MIUR), Países Bajos (The Netherlands Organisation for Health Research and Development (ZonMw), **España (Instituto de Salud Carlos III (ISCIII), Agencia Estatal de Investigación (AEI-MINECO)**, Suecia (Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (FORMAS).

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número de convocatorias conjuntas internacionales: 4 (2017, 2018, 2019 y 2020)

Participación de AEI-MINECO en convocatorias conjuntas: 2 (2017 y 2020)

CONVOCATORIA CONJUNTA INTERNACIONAL 2017

Países participantes	Austria, Bélgica, Francia, Alemania, Israel, Italia, Países Bajos, España, Suecia
Temáticas	Interrelation of the Intestinal Microbiome, Diet and Health
Presupuesto total	9.050.000 €
Presupuesto ES	442.780€
Proyectos aprobados	11
Proyectos con AEI	3

Nº	Acronimo y título del proyecto	Países participantes
1	DiGuMet. Diet x gut microbiome-based metatypes to determine cardiometabolic risk and tailor intervention strategies for improved health	Suecia, España, Italia
2	DIME. The role of diet-dependent human microbiome encoded T3SS-dependent effectors in modulating health	Alemania, Austria, Francia
3	Di-Mi-Liv. Dietary modulation of intestinal microbiota as trigger of liver health: role of bile acids	Austria, Alemania, Suecia
4	earlyFOOD. Long-term impact of gestational and early-life dietary habits on infant gut immunity and disease risk	Francia, España, Italia, Países Bajos
5	FAUSTRIAMAL. Identification of the molecular interplay between dietary fatty acids and gut microbiota in NAFLD	Francia, Italia, Suecia
6	GUTMOM. Maternal obesity and cognitive dysfunction in the offspring: cause-effect role of the GUT MicrobiOMe and early dietary prevention	Italia, Países Bajos, Alemania, España
7	MeaTic. Faecal Microbiome as determinant of the effect of diet on colorectal cancer risk: comparison of meat based versus pesco-vegetarian diets	Italia, Francia, Países Bajos
8	MEDIMACS. Impact of Mediterranean Diet, Inflammation and Microbiome on plaque vulnerability and microvascular dysfunction after an Acute Coronary Syndrome. A randomized, controlled, mechanistic clinical trial	España, Francia, Israel, Suecia
9	MICRODIET. Understand and prevent production of microbially-produced pro-diabetic metabolites in different ethnic group: impact of dietary change	Suecia, Francia, Países Bajos
10	OCTOPUS. A sound microbiota in a sound body through apolipoprotein A-I and HDL: from mouse models to humans	Italia, Alemania, Francia
11	TransMic. The transition from a traditional to a Western lifestyle and its effect on the interrelation between diet, gut microbiome and health	Países Bajos, Alemania, Italia

CONVOCATORIA NACIONAL APCIN 2017

PROYECTO 1 DiGuMet. Diet x gut microbiome-based metatypes to determine cardiometabolic risk and tailor intervention strategies for improved health

The aim of the DiGuMet project is to investigate how gut microbiota interact with diet and to identify the role of these interactions on cardiometabolic risk factors. In this project the underlying mechanisms will be further dissected through extensive metabotyping using metagenomics and metabolomics combined with lifestyle data in a free-living prospective cohort subset. The hypothesis is that gut microbiota - diet interactions are a major determinant of the metatypes

and that distinct metabolotypes could be reflected by predictive biomarkers. These biomarkers could then be used to tailor personalised dietary interventions to improve the molecular phenotypes among subjects at elevated risk of cardio vascular diseases. The hypothesis will be tested by conducting a dietary intervention rich in fermentable vs non-fermentable cereal fibres among subjects with signs of metabolic syndrome with distinct differences in their pattern of microbiota and microbiota-derived metabolites.

IP	Chalmers University of Technology, Suecia
Socios	España (Universidad de Barcelona), Italia (Federico II University)
Presupuesto total	713.432 €
Concedido ES	150.000 €

PROYECTO 4 earlyFOOD. Long-term impact of gestational and early-life dietary habits on infant gut immunity and disease risk

The project proposes to assess the importance of dietary habits on maternal immunity (sIgA in gut microbiota and breast milk) and on neonatal colonization and installation of immunological tolerance by a novel high-throughput immune-metagenomic approach. EarlyFOOD will integrate immuno-metagenomics, metabolomics and toxicological as well as epidemiological data, such as exposure to dietary-derived metabolites and pollutants as well as infectious events, antibiotics, allergens and air pollutants in a birth cohort of individuals living across Europe in environments of different biodiversity. The impact of gestational and early-life dietary habits on dysbiotic states of microbiota will be identified by biostatistical modelization of the risk of developing metabolic and allergic disease as well as neurobehavioral disorders. The program will identify predictive biomarkers and early-life preventive strategies for the growing epidemic of human metabolic and allergic diseases. Such advances may have important impact on public health and generate socio-economic benefits.

IP	Centre d'immunologie et des maladies infectieuses, Francia
Socios	Francia (UPMC), España (Universidad Rovira i Virgili), Italia (CNR Institute of Clinical Physiology), Países Bajos (TNO)
Presupuesto total	1.130.655 €
Concedido ES	149.780 €

PROYECTO 6 GUTMOM. Maternal obesity and cognitive dysfunction in the offspring: cause-effect role of the GUT MicrobiOMe and early dietary prevention

GUTMOM hypothesizes that the negative effects of maternal obesity on cognitive function in the offspring are partly mediated by the microbiota and its metabolites, offering the opportunity for non-invasive risk-screening and -reduction by tailored foods and diets, since earliest life stages. GUTMOM will use two existing children cohorts to identify the gut bacteria and metabolites that are related to maternal obesity and offspring's cognitive development in early, pre-scholar and scholar age. Animal models will be used to investigate cause-effect mechanisms and develop tailored dietary interventions to counteract the effects of maternal obesity on the gut microbiota, improving offspring's cognition.

IP	Consiglio Nazionale delle Ricerche, Italia
Socios	Italia (Istituto Superiore di Sanità), Países Bajos (Radboud University Medical Center), Alemania (Max Planck Gesellschaft), España (Universidad de Valencia)
Presupuesto total	778.240 €
Concedido ES	143.000 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2020

Países participantes	Austria, Bélgica, Francia, Alemania, Italia, Países Bajos, España, Lituania, República Checa e Irlanda.
Temáticas	Prevention of unhealthy weight gain and obesity during crucial phases throughout the lifespan (PREPHOBES)
Presupuesto total	7.000.000 €
Concedido ES	300.000 €
Proyectos aprobados	4
Proyectos con AEI	3

Nº	Acrónimo y título del proyecto	Países participantes
1	SO-NUTS. Preventing obesity, sarcopenia, and sarcopenic obesity in retirement - digital personalized interventions for healthy nutrition and physical activity for seniors	Austria, República Checa, Francia, España, Países Bajos
2	ENDOBSITY. First 1000 days strategies to prevent childhood obesity	Irlanda, España, Alemania, Francia, Países Bajos
3	GROWH!. Growing up healthy: obesity prevention tailored to critical transition periods in the early life-course	Alemania , Países Bajos, España, Canadá, Bélgica
4	I-PREGNO. Prevention of unhealthy weight gain in families in pregnancy and postpartum using a mHealth-enhanced intervention	Austria , Alemania, Bélgica, España

CONVOCATORIA NACIONAL APCIN 2020-2

PROYECTO 1 SO-NUTS. Preventing obesity, sarcopenia, and sarcopenic obesity in retirement - digital personalized interventions for healthy nutrition and physical activity for seniors

The aging population faces two conditions that threaten healthy aging: high fat mass (obesity) and low muscle mass and function (sarcopenia). Both conditions are independently associated with comorbidity, disability, low quality of life, and early death. The combination of both– referred to as sarcopenic obesity– synergistically increases the risk of adverse health outcomes. The two conditions often co-occur as they reinforce each other and share common etiologies, mainly poor nutrition and inactivity. Although all aging people are at risk of gaining weight and losing muscle

mass, during the transition from working life to retirement there is an even higher risk of becoming overweight and sarcopenic due to changes in hormonal status, poor nutritional intakes and lower physical activity levels. Even so, retirement offers a great window of opportunity to improve lifestyle, as older adults already need to restructure their daily activities. Furthermore, adopting a healthy lifestyle around the age of retirement offers sufficient time to prevent obesity, sarcopenia, sarcopenic obesity and provides long-term benefits, including healthy ageing and dependence in later life. To stimulate weight loss/prevent weight gain while preserving muscle mass, it is critical that both physical activity and adequate nutrition be addressed. It is key to change behavior in a sustainable manner, providing scientifically proven, personalized, and acceptable principles that can be integrated in daily life. Health technologies are promising tools for delivering personalized and appealing lifestyle interventions to a large group of people while keeping health care costs low. At this moment, there is a lack of effective sustainable interventions that focus on retirement as an important turning point to promote both nutrition and physical activity behavior. We aim to provide essential insights required to develop innovative strategies for preventing obesity, sarcopenia and sarcopenic obesity. Using these insights, we will design a personalized cross-country program that helps empowering people to lose weight while preserving muscle mass and function. We focus on a population that is, on the one hand, at high risk of developing sarcopenic obesity, while on the other hand showing a great window of opportunity of adopting a healthier lifestyle.

IP	Amsterdam University of Applied Sciences (Países Bajos)
Socios	Austria, República Checa, Francia, España (Fundación para la Investigación Biomédica del Hospital Universitario Ramón y Cajal)
Presupuesto total	1.030.000 €
Concedido ES	99.778 €

ENDOBEITY. First 1000 days strategies to prevent childhood obesity.

Childhood obesity is a major public health problem leading to short-term and long-term adverse health outcomes, reduced quality of life and high societal costs. Obesity and related comorbidities seem to originate in the earliest phase of life. Adverse maternal and offspring lifestyle factors in the preconception period, pregnancy and earlychildhood are major risk factors for childhood obesity and its comorbidities. These adverse maternal and offspring lifestyle factors are highly prevalent, cluster within families and are modifiable risk factors for childhood obesity. Urgent development of evidence-based childhood obesity prevention strategies targeting these family-based lifestyle factors in these three crucial transition periods is needed. These prevention strategies need to be developed in strong collaboration with consumers and stakeholders to enable effective large-scale implementation. EndObesity will develop, implement and evaluate innovative, multi-disciplinary strategies for prevention of childhood obesity by targeting family-based lifestyle factors in the preconception period, pregnancy and earlychildhood, covering the first 1000 days of life. EndObesity includes transnational European experts from academia, municipal/governmental health care services, educational stakeholders, industry partners and parentchildhood organizations, and combines outstanding expertise in multiple areas of childhood obesity science and implementation. First, in WP1 and WP 2 we will identify, from preconception to early-childhood, facilitators and barriers for family-based behaviours patterns associated with childhood obesity and develop dynamic populationbased prediction models for early identification of children at high risk of overall obesity and an unhealthy obesity phenotype. Second, in WP3 and WP4 we will develop evidence-based innovative intervention strategies for childhood obesity prevention by optimizing family

lifestyle and nutrition in the preconception period, pregnancy and early-childhood using population-level strategies and more personalized intervention strategies for higher risk groups. Finally, in WP5 we will implement and evaluate childhood obesity prevention strategies through novel and existing partnerships with health care, governmental, educational and industry stakeholders and parentchildhood organizations addressing identified facilitators and barriers and using evaluation studies. Ultimately, EndObesity will optimize family-based health behaviours in three crucial transition periods to prevent childhood obesity. This innovative, novel approach is not only beneficial for the child, but for the entire family and will break the transgenerational vicious cycle of obesity.

IP	Erasmus University Medical Center Rotterdam, Países Bajos
Socios	Irlanda, España (Fundacio Institut D'investigacio Sanitaria pere Virgili), Alemania y Francia
Presupuesto total	1.380.000 €
Concedido ES	100.000 €

GROWH!. Growing up healthy: obesity prevention tailored to critical transition periods in the early life-course

Obesity prevention programmes often have had only limited or short-term effects. In particular socially vulnerable groups, who are affected most, have not been reached successfully. If the known modifiable risk factors were effectively changed in a favourable direction and if this was achieved in the early life course and in the most affected population sub-groups, the burden of obesity and its related cardio-metabolic disorders could be reduced immensely. GrowH! will take advantage of the most recent longitudinal research results on risk factors and novel participatory intervention approaches in youth to develop and test better targeted and more effective primary prevention strategies. To this aim, GrowH! will address three research questions: (1) What is the – possibly age-dependent – impact of known modifiable risk factors at critical transition periods during the early life-course and which hypothetical interventions would result in the strongest reduction of overweight, obesity and their sequelae later in life? (2) Can two different novel participatory intervention approaches that have shown first promising effects be successfully transferred to socially disadvantaged populations in Spain and Germany and can these then be scaled-up sustainably by operational stakeholders? (3) What are the structural and regulatory requirements and conditions for the implementation and up-scaling of the developed intervention approaches onto a regional, national or international level from a whole systems perspective? The answers to these questions will feed into a policy guidance that will be worked out and disseminated for wider use and sustainability of the available evidence in a European context together with public health societies and the WHO.

IP	Leibniz Institute for Prevention Research and Epidemiology – BIPS, Alemania
Socios	Países Bajos, España (Universidad de Zaragoza), Canadá, Bélgica
Presupuesto total	1.160.000 €
Concedido ES	100.000 €

ERA-HDHL FOOD- HYPERSENS

Las intolerancias y alergias alimentarias son cada vez más comunes, probablemente debido a cambios en el entorno de vida, incluida la dieta. Las personas que padecen estos problemas a menudo tienen que abstenerse de muchos productos alimenticios, lo que aumenta los riesgos asociados a una dieta desequilibrada. El objetivo de esta convocatoria es comprender los mecanismos responsables de inducir o prevenir intolerancias y alergias alimentarias, mostrar cómo los ingredientes alimentarios y los métodos de procesamiento de alimentos pueden inducir o prevenir la aparición de intolerancias y alergias alimentarias entre los consumidores y desarrollar nuevos enfoques. disminuir la intolerancia alimentaria/alergia alimentaria, desarrollar nuevas herramientas de diagnóstico de alergia alimentaria/intolerancia alimentaria y desarrollar nuevos métodos de detección para detectar componentes alimentarios adversos o beneficiosos. Abordar cómo los ingredientes alimentarios y los métodos de procesamiento de alimentos pueden inducir o prevenir la aparición de intolerancias y alergias alimentarias entre los consumidores. Las propuestas deben incluir investigaciones sobre uno o más de los siguientes temas: - los mecanismos responsables de inducir o prevenir intolerancias y alergias alimentarias, tanto en niños como en adultos (por ejemplo, inmunidad; inflamación; metabolismo de los nutrientes; genética; microbiota; fisiología); - cómo el procesamiento de alimentos y los ingredientes alimentarios pueden modular la aparición de alergias/intolerancias alimentarias; - el desarrollo de nuevos enfoques para el procesamiento de alimentos (por ejemplo, nuevos ingredientes alimentarios, nuevos métodos de procesamiento) para disminuir la intolerancia o alergia alimentaria; - el desarrollo y/o validación de diagnósticos/métodos para distinguir entre intolerancias y alergias alimentarias reales y percibidas; - el desarrollo y/o validación de métodos de detección de componentes alimentarios adversos o beneficiosos generados durante el procesamiento de alimentos.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número de convocatorias conjuntas internacionales: 2 (2021, 2022)

Participación de AEI en convocatorias conjuntas: 2 (2021, 2022)

CONVOCATORIA CONJUNTA INTERNACIONAL 2021

Países participantes	Bélgica, Francia, Alemania, Israel, Italia, Letonia, Noruega, Polonia, España, Reino Unido
Temáticas	“Addressing adverse and beneficial effects of food ingredients and food processing on hypersensitivities to food (FOOD_HYPERSENS)”
Presupuesto total	4,39 M €
Presupuesto ES	415.600 €
Proyectos aprobados	4
Proyectos con AEI	2

Nº	Acrónimo y título del proyecto	Países participantes
1	EcoBiotic. Physiological and Ecological impact of pre- and probiotic interventions in relation to food allergy in early-life.	Francia, España, Israel, Alemania
2	GenMalCarb. Genetic Carbohydrate Maldigestion as a model to study Food Hypersensitivity mechanism and guide personalised treatment using a non-invasive multiparametric test.	Reino Unido, Alemania, España
3	ImmunoSafe-CeD. Towards comprehensive analytical methods for partially hydrolysed gluten to assess product safety for celiac disease patients	Alemania, Noruega, Italia
4	TRANS-FOODS. Preventing peanut allergy through improved understanding of the transcutaneous sensitisation route, novel food processing and skin care adaptations	Reino Unido, Francia, Alemania

CONVOCATORIA NACIONAL PCI 2021

PROYECTO 1 EcoBiotic. Physiological and Ecological impact of pre- and probiotic interventions in relation to food allergy in early-life

The co-evolution of man and microbiota has diversified the nutrients compatible with human digestion and thus survival. The increased fitness obtained from a better access to food has favored the development of mechanisms able to protect and preserve microbiota diversity, such as barrier function and host immunity. Man consumes more than 50000L of liquid and 30 tons of food in a lifetime. Nutrients therefore constitute a major environmental exposure to man, which can both protect from as well as lead to malnutrition, obesity, allergy etc. It is likely that the impact of nutrients on physiopathology are mediated by alterations in barrier function and host immunity. Here we propose to evaluate the effects of pre- and probiotics administered to pregnant women and their child in early-life. The effect will be assessed clinically (food allergy) and associated with measures of barrier function and host immunity. The consortium of 5 partners will evaluate clinical outcome, humoral and cellular host immunity as well as microbiota ecology in feces and breastmilk. We expect to observe alterations of gut microbiota ecology associated with modifications of host immunity to commensal microbes caused by nutritional interventions with pre- and probiotics. We hope to be able to support the transition to healthy food alternatives, which could reduce risk of developing food allergy in early-life.

IP	National Institute of Health and Medical Research. Francia
Socios	Institut National de la Recherche Agronomique (Francia), Agencia Estatal Consejo Superior de Investigaciones Científicas-CSIC (España), Ben-Gurion University of the Negev (Israel), Technische Universität München (Alemania)
Presupuesto total	1.200.000 €
Concedido ES	207.300 €

PROYECTO 2 GenMalCarb. Genetic Carbohydrate Maldigestion as a model to study Food Hypersensitivity mechanism and guide personalised treatment using a non-invasive multiparametric test

It is estimated that about 20% of the population has a food intolerance and that in people with Irritable Bowel Syndrome which affects about 1 in 10 people in the UK, food intolerance is even higher. A new international research study involving scientists and patients from across the world, aims to investigate whether there is a genetic reason for this and what new therapies could be developed to treat the symptoms. Members of the GenMalCarb team have shown that, compared to healthy people, IBS patients more often carry defective (hypomorphic) SI gene variants. The SI gene produces an enzyme, called sucrase-isomaltase, which is used by the body to digest carbohydrates such as starch and table sugar (sucrose). These results suggest that a sub-group of IBS patients, if correctly identified, could benefit from personalised treatments using dietary interventions or enzyme supplementation. In order to develop specific treatments, researchers need to understand the exact mechanisms which lead to symptoms as a result of carbohydrate maldigestion. The GenMalCarb study, which is coordinated by experts from the University of Nottingham, will use a magnetic resonance imaging (MRI) platform that allows the analysis of gut responses to food in real time. The research team will use this platform to study carbohydrate maldigestion in IBS patients carrying hypomorphic SI variants. The study will be run in collaboration with international research teams. The GenMalCarb project aims to: - accurately establish how many IBS patients carry DNA changes predisposing to SI malfunction in an international study involving more than 30 centres worldwide (Work Package 1) - confirm SI dysfunction (reduced capacity to digest sucrose and starch) for all identified hypomorphic variants via experimental validation in cell-based models (Work Package 1) - Elucidate via MRI studies what part of the digestive process is dysfunctional in IBS patients carrying different SI variants, in response to ingestion of carbohydrate (Work Package 2) The results from this research will open up the possibility for new personalised therapies, based on tailor-made dietary treatments and enzyme supplementation.

IP	University of Nottingham. Reino Unido
Socios	Christian-Albrechts University Kiel (Alemania), University of Veterinary Medicine Hannover (Alemania), Centro de Investigación Cooperativa en Biociencias CIC bioGUNE (España)
Presupuesto total	1.000.000 €
Concedido ES	208.300 €

JPI- HDHL Nutrimmune

PI HDHL se complace en lanzar una nueva actividad de financiación conjunta “Respuesta nutricional del sistema inmunológico: interacción entre enfermedades infecciosas y enfermedades metabólicas relacionadas con la dieta y el potencial de soluciones basadas en alimentos (NUTRIMMUNE)”. El objetivo de esta convocatoria es apoyar proyectos de investigación colaborativos transnacionales que obtengan una mejor comprensión de las interacciones entre nutrición e inmunidad en el contexto de su interacción entre enfermedades infecciosas y enfermedades metabólicas relacionadas con la dieta. Se espera que la investigación en esta área proporcione conocimientos que permitan el desarrollo y la fundamentación científica de estrategias de intervención para mantener una buena salud en todas las etapas de la vida y tratar enfermedades relacionadas con la nutrición.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número de convocatorias conjuntas: 2 (2022,2023)

Participación de AEI en convocatorias conjuntas: 2 (2022,2023)

CONVOCATORIA INTERNACIONAL CONJUNTA 2022

Países participantes	Francia, Alemania, Irlanda, Israel, Italia, Países Bajos, España, Reino Unido
Temáticas	Nutrition-responsiveness of the immune system: interplay between infectious diseases and diet-related metabolic diseases and the potential for food-based solutions (NUTRIMMUNE)”
Presupuesto total	8.270.000 €
Concedido ES	319.062 €
Proyectos aprobados	6
Proyectos con financiación AEI	1 (1 coordinado)

Nº	Acrónimo y título del proyecto	Países participantes
1	DIYUFOOD. From diet to a healthy immune system: understanding biological food paths to oppose metabolic syndromes and infectious diseases	Israel, Países Bajos, Reino Unido, China, Francia
2	METARYL. Nutrition and aryl hydrocarbon receptor activation in mesenteric adipose tissue inflammation and intestinal surgical site infections in metabolic syndrome	Países Bajos, Francia, Alemania
3	OBESSIM. Exploring the effects of time-restricted feeding on the immune function of obese individuals: a multi-omic approach	España, Reino Unido, Francia
4	PreVegDiet. Prevention in prediabetic patients of infection's morbidity following a high fiber and vegetal protein diet	España, Irlanda, Reino Unido

5	RESIST-PP. A comprehensive study of the innate immune surveillance against infection during post_x0002_prandial metabolism.	Francia, España, Alemania
	Transflnf. The effect of diet on immune and vaccine responses in people living with obesity in transitioning communities.	Países Bajos, Francia, Alemania

CONVOCATORIA NACIONAL PCI 2022

PROYECTO 4 PreVegDiet. Prevention in prediabetic patients of infection's morbidity following a high fiber and vegetal protein diet

Obesity is a risk factor for both susceptibility to infections including postoperative infections and other nosocomial infections and the occurrence of a more severe disease course. The main cause of obesity is the energetic imbalance due to increased caloric intake and little expenditure. This induces metabolic and hormonal changes that increases the risk of developing type 2 diabetes mellitus (T2DM), heart disease, and stroke. T2DM is a non-reversible but preventable condition with overweight and obesity being major risk factors. Nutrition and diets can promote the functioning of the immune system as a preventive measure by reducing both inflammation and oxidative stress that might be caused by various factors. The Mediterranean diet, rich in fruits, vegetables, fibre, can help prevent T2DM. Moreover, bioactive compounds such as polyphenols also have great impact on immunity. Seaweeds, particularly brown seaweeds, are a valuable source of natural bioactive compounds, and thus have generated a massive interest. The main objective of the present project is to study the influence of beneficial diets on the immune system of prediabetic patients and its potential to counteract infections. A clinical, an in vitro and an in vivo approach will be used to study the influence of a seaweed supplement and a diet rich in components from a Mediterranean diet on a Salmonella typhimurium infection in prediabetic subjects. Immune system, inflammation, microbiota and bile acids will be assessed and metabolic and lipidomic analysis will be performed in different samples from the different cohorts of the study. At the end of this project, we will provide evidence on the potential of these nutritional interventions to counteract infection, which are of high relevance to the society to reduce the burden of T2DM and obesity.

IP	Universidad de Barcelona. España
Socios	University College Cork (Irlanda), University of Roehampton (Reino Unido)
Presupuesto total	6.451.320 €
Concedido ES	319.062 €

JPIAMR-ACTION

Interrupción de la resistencia a los medicamentos mediante un diseño innovador: esta convocatoria tiene como objetivo mejorar el tratamiento de infecciones bacterianas y fúngicas (incluida la coinfección) en humanos, animales o plantas mediante la mejora de la eficacia, especificidad, administración, combinaciones y/o reutilización de medicamentos y agentes fitosanitarios. En particular, las propuestas deben centrarse en agentes antimicrobianos autorizados (antibióticos/antifúngicos) o agentes en desarrollo preclínico y/o clínico temprano.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número de convocatorias conjuntas internacionales: 3 (2021, 2022, 2023)

Participación de AEI en convocatorias conjuntas: 3 (2021, 2022, 2023)

CONVOCATORIA CONJUNTA INTERNACIONAL 2021

Países participantes	Argentina, Bélgica, Canadá, Dinamarca, Estonia, Finlandia, Francia, Alemania, Hungría, Irlanda, Israel, Italia, Letonia, Lituania, Moldavia, Países Bajos, Noruega, Polonia, España, Suecia, Reino Unido
Temáticas	One Health interventions to prevent or reduce the development and transmission of AMR
Presupuesto total	25.600.000 €
Presupuesto ES	982.008,92 €
Proyectos aprobados	19
Proyectos con AEI	4 (1 coordinado)

Nº	Acrónimo y título del proyecto	Países participantes
1	ARPHILAKE. Combating Antibiotic Resistance in Philippine Lakes: One Health upstream interventions to reduce the burden	Canadá, Filipinas, España, Irlanda, Reino Unido
2	CABU-EICO. Optimising community antibiotic use and environmental infection control with behavioural interventions in rural Burkina Faso and DR Congo	Bélgica, Burkina Faso, República Democrática del Congo, Francia, Reino Unido
3	COINCIDE. Impact of reducing colistin use on colistin resistance in humans and poultry in Indonesia	Indonesia, Países Bajos, Canadá, Bélgica
4	COMBAT. COMplex Biofilms and AMR Transmission	Reino Unido, Alemania, Finlandia, Estonia, Irlanda
5	DESING. Designing One Health Governance for Antimicrobial Stewardship Interventions	Canadá, Países Bajos, Francia, Senegal, Filipinas, Hungría
6	ENVIRE. Interventions to control the dynamics of antimicrobial resistance from chickens through the environment	Alemania, Francia, Lituania, Polonia, Túnez
7	FARM-CARE. FARM interventions to Control Antimicrobial Resistance	Dinamarca, Irlanda, Colombia, Reino Unido, Alemania

8	HOTMATS. Targeted removal of ARGs and facultative pathogenic bacteria (FPB) in wastewater from AMR hotspots using modular advanced treatment solutions	Alemania, Noruega, Ghana, Kenya
9	I-CRECT. Interventions to decrease CRE colonization and transmission between hospitals, households, communities and domesticated animals.	Suecia, Vietnam, Dinamarca, Alemania, Francia
10	ICONIC. Ionophore coccidiostats: risk of CO-selection of antimicrobial resistance - Clinical impact and intervention strategies	Países Bajos, Noruega, Italia, Francia, Polonia
11	MISTAR. Microbiota Intervention Strategies Limiting Selection and Transmission of Antibiotic Resistance burden in the One Health domain	Países Bajos, España, Bélgica, Reino Unido, Brasil
12	MOB-TARGET. Novel interventions for eliminating one-health mobile antimicrobial resistance genes from human and animal microbiomes	Reino Unido, España, Alemania, Francia, China
13	PHAGE-EX. Use of phage applications to combat MRSA at the sow-piglet interface to reduce exposure of staff and contamination of the environment	Alemania, Suecia, Noruega, Austria
14	Phage-Stop-AMR. Phage Therapy to Reduce AMR Enterobacteria Spread from a One Health Perspective	Alemania, España, Reino Unido, Hungría, Israel
15	PhageLand. Phage treatment and wetland technology as intervention strategy to prevent dissemination of antibiotic resistance in surface waters	España, Polonia, Bélgica, Reino Unido, Países Bajos, Moldavia
16	SEFASI. Selecting Efficient Farm-level Antimicrobial Stewardship Interventions from a one health perspective	Reino Unido, Senegal, Dinamarca
17	SNAP-ONE. Strengthening implementation of National Action Plans through a One Health AMR full economic costing exercise	Alemania, Irlanda, Malawi, Italia, Zambia, Bélgica
18	STARS- TAP. Specific Targeting of Antimicrobial Resistant Strains in situ using Targeted-Antibacterial-Plasmids	Francia, Bélgica, Polonia
19	STRESST. Antimicrobial Stewardship in Hospitals, Resistance Selection and Transfer in a One Health Context	Reino Unido, Noruega, Países Bajos

CONVOCATORIA NACIONAL PCI 2021

PROYECTO 1 RPHILAKE. Combating Antibiotic Resistance in Philippine Lakes: One Health upstream interventions to reduce the burden

Lakes provide essential natural resources for populations in low-middle income countries. A growing concern has been contamination with antimicrobial resistance (AMR) determinants from animal and human sources, especially beta-lactams and carbapenems that are the cornerstone

of human antimicrobial therapy. A growing literature supports that beta-lactam resistance in Asian lakes and rivers is increasing. However, few interventions have been evaluated to see if environmental contamination from hospitals and agriculture can be reduced. We propose to develop interventions and evaluate their impact on AMR from humans, animals and the environment. Interventions include antimicrobial stewardship programs in hospitals and backyard farms, campaigns to educate the public on AMR, improve management practices on farms and cleaning of effluents feeding the lake. AMR in human and veterinary setting and lake water will be evaluated using conventional microbiology and molecular biology methods. The conditions in and around Laguna Lake in the Philippines resemble those of many Asian, Latin American and African countries, allowing project results to be generalizable to other LMICs and promote the UN sustainable development goals worldwide. The One Health approach is essential to tackle AMR in the human-animal-environment interface. Lower pollution loads will improve water quality and lake resources, and reduce disease outbreaks, benefiting the Laguna lakeshore communities of over 16 million people.

IP	University of Calgary. Canadá
Socios	University of the Philippines Diliman (Filipinas), Polytechnic University of Madrid (España), University College Dublin (Irlanda), University of Liverpool (Reino Unido)
Presupuesto total	1.246.333 €
Concedido ES	200.242,92 €

PROYECTO 12 MOB-TARGET. Novel interventions for eliminating one-health mobile antimicrobial resistance genes from human and animal microbiomes

The most important cases of one-health antimicrobial resistance (AMR) are caused by dissemination of antibiotic resistance genes on mobile genetic elements. In this project, we will develop novel interventions aimed at selectively eliminating mobile AMR from complex human and animal microbiomes. We will focus on two urgent AMR problems: 1. AMR poses a critical health risk to neonates. We will develop sequence specific antimicrobials (SSA) and conjugative delivery systems to eliminate AMR from the neonatal microbiome. SSAs will include CRISPR-Cas9 systems that will target AMR plasmids, “killer cassettes” that will kill bacteria carrying mobile integrons that are key platforms for AMR, and inducible toxin-intein antimicrobials that will kill cells carrying AMR plasmids. We will test the efficacy of these systems using in vitro and in vivo models of the neonatal human microbiome. 2. Chickens provide a key source of protein in LMICs, but the chicken gut microbiome acts as a reservoir of AMR that can be transmitted to humans. First, we will develop pilus-dependent lytic phage (PDB) as a tool to eliminate mobile ARGs. Second, we will test the ability of both SSAs and PDBs to control AMR in the chicken gut microbiome using in vivo experiments. Our two-pronged approach will help eliminate AMR from a high-risk patient population and restrict the colonization of humans by decontaminating an important agricultural source of AMR.

IP	University of Oxford. Reino Unido
Socios	University of Manchester (Reino Unido), Centro Nacional de Biotecnología (España), Universidad Complutense (España), Max von Pettenkofer-Institute, LMU Munich (Alemania), Institut Pasteur (Francia), Jiangsu Academy of Agricultural Sciences (China)

Presupuesto total	1.590.713 €
Concedido ES	258.748 € (Universidad Complutense de Madrid 44.045 €) y (Agencia Estatal Consejo Superior de Investigaciones Científicas- CSIC 214.703 €)

PROYECTO 14 Phage-Stop-AMR. Phage Therapy to Reduce AMR Enterobacteria Spread from a One Health Perspective

The ‘One Health’ approach recognises the close connection of human and animal health and the environment. Multidrug resistant (MDR) pathogens, e.g. Salmonella and E. coli in poultry and related foods are increasingly becoming a global public health concern. Antibiotic use in animal husbandry has to be reduced to counteract spread of MDR plasmids among zoonotic pathogens in food-producing animals and the risk of transmission of MDR bacteria to humans and the environment. We will demonstrate the potential of a bacteriophage-based intervention to control and reduce the incidence of MDR zoonotic pathogens in broilers in a commercial farm environment and their release into environmental reservoirs. The use of an advanced targeted phage delivery system via animal feed will impact on reduced spread of MDR bacteria and relevant plasmids in broilers and their transmission to humans or to the environment. Conjugative plasmid-encoded pilus-specific phages will help to selectively target MDR plasmid-carrying bacteria without markedly affecting the overall intestinal microbiome composition. We will study the circulation of MDR plasmids among coliform enterobacteria and the effects of phage therapy, by initially using a novel ex-vivo chicken gut model and then on a chicken farm. For early detection, assessment of treatment or prevention of spread of MDR Salmonella or E. coli in broiler flocks, we will develop easy to use on-site detection tools based on PCR/LAMP/CRISPR-Cas assays for determining the presence of conjugative plasmids, antibiotic resistance genes and virulence markers.

IP	Universitätsklinikum Münster. Alemania
Socios	Universidad Cardenal Herrera – CEU (España), Animal and Plant Health Agency (España), Universidad de Cantabria (España), Loughborough University (Reino Unido), Veterinary Medical Research Institute (Hungría), Tel Aviv University (Israel)
Presupuesto total	1.403.468 €
Concedido ES	258.750 € (Instituto de Biomedicina y Biotecnología de Cantabria (IBBTec), Universidad de Cantabria 129.375 €) y (UCH-CEU Facultad de Veterinaria-Fundación Universitaria San Pablo CEU 129.375 €)

PROYECTO 15 PhageLand. Phage treatment and wetland technology as intervention strategy to prevent dissemination of antibiotic resistance in surface waters

PhageLand aims to develop a novel intervention strategy combining the low-cost and eco-friendly purification capacity of passive treatment systems, namely constructed wetlands (CW), with a dedicated phage-based treatment to prevent the transmission of antibiotic resistance (AR) from wastewater into surface waters. PhageLand includes public health investigations targeting multidrug-resistant bacterial (ARB) pathogens in low-middle income countries (LMICs) in Eastern Europe. The phage-based treatment will be specifically tailored to eliminate these multidrug-resistant pathogens from wastewater. In parallel, PhageLand aims to assess: a) the self-purification capacity of model full-scale CWs operating in Spain and Moldova in removing antibiotic residues, ARB and antibiotic resistance genes (ARGs); and b) the potential risk

associated with the dissemination of ARB and ARGs within indigenous bacterial communities and among animals inhabiting CWs. Experimental tasks will include field and laboratory experiments involving cutting-edge chemical, biotechnological and (meta)genomic techniques as well as animal testing. Finally, a pilot-scale infrastructure will be used to scale-up the PhageLand technology and to assess its performance under real environmental conditions. This proof-of-concept will be used to demonstrate the efficacy and scalability of this nature-based technology for combating AR and to encourage stakeholders for its implementation in wastewater treatment, particularly in LMICs where costly and power-demanding treatment plants are difficult to set up.

IP	Instituto Català de Recerca de l'Aigua. (ICRA). España
Socios	University of Warsaw (Polonia), Warsaw University of Life Sciences (Polonia), KU Leuven (Bélgica), Quadram Institute Bioscience (Reino Unido), Delft University of Technology (Países Bajos), Nicolae Testemitanu State University of Medicine and Pharmacy (Moldavia)
Presupuesto total	1.833.081 €
Concedido ES	264.270 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2022

Países participantes	Bélgica, Canadá, República Checa, Dinamarca, Estonia, Francia, Alemania, Hungría, Israel, Italia, Letonia, Lituania, Moldavia, Polonia, España, Suecia, Suiza, Reino Unido.
Temáticas	Disrupting drug resistance using innovative design
Presupuesto total	15.400.000 €
Presupuesto ES	593.106 €
Proyectos aprobados	13
Proyectos con AEI	3

Nº	Acrónimo y título del proyecto	Países participantes
1	ACOMa. Optimization of Antibiotic Combinations using Organoids for treatment of Mycobacterium abscessus infections.	Francia , Suiza, Italia
2	APRINHA. New Inhalation Formulations for Improved Delivery of Antimicrobials	Suiza , Letonia, Alemania, España, Francia, Suecia
3	CAVIFOS. Optimization and implementation of ceftazidime or ceftazidime-avibactam combined with fosfomycin against highly resistant gram-negative bacteria	Francia , Alemania, Israel, Suiza, Italia, España
4	CycleDrug. Disrupting drug resistance by exploiting collateral sensitivity to design novel therapeutic strategies for C. auris and C. glabrata	Bélgica , Israel, España,

5	DONATE. Lyophilized fecal microbiome transfer for primary Clostridioides difficile infection (DONATE study): a multicenter randomized controlled trial	Israel, Italia, Canadá, Reino Unido, Hungría, Lituania, Italia.
6	KLEOPATRA. Design and implementation of effective combination of Phages and Antibiotics for improved Therapy protocols against Klebsiella pneumoniae	Polonia, Bélgica, Francia, Alemania, Israel
7	MURYXIN. The disulfide bond as a chemical tool in cyclic peptide antibiotics: engineering disulfide polymyxins and murepavadin	España, Suecia, Letonia, Reino Unido, Dinamarca
8	NOBACT. Identification of a Novel non-antibiotic Bactericidal agent to fight antimicrobial resistance	Suecia, Francia, Dinamarca
9	StopStaphGrowth. Optimisation of bi-therapy inhibition of Staphylococcus aureus in persistent and bacteremic infections	Francia, Alemania, España
10	SuITAn. Optimized dosing regimens for the combinations of sulfonamides and trimethoprim in veterinary medicine	Francia, Suiza, Reino Unido, Suecia, Bélgica
11	TANDEM. Targeted Nitroxoline Delivery for Treatment of Multidrug-resistant Pathogens	Alemania, Reino Unido, Suecia
12	TRA-COAT. Development and in vivo validation of a novel triggered release antibiofilm coating for orthopaedic implants and vascular grafts.	Bélgica, Suiza, Alemania
13	VARIANT. Design and implementation of silver-based nanoparticles for combating antibiotic resistance	Alemania, Letonia, Polonia, Suecia

CONVOCATORIA NACIONAL PCI 2022

PROYECTO 2 APRINHA. New Inhalation Formulations for Improved Delivery of Antimicrobials

Antimicrobial drug delivery by inhalation has gained increasing popularity over the past decade, with a purpose of resulting in higher drug concentrations in the respiratory tract when compared to oral or parenteral routes of administration, achieving highly efficacious exposures in the treatment of lower respiratory tract infections (LRTI). However, developing inhalation formulations is demanding and requires technologies to overcome a variety of hurdles and limitations. In the treatment of hospitalized patients with acute LRTI, simple nebulization of injectable drugs is used as an “off-label” method for inhalation, resulting in suboptimal delivery due to inefficient penetration to the site of infection and into biofilms. Innovative formulations, including nanoparticles, have therefore been developed to improve drug deposition at the sites of infection, enhance biofilm penetration, and increase the drug exposure in the relevant sites of infection by controlling drug release and clearance. This has been successful for antibiotics targeting *Pseudomonas aeruginosa* and in the treatment of chronic LRTI. However, to date no powerful inhalation formulations targeting other pathogens and for the treatment of acute LRTI in hospitalized patients has been developed. Here we propose to utilize the latest advancements in formulation technologies to develop five distinct inhalation formulations of apramycin and

competitively evaluate their pharmacokinetics, safety, and efficacy in *Acinetobacter baumannii* animal infection models, providing a case study for other antimicrobials as well.

IP	University of Zurich. Suiza
Socios	Inhalation Sciences Sweden AB (Suecia), RISE Reaserch Institute of Sweden AB (Suecia), Latvian Institute of Organic Synthesis (Letonia), INSERM U1070 (Francia), CIDETEC (España), Fraunhofer Institute for Toxicology and Experimental Medicine (Alemania)
Presupuesto total	1.535.373 €
Concedido ES	199.875 €

PROYECTO 4 CycleDrug. Disrupting drug resistance by exploiting collateral sensitivity to design novel therapeutic strategies for *C. auris* and *C. glabrata*

Resistant and tolerant pathogenic fungi are a major medical concern. *Candida auris* was the first pathogenic fungus officially considered an urgent antimicrobial resistance threat by CDC, and resistant *Candida glabrata* has been increasing in prevalence over the past decades. Nevertheless, despite their potential for revolutionizing treatment, insights into the evolutionary dynamics of antifungal resistance and tolerance are scarce. Recently, we discovered that *C. auris* can exhibit collateral sensitivity (CS) and cross resistance (XR). Both phenomena have been studied extensively in tumors and bacteria yet remain unexplored in fungi. Drug cycling and combination therapy strategies designed based on CS and XR networks can prevent or decrease the development of resistance as shown in tumours and prokaryotes. In this project, we will perform an in-depth comparative analysis of CS, XR, drug tolerance and alternative therapies in *C. auris* and *C. glabrata*, using antifungal drugs from every class, drugs in clinical development and repurposed agents. Promising schemes will be tested in vivo and across different strains. State-of-the-art techniques, such as next generation sequencing, an in-house optimized CRISPR-Cas9 gene-editing tool and novel labeled antifungal drugs, will be employed to unravel the mechanisms that drive CS and XR at the molecular level. Because the slow process of antifungal drug discovery, the innovative use of existing drugs based on CS and XR holds great promise for the rapid development of new antifungal therapies to fight antifungal resistance.

IP	Khatolieke Universiteit Leuven. Bélgica
Socios	Tel Aviv University (Israel), Institute for Research in Biomedicine (España), University Hospitals Leuven (Israel, observador)
Presupuesto total	689.561 €
Concedido ES	213.651 €

PROYECTO 7 MURYXIM. The disulfide bond as a chemical tool in cyclic peptide antibiotics: engineering disulfide polymyxins and murepavadin

The project presents an innovative chemical tool to be applied to known cyclic peptide antibiotics. The objective consists of proving that the insertion of disulfide bonds within antimicrobial cyclic peptides improves their therapeutic window (i. e. reduce nephrotoxicity) of antibacterials such as

polymyxins (polymyxinB/colistin) and murepavadin. The rationale of the design consists of maintaining the overall structure of the antibiotic to preserve the antibacterial activity while the presence of the disulfide bond within the peptide backbone would facilitate the initial metabolism and detoxification by oxidoreductases (decyclization of the disulfide-polymyxin/murepavadin) upon eventual accumulation of the antibiotic in the kidney. The project follows a proof-of-concept scheme involving the necessary chemistry to prepare the disulfide-polymyxins and murepavadin model compounds, the in vitro and in vivo assays to assess activity and low toxicity, and estimation of the therapeutic window. Finally, tests to prove the design hypothesis (the search of metabolites related to the reductive opening of the cyclic peptide to facilitate metabolism) and the mechanism of action at the membrane level are also proposed.

IP	Universidad de Barcelona. España
Socios	Suecia, Letonia, Reino Unido, Dinamarca
Presupuesto total	1.510.899 €
Concedido ES	314.842 €

PROYECTO 9 Stop-StaphGrowth. Optimisation of bi-therapy inhibition of Staphylococcus aureus in persistent and bacteremic infections

Staphylococcus aureus is a major cause of fulminant and persistent intracellular infections associated with antimicrobial resistance. Treatment failure correlates with antibiotic resistance and poor antibiotic penetration. We propose an original bi-therapy approach to treat S. aureus infections applicable to humans and animals. It is based on a large family of fatty acid synthesis (FASII) inhibitors, developed to block Firmicute pathogens. We proved that anti-FASII efficiently blocks its target but does not inhibit bacterial multiplication in the host. Instead, anti-FASII-treated bacteria use available host fatty acids, and are markedly reprogrammed, notably with diminished virulence factor expression. We identified five classes of antimicrobials that synergize with anti-FASII to block S. aureus multiplication in vitro: pore formers, stringent response inducers, wall and wall teichoic acid inhibitors, and redox cycling inhibitors. This project aims to transpose our promising in vitro findings to test feasibility of inhibiting S. aureus in intracellular and in vivo models. Selected bi-therapy couples will be encapsulated in lipidic nanoparticles to increase their penetration to solve the difficulties of access in deep and intracellular infections. This multiple-approach project is designed to provide a multimodal therapeutic approach to be used in treatments. The strategy involves compounds already used in humans or in preclinical and clinical trials, promising a rapid application of successful combinations for eradicating bacteria in hard-to-treat infections.

IP	Micalis Institute Univ Paris-Saclay, National Research Institute for Agriculture, Food & Environment. Francia
Socios	Institut Pasteur (Francia), Jena University Hospital, Germany (Alemania), Institut Cochin (Francia), University of Santiago de Compostela (España)
Presupuesto total	756.959 €
Concedido ES	179.580 €



RETO 2

Seguridad y calidad alimentarias, agricultura productiva y sostenible, sostenibilidad de los recursos naturales, investigación marina, marítima y en materia de aguas interiores (Incluye Bioeconomía)



RETO 2: SEGURIDAD Y CALIDAD ALIMENTARIAS, AGRICULTURA PRODUCTIVA Y SOSTENIBLE, SOSTENIBILIDAD DE LOS RECURSOS NATURALES, INVESTIGACIÓN MARINA, MARÍTIMA Y EN MATERIA DE AGUAS INTERIORES (INCLUYE BIOECONOMÍA)

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FACCE SURPLUS- Sustainable and Resilient agriculture for food and non-food systems

FACCE SURPLUS es una ERA-NET Cofund formada por una asociación de 15 países en el marco de la Iniciativa de Programación Conjunta sobre Agricultura, Seguridad Alimentaria y Cambio Climático (FACCE-JPI), con financiación de la UE. FACCE SURPLUS se compromete a mejorar la colaboración en todo el Espacio Europeo de Investigación en la gama de sistemas diversos, pero integrados, de producción y transformación de biomasa alimentaria y no alimentaria, incluida la biorefinería.

Socios: **Coordinador Alemania (PT Juelich (PTJ/FZJ));** Bélgica (Flanders Region (Department of Economy, Science and Innovation / Flanders Innovation & Entrepreneurship) (EWI / VLAIO), Research Foundation Flanders (FWO) Flanders' Food (FF), Fund for Scientific Research (FNRS); Chipre (Research Promotion Foundation (RPF/IPE); Dinamarca (Aarhus University (AU), Innovation Fund Denmark (Innofond), Estonia (Ministry of Rural Affairs (MEM); Alemania (Federal Agency for Agriculture and Food (BLE), Federal Ministry of Education and Research (BMBF), Federal Ministry of Food and Agriculture (BMEL); Francia (French National Institute for Agricultural Research (INRA), French National Research Agency (ANR); Italia (Ministry of Agricultural food and Forestry Policies (MIPAAF), Ministry of Education, University and Research (MIUR), Países Bajos (Ministry of Economic Affairs (MinEZ/MinEA), Netherlands Organisation for Scientific Research (NWO); Nueva Zelanda (Ministry of Business, Innovation and Employment (MBIE); Noruega (Research Council of Norway (RCN); Polonia (National Centre for Research and Development (NCBiR); Rumanía (Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI); **España (Instituto Nacional de Investigación Agraria y Alimentaria (INIA); Agencia Estatal de Investigación (AEI),** Reino Unido (Department for Environment, Food and Rural Affairs (DEFRA).

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número de convocatorias conjuntas internacionales: 3 (2015, 2017, 2018)

Participación de MINECO-AEI en convocatorias: 2 (2016, 2018)

CONVOCATORIA CONJUNTA INTERNACIONAL 2015

Países participantes	Alemania, Bélgica, Chipre, Dinamarca, España, Estonia, Finlandia, Francia, Italia, Noruega, Países Bajos, Polonia, Reino Unido, Rumanía
Temáticas	1. Spatial targeting of land use to increase biomass production and transformation 2. Developing markets 3. The sustainable intensification of integrated food and non-food systems of agriculture
Presupuesto total	17.000.000 €
Presupuesto ES	150.600 €
Proyectos aprobados	14
Proyectos con MINECO/AEI	2

Nº Acrónimo y título del proyecto		Países participantes
1	AGRONICKEL. Developing Ni agromining on ultramafic land in Europe.	Austria , Polonia, Albania, Francia, España, Italia, Grecia
2	BarPLUS. Modifying canopy architecture and photosynthesis to maximize barley biomass and yield for different end-uses	Italia , España, Alemania, Polonia
3	BioC4. New integrative sustainable system from C4 photosynthetic miscanthus to biological synthesis of valuable C4 compounds.	Francia , Alemania, Bélgica
4	INTENSE. Intensify production, transform biomass to energy and novel goods and protect soils in Europe.	Alemania , Polonia, Francia, España, Italia
5	MISCOMAR. Miscanthus biomass options for contaminated and marginal land: quality, quantity and soil interactions.	Polonia , Alemania, Reino Unido,
6	OLIVE-MIRACLE. Modelling solutions for improved and Resilient mAnagement strategies for Olive tree against future CLimate change.	Italia , Chipre, España
7	PREAR. Predicting and enhancing the Resilience of European Agro-ecosystems to environmental change using crop Rotations.	Francia , Reino Unido, Dinamarca, Hungría
8	SidaTim. Novel Pathways of Biomass Production: Assessing the Potential of Sida hermaphrodita and Valuable Timber Trees.	Alemania , Italia, Reino Unido, Polonia
9	SUSTAg. Assessing options for the SUSTainable intensification of Agriculture for integrated production of food and non-food products at different scales.	Alemania , Finlandia, Países Bajos, España
10	SustainFARM. Innovative and sustainable intensification of integrated food and non-food systems to develop climate-resilient agro-ecosystems in Europe and beyond.	Dinamarca , Reino Unido, Alemania, España, Rumanía, Italia, Polonia
11	Sweedhart. Separation of weeds during harvesting and hygienisation to enhance crop productivity in the long term.	Alemania , Noruega, Dinamarca
12	TSARA. Targets for Sustainable And Resilient Agriculture	Reino Unido , Francia, Países Bajos, Nueva Zelanda
13	VITAL. Viable InTensification of Agricultural production through sustainable Landscape transition.	Países Bajos , Francia, España, Alemania
14	VitiSmart. Toward a sustainable viticulture: Improved grapevine productivity and tolerance to abiotic and biotic stresses by combining resistant cultivars and beneficial microorganisms.	Francia , Bélgica, Chipre, Italia, Polonia, España, Países Bajos, Reino Unido, Alemania

CONVOCATORIA NACIONAL APCIN 2017

PROYECTO 1 AGRONICKEL. Developing Ni agromining on ultramafic land in Europe

AGRONICKEL aims to implement agroecosystems which can lead to better soil resource efficiency and to offer a fully integrated, new agromining agriculture that could cover thousands of km² in Europe and benefit local communities with sustainable rural development. AGRONICKEL has identified the bottlenecks that need to be solved before agromining fully develops in Europe. Traditional agronomy has already been developed for the Ni-hyperaccumulator *Alyssum murale* but a move towards a more resource-friendly agriculture is needed.

IP	INRA, Francia
Socios	Francia (CNRS, MICROHUMUS), España (Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC)) , Austria (University of Natural Resources and Life Sciences Vienna), Polonia (Jagiellonian University), Albania (University of Tirana), Italia (Università di Firenze), Grecia (Eastern Macedonia and Thrace Institute of Technology)
Presupuesto total	589.000 €
Concedido ES	75.000 €

PROYECTO 4 intense. Intensify production, transform biomass to energy and novel goods and protect soils in europe

The research project INTENSE strives to reconvert these sites into sustainable farmland and thereby expand the area available for food and fodder production. The aim is determine and harmonize methodologies to identify and recover degraded soils and develop and optimize novel cropping systems, using precision agriculture and modeling tools, able to increase productivity, increase soil life and quality and make use of specific amendments to suppress pathogens and fertilize soils.

The project will also develop and implement suitable production systems applicable for land amelioration in complex degradation situations and demonstrate and implement sustainable and financially attractive production alternatives for farming on recovered land.

IP	NIBIO (Norwegian Institute of Bioeconomy Research), Noruega
Socios	Alemania (Helmholtz Zentrum Muenchen GmbH, Hasselt University), Polonia (Warsaw University of Life Sciences), Francia (INRA- National Institute of Agronomic Research), España Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT) , Italia (Università degli Studi di Parma)
Presupuesto total	1.967.000 €
Concedido ES	75.600 €

SUSCROP – ERA-NET Cofund on Sustainable Crop Production

SUSCROP ERA-NET COFUND es una ERA-Net cofinanciada por la Comisión Europea que reúne a 23 agencias de 18 países. Su objetivo es fortalecer la cooperación tecnológica en el sector agrícola promoviendo proyectos transnacionales de investigación, desarrollo e innovación que mejoren la sostenibilidad y resiliencia en la producción de cultivos. SusCrop tiene como fin cubrir todos los aspectos de la sostenibilidad, incluyendo el medio ambiente, la economía y aspectos socio-culturales.

La producción moderna de cultivos debe promoverse teniendo en cuenta toda la cadena de valor de la producción de alimentos, la diversidad de cultivos y la resiliencia, eficiencia en el uso de recursos, reciclaje de nutrientes, ecosistema, reducción de impactos negativos en el medio ambiente, gestión integrada de pesticidas, reducción y reciclaje de desperdicios y asegurando la disponibilidad de alimentos y la correcta nutrición. Para enfrentarse a este reto, los miembros de la UE establecieron la Iniciativa de Programación Conjunta en Agricultura, Alimentación y Seguridad y Cambio Climático: FACCE-JPI. Esta JPI desarrolló una agenda estratégica de investigación enfocándose en cinco temas centrales de investigación. En este contexto, SUSCROP se inició para promover la investigación dentro de la temática "Intensificación medioambientalmente sostenible de sistemas agrícolas".

El principal objetivo de SUSCROP es la implementación de una convocatoria conjunta, cofinanciada por la UE, para promover proyectos transnacionales de I+D+i que mejoren la sostenibilidad y resiliencia en la producción de cultivos o sistemas de cultivo, considerando retos medioambientales como el cambio climático, la escasez/limitación de recursos naturales, etc.

La convocatoria pretende apoyar propuestas orientadas a la producción sostenible de cultivos para enfrentar los retos sociales del siglo XXI. Está alineada con la prioridad estratégica de "Producción sostenible de cultivos" del Reto Social 2 de H2020 "Seguridad alimentaria, agricultura y silvicultura sostenibles, investigación marina, marítima y de aguas interiores y bioeconomía" y con la Agenda Estratégica diseñada por la JPI de Agricultura, Seguridad Alimentaria y Cambio Climático (FACCE JPI) de diciembre de 2012, revisada en noviembre de 2015.

Coordinador Alemania (PT Juelich (PTJ/FZJ); Austria (Austrian Agency for Health and Food (AGES), Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW); Bélgica (Institute for Agricultural and Fisheries Research (EV-ILVO), National Fund for Scientific Research (FNRS); Dinamarca (Aarhus University (AU), Danish AgriFish Agency (DAFA); Estonia (Estonian Science Foundation (ETAG), Ministry of Rural Affairs (MEM); Finlandia (Ministry of Agriculture and Forestry (MMM), Natural Resources Institute Finland (Luke); Alemania (Federal Agency for Agriculture and Food (BLE), Federal Ministry of Education and Research (BMBF), Federal Ministry of Food and Agriculture (BMEL), German Research Foundation (DFG); Francia (French National Institute for Agricultural Research (INRA), French National Research Agency (ANR); Irlanda (Agriculture and Food Development Authority (Teagasc), Department of Agriculture, Food and the Marine (DAFF); Italia (Ministry of Education, University and Research (MIUR), Letonia (Latvian Academy of Agricultural and Forestry Sciences (LAAFS); Países Bajos (Ministry of Economic Affairs (MinEZ/MinEA), Netherlands Organisation for Scientific Research (NWO); Noruega (Research Council of Norway (RCN); Polonia (National Centre for Research and Development (NCBiR); Rumanía (Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI); **España (Centro para el Desarrollo Tecnológico Industrial (CDTI); Instituto Nacional de Investigación Agraria y Alimentaria (INIA); Agencia Estatal de Investigación (AEI-MINECO);** Turquía (Ministry of

Food, Agriculture and Livestock (TAGEM), The Scientific and Technological Research Council of Turkey (TUBITAK); Reino Unido (Department for Environment, Food and Rural Affairs (DEFRA)).

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales: 4 (2019, 2020, 2021, 2022)

Participación de la AEI en convocatorias conjuntas: 4 (2019, 2020, 2021, 2022)

CONVOCATORIA CONJUNTA 2018

Países participantes	Alemania, Austria, Bélgica, Canadá, Dinamarca, Estonia, Finlandia, Francia, Irlanda, Italia, Letonia, Países Bajos, Noruega, Polonia, Rumanía, España, Turquía, Reino Unido
Temáticas	• Mejora de las tecnologías predictivas de mejoramiento y desarrollo de nuevos genotipos que conduzcan a nuevos fenotipos y variedades de cultivos para mejorar la salud, la protección, la producción y la resiliencia de las plantas • Desarrollo y explotación de métodos y prácticas novedosos de gestión integrada de plagas y cultivos • Mejora de la eficiencia en el uso de los recursos de cultivos y sistemas de cultivo • Investigación sistémica sobre cultivos agrícolas como parte de un ecosistema, incluidas las interacciones entre las plantas y otros organismos ("la planta como un meta-organismo")
Presupuesto total	18.030.000 €
Presupuesto ES	947.000 €
Proyectos aprobados	13
Proyectos con MINECO/AEI	6 (1 proyecto coordinado por ES)

Nº	Acrónimo y título del proyecto	Países participantes
1	AC/DC-weeds. Applying and Combining Disturbance and Competition for an agro-ecological management of creeping perennial weeds	Alemania , Noruega, Finlandia, Dinamarca, Francia
2	BARISTA. Advanced tools for breeding BARley for Intensive and SusTainable Agriculture under climate change scenarios	Italia , Finlandia, España, Alemania, Dinamarca, Reino Unido, Estonia, Polonia
3	DIFFUGAT. Diploid Inbreds For Fixation, and Unreduced GAmetes for Tetraploidy – A novel Fixation-Restitution Breeding method for potato	Irlanda , Países Bajos, Alemania, Dinamarca
4	LegumeGap. Increasing productivity and sustainability of European plant protein production by closing the grain legume yield gap	Finlandia , Alemania, Polonia, Letonia, Reino Unido, Francia, Países Bajos, España

5	NETFIB. Valorization of fibres from nettle grown on marginal lands in an agro-forestry cropping system	Francia, Italia, Reino Unido, Alemania, Austria
6	PROSTRIG. Delivering novel maize genotypes with improved resilience And PROductivity through the application of predictive breeding technologies to modulate STRIGolactone levels	España, Reino Unido, Alemania
7	ProFaba. Developing improved Vicia faba breeding practices and varieties to drive domestic protein production in the European Union	Dinamarca, Finlandia, Francia, Alemania, Irlanda, España, Reino Unido
8	ROOT. Resilience to salinity in tomato	Países Bajos, Italia, Alemania, Francia
9	RYE-SUS. Development of lodging-resistant and climate-smart rye – a contribution to a sustainable cereal production in marginal environments	Alemania, Austria, Canadá, Estonia, Finlandia, Polonia, Noruega
10	SOLNUE. Tomato and eggplant nitrogen utilization efficiency in Mediterranean environments	Italia, España, Francia
11	SUSCAP. Developing resilience and tolerance of crop resource use efficiency to climate change and air pollution	Reino Unido, Noruega, Italia, Alemania, Rumanía, España
12	WheatSustain. Knowledge-driven genomic predictions for sustainable disease resistance in wheat	Noruega, Austria, Alemania, Irlanda, Canadá, Estados Unidos, Méjico
13	potatoMETAbiome. Harnessing the potato-microbiome interactions for development of sustainable breeding and production strategies	Países Bajos, Alemania, Austria, Irlanda, Francia, Polonia

CONVOCATORIA NACIONAL APCIN 2019

PROYECTO 2 BARISTA. Advanced tools for breeding BARley for Intensive and SusTainable Agriculture under climate change scenarios

Improving the genetic potential of the seeds is the most effective way to introduce the innovation in agriculture needed to meet the UN Sustainable Development Goals (SDGs). Plant breeding allows improvement of crop sustainability and yield potential through the introgression of specific traits capable of coping with climate change, disease shifts, and resource limitations. Taking barley both as a target and a model, BARISTA will deliver new breeding strategies and toolkits for boosting crop improvement, leading to new, high-yielding varieties selected to cope with anticipated future climatic conditions. Acceleration of conventional breeding through a combination of high-precision phenotyping, detailed genomic information, high density genetic maps, bioinformatics, and genetic modelling and crop growth simulation methods can provide the quantum leap improvement needed for achieving the SDGs (especially 2, 6, 8, 12, 13, 15) under a rapidly changing global climate. BARISTA is built on extensive phenotypic and genotypic data generated in previous projects and on current understanding of the genetics of ideotype traits for biotic and abiotic stress resilience. The consortium will work on a common set of germplasm, consisting of ~200 barley spring cultivars

extensively genotyped and phenotyped within the previous Exbardiv (ERA-PG 2006), Climbar (FACCE-JPI 2014), and various national projects, a panel of 160 spring barley single- and quadruple-stack lines developed to introgress quantitative resistance against the main barley pathogens, and several novel barley ABA-related mutants of candidate genes affecting water use efficiency (WUE) and drought tolerance. In BARISTA, this germplasm and data resource will drive genomic prediction (GP) and crop simulation models (CSMs) in combination to improve current predictive breeding tools and methods, focusing on phenological adaptation to the different European agro-climatic zones, resilience to climate change factors and disease.

resistance. In addition, we will dissect traits relevant for barley sustainability and resilience (e.g., water- and nitrogen-use efficiency, culm architecture, disease resistance, flowering time) by using state of the art phenotyping, genetics, and genomics methodologies. Physiological performance of barley varieties and of ABA-related mutants will be evaluated together with their agronomic performance under different growth conditions, ambient and elevated [CO₂], and used to improve the models. Sets of barley lines stacking candidate genes conferring quantitative resistance against barley pathogens will be genotyped and tested in relevant environments. New populations carrying sustainability-related traits will be developed as breeding resources, thus contributing to food security for a growing population under climate change and pressure on natural resources. BARISTA will predict which new combinations of alleles are required for future climate scenarios in different target environments, validate models and provide a toolkit for breeding for climate change, and design optimal cross combinations to enhance breeding for specific target environments. Twelve partners from eight countries will contribute complementary scientific and technological expertise to BARISTA. The partners have internationally recognised experience in crop modelling, plant genomics, plant physiology, barley pre-breeding and breeding, environmental sciences and agricultural advisory services. The impact will be assured through the involvement of private companies (KWS, DE; ISEA, IT; APSOV, IT; Boreal, FI; Agromonegros, ES; DANKO, PL) and agricultural advisory services or public breeding stations (SEGES, DK; ECRI, EE; ICARDA, MA), as partners, subcontractors, and members of the Stakeholder Advisory Board. They will help to deploy the results of the project in commercial breeding programs and disseminate the project results to the seed and processing industries, farmers and other stakeholders.

IP	Council for Agricultural Research and Economics, Italia
Socios	Italia (Università degli Studi di Milano), Finlandia (Natural Resources Institute Finland), España (Agencia Estatal Consejo Superior de Investigaciones Científicas- Estación Experimental Aula Dei), Alemania (Martin-Luther-University Halle/Wittenberg, University of Goettingen), Dinamarca (University of Copenhagen, SEGES Landbrug & Fødevarer F.m.b.A.), Reino Unido (James Hutton Institute), Estonia (University of Tartu, Estonian Crop Research Institute), Polonia (University of Silesia in Katowice)
Presupuesto total	2.005.000 €
Concedido ES	150.000 €

PROYECTO 4 LegumeGap. Increasing productivity and sustainability of European plant protein production by closing the grain legume yield gap

The LegumeGap project will contribute to ensure food and nutritional security under climate change and reduce pressures on natural resources by identifying the potential contribution of new cultivars, optimal management practices, and farmers' knowledge in closing the yield and protein

gaps, reducing the observed yield variability and EU-level protein shortfall, and optimizing the environmental performance of legume production in Europe. We will focus on two key representative legumes: faba bean and soya bean, due to their growing popularity, broad adaptability and high protein concentration in the seeds. A systems approach will be employed, where biophysical and socio-economic limitations, opportunities, and their interaction are taken into account. The innovative combination of different methodological approaches, including modelling, field experiments, a large scale farmer survey, and data analysis, will allow us to deliver more than their individual parts and to identify and recommend ways by which the potential of these two crops can be maximised. Ten partners from eight countries will make use of their expertise in modelling, breeding, soil science, agronomy, geography and socio-economics to achieve in an interdisciplinary manner the objectives. The innovation of LegumeGap lies in its synergistic methodological integration and its detailed focus on the breeding, management, and knowledge innovation gaps of the two most productive grain legumes, faba bean and soya bean. By covering all of the main European agroclimatic regions, as well as the pan-European level, LegumeGap will reveal environmental and socio-economic opportunities and constraints for enhancing the potential of grain legume production across Europe and point towards novel measures for resilient, legume-supported cropping systems, contributing to sustainable intensification under the challenge of global change.

IP	University of Helsinki, Finlandia
Socios	Alemania (Humboldt University of Berlin, Leibniz Centre for Agricultural Landscape Research (ZALF), Polonia (Wrocław University of Environmental and Life Sciences), Letonia (Latvia University of Life Sciences and Technologies (Latvia University of Agriculture), Reino Unido (Scotland's Rural College (SRUC), Francia (INRA, RAGT SEMENCES), Países Bajos (Vrije Universiteit Amsterdam), España (Universidad de Lleida (UdL)
Presupuesto total	1.616.000 €
Concedido ES	148.000 €

PROYECTO 6 PROSTRIG. Delivering novel maize genotypes with improved resilience And PROductivity through the application of predictive breeding technologies to modulate STRIGolactone levels

PROSTRIG employs novel breeding technologies, specifically precise Genome Editing using CRISPR/cas9 technology to create maize (corn) varieties with higher productivity while simultaneously minimizing environmental impact directly because the novel maize varieties will require much less application of nitrogen and phosphorous fertilizers. Modulation of the plant hormones strigolactones provides this opportunity. A novel approach using tunable modulation of two carotenoid cleavage dioxygenase enzymes (CCD7 and CCD8) specifically involved in the biosynthesis of these compounds can modulate strigolactone content and composition and will potentially result in a complete new root architecture simultaneously encouraging stimulation of hyphal branching in fungal symbionts that form arbuscular mycorrhizae. Consequently less fertilizer will be required due to the improved uptake efficiency of nitrogen and phosphorus as a result of this symbiosis. These properties will enable greater crop intensification in a highly sustainable manner thus delivering the paramount objective of the SUSCROP call in a manner entirely congruent with the call for proposals. A further direct impact is the generation of novel phenotypes which can be commercialized directly as these do not fall under GMO regulations at least outside the EU. A further direct impact of PROSTRIG will be to provide experimental evidence and

outputs in the form of scientific and white papers, and popular articles in the press to explain why GE crops should not be treated as GMOs on a purely scientific basis. The project will establish a technology platform which will be open to all EU companies interested in taking advantage of the potential commercial outcomes of the project in terms of knowhow, technology, IP and tangible outputs including experimental data including safety and efficacy data from animal feeding trials, optimized expression vectors, germplasm and lead plant lines characterized fully also under field conditions, all complemented by a full Life Cycle Assessment and a comprehensive Techno-economic Analysis.

IP	Universidad de Lleida (UdL), España
Socios	Reino Unido (Royal Holloway University of London), Alemania (Fraunhofer Institute for Molecular Biology and Applied Ecology IME)
Presupuesto total	624.000 €
Concedido ES	200.000 €

PROYECTO 7 ProFaba. Developing improved Vicia faba breeding practices and varieties to drive domestic protein production in the European Union

The ProFaba project aims to boost protein production in Europe by improving faba bean (*Vicia faba*) as a European protein crop, thereby markedly contributing to a more balanced and protein-self-sufficient agricultural system. As a result, the ProFaba ERA-NET project will bring partners together with complementary expertise in genomics, bioinformatics, quantitative genetics, insect resistance, disease resistance, abiotic stress tolerance, nitrogen fixation, field phenotyping, breeding, and climate and phenological modeling to tackle the main obstacles to faba bean success as a protein crop. ProFaba will build a common reference and data repository for faba genome, genotype, and phenotype data, ensuring easy communication throughout the faba community. ProFaba will leverage these resources by developing common diversity panels and breeding lines, which will be phenotyped for agronomic traits in five different locations from the South to the North of Europe. This will allow deciphering the genomic architecture of faba traits, understanding genotype by environment interactions, and direct incorporation of this knowledge into active, predictive breeding programs through the participating breeders from Denmark, Germany, France and Spain. ProFaba project results will additionally be disseminated through breeder and grower conventions to the wider group of stakeholders as well as through scientific publications and conferences. ProFaba will focus on the most critical faba traits across Europe, and phenological and climate change models will be used to understand and predict future breeding targets for specific regions. ProFaba will work with both spring- and autumn-sown material to understand genetic differences and improve frost tolerance of autumn-sown germplasm, which could lead to rapid changes in management practices and increased yield in colder climates. Low soil pH restricts the growth of faba bean in wet climates, and ProFaba will establish the genetics and physiology underlying faba acid-soil tolerance to enable its manipulation in practical breeding. To drive reduction in pesticide use, and thus promote faba bean ecosystem services for pollinators, ProFaba will perform multi-location testing of bruchid-resistant germplasm and map the alleles associated with resistance. As an additional strategy to ameliorate the effects of pollinator decline, ProFaba will dissect and understand autofertility, which allows persistent high yield in the absence of cross-pollination. In terms of resource use efficiency, biological nitrogen fixation through symbiotic interactions with rhizobia is a critical but poorly understood trait. ProFaba will address this by identifying faba bean germplasm, which

effectively selects for efficient nitrogen fixing rhizobia, and by taking the first steps in establishing efficient nitrogen fixation as a breeding target.

IP	Aarhus University, Dinamarca
Socios	Dinamarca (Sejet Plant Breeding), Finlandia (University of Helsinki), Francia (National Institute for Agricultural Research, Groupement des Sélectionneurs des Protéagineux), Alemania (Georg-August-University Goettingen), Irlanda (Teagasc), España (IFAPA, Agrovegetal), Reino Unido (University of Reading)
Presupuesto total	1.901.000 €
Concedido ES	150.000 €

PROYECTO 10 SOLNUE. Tomato and eggplant nitrogen utilization efficiency in Mediterranean environments

SOLNUE aim is to provide knowledge and strategies for an ecological and sustainable vegetable cropping system by the reduction of nitrogen (N) fertilizer, using tomato and eggplant as target species. The results may be extended to other fruit vegetables. In particular, the main goal will be the identification of tomato and eggplant efficient genotypes in N-use in agreement with the EU policy about the agricultural sustainable practices. The development of high NUE genotypes is considered more challenging than targeting N applications, although more effective as a part of an integrated crops nutrient management. The deliverables of SOLNUE will be 1) the identification and selection of tomato and eggplant genotypes contrasting for nitrogen use efficiency (NUE); 2) the improvement of knowledge on morpho-physiological and molecular traits in NUE-contrasting tomato and eggplant genotypes; 3) the genotyping and phenotyping of segregant populations for associations/QTL related to low nitrogen responses with special focus on eQTL controlling the response to low N-stress; 4) the setting up of genomic selection based on whole genome information. Genomic prediction models for fruit production and quality will be proposed, based on the information on the populations evaluated and tested taking into account the impact of low N stress to foster the selection of novel high NUE varieties.

IP	Università Mediterranea di Reggio Calabria, Italia
Socios	España (Universitat Politècnica de València), Italia (Council for Agricultural Research and Economics), Francia (National Institute for Agricultural Research)
Presupuesto total	500.000 €
Concedido ES	150.000 €

PROYECTO 11 SUSCAP. Developing resilience and tolerance of crop resource use efficiency to climate change and air pollution

It is well known that climate change will impact arable crop production across Europe in coming decades. We also know that air pollution is already having substantial impacts on crop productivity causing yield losses of between 10 and 15% on average across Europe for sensitive staple crops such as wheat. What is unclear is how these stresses will combine to impact crop growth, development and yield through influences on important crop resource use efficiencies such as radiation, water and nutrient use. Within this project we will develop a new generation of process based crop models to better understand the mechanisms, and hence impacts, of these multiple stresses both for the current

day and future 2050 climates. This will allow us to identify the magnitude, frequency and geographical distribution of the combined stresses most likely to limit resource use efficiency and hence crop productivity. This will be important since, in spite of international efforts to reduce emissions, poor air quality in Europe is currently set to continue to substantially impact crop yields until at least 2050 and GHG emissions are still on course to see large changes in climate over the coming decades. This project focusses on four goals. Firstly, to define which multi-stress combinations (e.g. pollution (aerosol and ozone), drought, high temperatures, low soil fertility) are most likely to adversely affect crop resource use efficiency and ultimately crop growth, development and yield. Secondly, to describe the frequency, magnitude and geographical distribution of the most damaging of these multi-stress combinations and where they are most likely to occur across Europe both for the current day as well as the future (2050). Thirdly, to use this information to identify new plant traits that could be bred for, and new crop management practices that could be employed by farmers, to help adapt to the stresses resulting from air pollution and climate change conditions. Finally, through conducting this research in partnership with a variety of stakeholders, to understand the context within which these threats manifest themselves so as to identify appropriate, realistic and feasible solutions for their remediation. The project will build on existing initiatives to develop modelling approaches; and will conduct this research in close dialogue with policy and sector stakeholders that are partners of our consortium of eight world-leading expert groups skilled in climate change and air pollution in relation to experimental and crop modelling. Ultimately, this project will target an increase in the sustainability of agriculture across Europe and a reduction in the threats to crop resource use efficiency from both current and future climate change and air pollution stress.

IP	SEI York, Reino Unido
Socios	Noruega (CICERO), Italia (Council for Agricultural Research and Economics, JRC), Alemania (University of Bonn), Rumanía (AFAHC, National Meteorological Administration), España (Centro de Investigaciones Energéticas y Medioambientales-CIEMAT)
Presupuesto total	1.266.000 €
Concedido ES	149.000 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2020

Países participantes	Alemania, Austria, Bélgica, Canadá, Dinamarca, Estonia, Finlandia, Francia, Irlanda, Italia, Letonia, Países Bajos, Noruega, Polonia, Rumanía, España, Turquía, Reino Unido
Temáticas	• Mejora de las tecnologías predictivas de mejoramiento y desarrollo de nuevos genotipos que conduzcan a nuevos fenotipos y variedades de cultivos para mejorar la salud, la protección, la producción y la resiliencia de las plantas • Desarrollo y explotación de métodos y prácticas novedosos de gestión integrada de plagas y cultivos • Mejora de la eficiencia en el uso de los recursos de cultivos y sistemas de cultivo • Investigación sistémica sobre cultivos agrícolas como parte de un ecosistema, incluidas las interacciones entre las plantas y otros organismos ("la planta como un meta-organismo")
Presupuesto total	7.500.000 €

Concedido ES	450.000 €
Proyectos aprobados	8
Proyectos con MINECO/AEI	3

Nº	Acrónimo y título del proyecto	Países participantes
1	BioHortiTech. Improved bio-inocula and living mulching technologies for integrated management of horticultural crops	Polonia , Reino Unido, Alemania, Francia, España
2	BioProtect. Target-specific RNA-based bioprotectants for sustainable crop production in a changing climate	Francia , Finlandia, Alemania
3	BRACE. Barley Responses and Adaptation to Changing Environments	Alemania , Finlandia, Estonia, Turquía, Marruecos
4	C4FUTURE. Fortifying and Enhancing Resilience in C4 Crops for Current and Future Climate Change Adversities	Bélgica , Alemania, Turquía, Dinamarca, Italia, Francia
5	CATCH-BNI. Improved nitrogen use efficiency in agriculture by CATCH crops as producers of Biological Nitrification Inhibitors	Bélgica , Reino Unido, Alemania, España
6	ECOSOL. Eco-friendly solutions for the integrated management of late and early blight of potatoes	Reino Unido , Alemania, Estonia, Dinamarca, Finlandia
7	FruitFlow. Predicting and tuning seasonal responses of apple and peach to improve orchard yield and climate change resilience	Francia , Alemania, España
8	RootsPlus. Development of novel brEstoniading technology for improved root system, drought tolerance and sustainable plant productions	Bélgica , Dinamarca, Alemania, Polonia, Rumanía

CONVOCATORIA NACIONAL APCIN 2020-2

PROYECTO 2 BioHortiTech. Improved bio-inocula and living mulching technologies for integrated management of horticultural crops

The “green revolution” started seventy years ago and since then has led to a great progress in food production by introducing mineral fertilizers and pesticides into agriculture. However, over time, high impact of these agrochemicals has resulted in the progressive degradation of agro-environment. Today, it appears clear that the chemicals should be limited and replaced with more environmental-friendly practices. BioHortiTech project aims to introduce new technologies in horticulture, based on the application of newly formulated bio-inoculants and living mulching for crop plants benefit in different farming systems. Interdisciplinary research involves international cooperation between experts in the fields of biotechnology, chemistry, microbiology, plant protection and cultivation, in integrated and organic systems.

IP	The National Institute of Horticultural Research (INHORT), Polonia
Socios	National Institute of Agricultural Botany, East Malling Research (NIAB EMR) (Reino Unido), Institute for Polymer Research (MPI-P) (Alemania), Research Group for Organic Farming (GRAB) (Francia), Creaciones Aromáticas Industriales S.A. (CARINSA) (España) y Eurecat (España)
Presupuesto total	1.740.000 €
Concedido ES	150.000 €

PROYECTO 5 CATCH-BNI. Improved nitrogen use efficiency in agriculture by CATCH crops as producers of Biological Nitrification Inhibitors

Agrosystems in industrialized countries are confronted with important challenges: they are facing increasing food demand while they are requested to reduce external inputs and to minimize negative environmental impact. The widespread use of synthetic nitrogen (N) fertilizers has promoted the productivity and profit in agricultural plant production. However, due to the low nitrogen use efficiency (NUE) of crop plants, the intensive use of N fertilizers entails losses from the plant-soil system via NO₃-leaching and/or N gas emissions, leading to soil, water and atmosphere pollution. Strategies aiming at optimizing the management of N fertilization and reducing N losses to the environment have the potential to provide a significant contribution to UN Strategic Development Goals (SDGs) dealing with global warming (SDG13), responsible production (SDG12), clean water (SDG6) and biodiversity (SDG15). In the CATCH-BNI project, we will investigate the potential of catch crops to provide key functions and services in the regulation of N cycling in conventional and organic agrosystems. The nitrification processes operated by soil bacteria and archaea lead to the rapid conversion of ammonium into nitrate which is prone to losses that subsequently pollute the environment. Nitrification is also associated with the production of greenhouse gases (NO_x), a GHG emitted as well by denitrification. While chemical inhibition of nitrification has emerged as a tool to limit nitrate losses, several plant species were lately shown to display nitrification inhibiting activities, mostly through release of organic compounds present in their root exudates. Those compounds are named Biological Nitrification Inhibitors (BNIs).

IP	Gembloux Agro-Bio Tech, University of Liège, Bélgica
Socios	Leibniz Institute of Crop Genetics and Crop Plant Research (Alemania), John Innes Centre (Reino Unido), University of the Basque Country (España) y AN S.Coop (España)
Presupuesto total	1.157.000 €
Concedido ES	150.000 €

PROYECTO 7 FruitFlow. Predicting and tuning seasonal responses of apple and peach to improve orchard yield and climate change resilience

The life-cycles of fruit trees are closely synchronized with seasonal cycles. These seasonal patterns of growth and flowering are crucial for successful fruit production and yield. Responses to temperature and day length control these seasonal patterns. During autumn and early winter, buds and apices of fruit trees become dormant in response to low temperatures and short days.

This dormancy is eventually overcome by longer exposure to cold, allowing growth to resume in spring in response to longer days and warmer temperatures. Environmental cues such as winter and spring temperatures that control these cycles are altered with climate change threatening yield. However, our ability to breed new tree cultivars is hampered by our lack of knowledge of the molecular and genetic mechanisms underlying these economically important environmental responses, particularly how trees detect and respond to temperature changes. The FruitFlow project brings together an international consortium of five academic and three commercial partners to address these issues for two important perennial crops: apple and peach. We propose to develop novel technologies for predicting and promoting flower and fruit production.

IP	UMR AGAP, Francia
Socios	Centre for Plant Biotechnology and Genomics UPM – INIA (España), Institute for Plant Breeding Research (Alemania), Instituto Valenciano de Investigaciones Agrarias (IVIA) (España), Instituto Murciano de Investigación y Desarrollo Agrario (IMIDA) (España), UTW (España), Sudexpe (Francia) y DAI NATURE S.L. (España)
Presupuesto total	1.758.000 €
Concedido ES	150.000 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2021

Países participantes	Noruega, Kenia, España, Irlanda, Alemania, Italia, Reino Unido, Sudáfrica, Bélgica, Letonia, Estonia, Turquía, Polonia, Francia, Noruega, Argentina, Finlandia, Nueva Zelanda, Perú, Uruguay, Países Bajos, Dinamarca, Chile, Brasil, Rumania
Temáticas	“Circularity in mixed crops and livestock farming systems with emphasis on climate change mitigation and adaptation”
Presupuesto total	12.229.500 €
Concedido ES	930.000 €
Proyectos aprobados	9
Proyectos con MINECO/AEI	6

Nº	Acronimo y título del proyecto	Países participantes
1	CircAgric-GHG. Strategies for Circular Agriculture to reduce GHG emissions within and between farming systems across an agro-ecological gradient	Noruega, Kenia, España, Irlanda, Alemania, Italia, Reino Unido, Sudáfrica
2	ConnectFarms. Connecting sustainable agroecosystems and farming with circular bioeconomy and new technologies	Italia, Bélgica, Letonia, Estonia, España, Polonia, Turquía
3	DairyMix. Multi-criteria assessment, decision support and management tools for sustainable circular mixed farming systems for dairy production	Alemania, Irlanda, Italia, Polonia, Francia, Noruega, Bélgica, Argentina

4	INTEGRITY. Integrated crop-ruminant livestock systems as a strategy to increase nutrient circularity and promote sustainability in the context of climate change	Argentina, España, Finlandia, Reino Unido, Nueva Zelanda, Perú, Uruguay, Francia, Irlanda
5	MI BICYCLE. Mitigation and adaptation through better biomass cycling in crop livestock systems of north and western Europe	Países Bajos, Dinamarca, Reino Unido, Francia
6	PROENV. Balancing production and environment	Dinamarca, Noruega, España, Italia
7	ReLive. Back to the Future: reintegrating land and livestock for greenhouse gas mitigation and circularity	Irlanda, Francia, Países Bajos, Alemania, España, Finlandia, Polonia, Estonia, Nueva Zelanda, Chile
8	SENSE. Synergies in integrated systems: Improving resource use efficiency while mitigating GHG emissions through well-informed decisions about circularity	Reino Unido, Países Bajos, Alemania, Italia, Brasil, Argentina, Uruguay
9	Solution4Farming. Solutions for GHGs emissions mitigation for the mixed farming systems across different European climates	Rumania, Polonia, España, Finlandia

CONVOCATORIA NACIONAL PCI 2021

PROYECTO 1 CircAgric-GHG. Strategies for Circular Agriculture to reduce GHG emissions within and between farming systems across an agro-ecological gradient

Over the past decades, European farms have trended towards specialisation and high per ha yields, but have become increasingly dependent on external inputs to compensate for declining recycling of nutrients. Meanwhile, farms in sub-Saharan Africa less specialized, have low inputs and yields and much higher vulnerability to climate change compared with European farms. More efficient (re)cycling of resources (nutrients, water, energy and land) across the agri-food sector and enhanced resilience is imperative to deliver food security whilst respecting ecological boundaries and rural livelihoods. In Europe, recoupling (direct and/or remote) of livestock and crop systems could play an important role in more efficient (re)cycling of resources across livestock and crops, and food value chains. In Africa, integrating sustainability and resilience objectives with enhanced food security could avoid some of the trade-offs currently experienced in Europe (e.g., high GHG emissions and N pollution). CircAgric-GHG will draw upon state-of-the-art knowledge, research methods and models to assess how circular practices can deliver sustainable food systems. Using farm typologies as a baseline, the extent of existing circular practice implementation will be evaluated. Promising practices to enhance circularity will be proposed across typologies and agro-ecological zones. High-resolution modelling of resource cycling and GHG emissions at farm and landscape level will be undertaken using process and farm models, with remote sensing of particularly uncertain land-use emission fluxes using novel satellite and drone technology. LCA will be applied to integrate modelling outputs into environmental footprints of food production, developing a novel framework for future projects. Farm-scale modelling will also inform a marginal abatement cost curve and a decision support tool, enabling robust comparison of GHG abatement efficacy of specific circular practices.

IP	Norwegian Institute of Bioeconomy Research NIBIO Grassland and livestock. Noruega
Socios	Kenia, España, Irlanda, Alemania, Italia, Reino Unido, Sudáfrica
Presupuesto total	1.716.000 €
Concedido ES	168.000 €

PROYECTO 2 ConnectFarms. Connecting sustainable agroecosystems and farming with circular bioeconomy and new technologies

The ConnectFarms project will develop approaches to increase in a sustainable way integrated crop-livestock production while benefiting soil resilience to stress and climate change. This will include an extensive toolbox for farmers and stakeholders addressing crop-livestock integration, precise farming, organic amendments, re-use of residues in circular economy and sustainability improvements of farming practices. A set of recommendations for sustainable strategies leading to environmentally sound production in compliance with the Farm to Fork strategy will be given. Emphasis will be given to new approaches based on science and nature-based solutions to manipulate crops, livestock, soil and plant microbial communities to maximize positive ecological interactions and enhance ecosystem services. The ConnectFarms concept is highly interdisciplinary and joins together expertise from many research fields, to achieve an integration of crop, livestock and ICT to obtain ecosystem services in agreement with the needs of sustainable agriculture. Partners will work in experimental sites in all partner countries – Bulgaria, Estonia, Italy, Lithuania, Poland, Spain and Turkey. Focused aspects of the project will concern: agriculture and soil fertility – crop and livestock – soil improvers, amendments and biochar for soil health – welfare and sustainability for animals – precision farming – life cycle and ecosystem services assessment – stakeholder involvement. The ambition of the project is to contribute to innovative strategic food systems by targeting enhanced agricultural technology, food processing and preservation innovation, environmental issues, and ultimately human health. ConnectFarms explores the interaction between arable crops, e.g. barley and pulses, with farm animals of high relevance, e.g. sheep and chicken. The connection is maintained through triangulation – crop becomes feed for animals, residues become amendments, amendments feed and boost crops and animals. The sustainable use of biochar is our keystone to improve both plant and animal farming in a circular economy approach.

IP	Consorzio Interuniversitario Nazionale per le Scienze Ambientali. Italia
Socios	Lituania, Bulgaria, Estonia, España, Polonia, Turquía
Presupuesto total	1.422.000 €
Concedido ES	172.800 €

PROYECTO 4 INTEGRITY. Integrated crop-ruminant livestock systems as a strategy to increase nutrient circularity and promote sustainability in the context of climate change

"INTEGRITY aims to evaluate alternative management of mixed crop-ruminant livestock systems to increase the potential increment of Carbon and Nutrient Circularity in diverse agro-climatic regions. Nine countries from three continents (America, Europe, and Oceania) are involved in this proposal. Different degrees of integration between the crops and livestock components of a system may have advantages or disadvantages, so trade-offs among economic (productivity, efficiency),

environmental (nutrient cycling, soil health, greenhouse gas (GHG) emissions), and social (work arduousness and organization, household networks) indicators will be identified. Gaps in knowledge regarding impacts of the integration need to be addressed to fully understand the mechanisms that reduce GHG emissions and/or increase soil C sequestration and nutrients (i.e. C, N) use efficiency in mixed production systems; and which would be the impact of proposed interventions with a broader and holistic perspective. These interventions will be specifically designed for each situation and will be evaluated experimentally to quantify their impact, not only through direct and specific effects but also in a broad sense addressing the circularity within the agricultural systems by different modelling tools. Standardized evaluation approaches and procedures across the different partners will allow direct comparison of the relative impact of new management alternatives. Stakeholders' involvement through the process will certainly help to focus on applicable new practices and facilitate their adoption by farmers. The conformed Low Carbon Livestock - Research Network, a regional platform involving countries from America and Europe created in 2020 and supported by the GRA, will strengthen the capacity-building opportunities for young researchers and enhance the result dissemination platform. Proposed activities within this project will be organized in 5 Work Packages (WP): WP1 will investigate different management practices at diverse agricultural systems to enhance nutrient circularity, production efficiency, and reduce C footprint; WP2 aims to identify the potential improvement of C footprint by increasing the inclusion of by-products in ruminants feeding programs; WP3 will evaluate the management of carbon circularity and climate change mitigation and adaptation in mixed crop-ruminant livestock systems through system approach assessment and Information and Communication Technology (ICT) (i.e. design of digital twins of farms based on combining sensor data and modelling that can help the decision-making process of stakeholders on the production chain of different mixed production systems). Also, this WP includes agent-based modelling to understand the decision-making process and other emergent properties of mixed crop-livestock production systems; WP4 will involve engagement with stakeholders, training, communication, and dissemination; WP5 project coordination. A particular characteristic of this proposal is the range of diverse production systems with different agro-climatic and socio-cultural characteristics that will allow observing differential responses of enhanced resource use efficiency and optimize nutrient circularity with the integration of the two systems components at different locations. This project involves cross-institutional and cross-disciplinary cooperation, which will be supported by the consortium's complementary scientific skills, and reinforce and expand a history of mutual cooperative research where new partners will be involved."

IP	National Institute of Agricultural Technology. Argentina
Socios	España, Finlandia, Reino Unido, Nueva Zelanda, Perú, Uruguay, Francia, Irlanda
Presupuesto total	2.268.000 €
Concedido ES	137.000 €

PROYECTO 6 PROENV. Balancing production and environment

The PROENV (balancing PROduction and ENVironment) project will have an interdisciplinary approach, with theoretical and practical components that build on existing knowledge but contain innovative developments. The theoretical component will consider the relative merits of the land spare and land share approaches to balancing production and ecosystem services. This will provide a theoretical framework for deciding whether for a particular region, the balance between production and other

ecosystem services is best achieved using a land spare, land share or a mixed approach. Such considerations are already relevant for policymakers and will become more so in the future, as they strive to maintain rural economies and employment while achieving prescribed reductions in GHG emissions and losses of nitrogen (N) to the air and water, and increasing biodiversity.

IP	Aarhus University. Dinamarca
Socios	Noruega, España, Italia
Presupuesto total	1.561.000 €
Concedido ES	167.000 €

PROYECTO 7 ReLive. Back to the Future: reintegrating land and livestock for greenhouse gas mitigation and circularity

"The widespread reintroduction of crops and livestock could make a major contribution to the development of the wider EU circular (agricultural) economy and contribute to sustainable growth, through the more effective recycling of materials and resources, the minimization of waste, and a reduction in external supplies of feed and synthetic fertilizers, with potential biodiversity, environmental and soil health benefits. However, this comes with significant challenges, including the potential for enhanced GHG emissions, particularly methane emissions, from enteric fermentation, land degradation due to over grazing and water pollution as well as the need to effectively substitute all/most inorganic fertilizers with organic manures. Organic amendments applied to land could conversely result in enhanced GHG emissions, particular nitrous oxide emissions, unless these are managed appropriately and the necessity to store large amounts of organic manures/wastes may also be problematic, given their links to environmental pollution and GHG emissions. Additional complications could arise due to associated modifications in land use, including a shift from a grass-based to a forage/alternative crop-based diet, altered grazing practices and increased competition between food and animal feed or the use of biogas or bioenergy crops. Another key issue is the economic consequences of reintroducing livestock and whether the necessary incentives are available for them to be taken up by farmers. Whilst mixed farming systems were previously common and economically viable, new developments will require them to be matched with current production and market conditions and the availability of suitable value chains and business models to ensure their long-term viability. To address this, we have assembled a multi-actor inter-disciplinary research team, with wide ranging expertise in the whole animal-crop supply chain and its environmental impact, which will take a holistic approach to the sustainable reintegration of livestock and cropping systems. Particular attention will be directed at livestock type and management (WP2), the appropriate use and storage of manures (WP2), crop choice, including direct grazing of crops and/or their residues, the use of afforestation/agroforestry (WP4) as an alternative grazing option and to increase soil carbon, as well as and how this information can be integrated into decision support tools for identifying the best options for farmers (WP5). Importantly, we will assess the use of alternative livestock dietary feed sources that have the potential to reduce enteric methane production coupled with novel investigations on a mechanistic assessment of the ability of soils to oxidise methane, and how this information can be utilized to improve whole farm methane budgets. Critical to this approach is an ability to monitor and validate any management options (WP6) on the net GHG budgets and their economic consequences (WP7), as well as the effective dissemination of the results for practical implementation by policy makers, stakeholders, farmers and other end users (WP8). Stakeholder engagement will play an important role in realising the benefits of any modifications that are identified

to increase circularity whilst also minimizing the environmental footprint of mixed farming systems. All this will feed into a project-specific data repository (WP1) and, together with the identification of management options that avoid the negative impacts of livestock integration, will have benefits beyond the lifetime of the project."

IP	University College Dublin UCD School of Biology and Environmental Science and UCD Earth Institute. Irlanda
Socios	Francia, Países Bajos, Alemania, España, Finlandia, Polonia, Estonia, Irlanda, Nueva Zelanda, Chile
Presupuesto total	2.531.000 €
Concedido ES	166.000 €

PROYECTO 9 Solution4Farming. Solutions for GHGs emissions mitigation for the mixed farming systems across different European climates

Solution4Farming project aims to develop a solution based on measurement sensors and a decision support system to reduce GHGs emissions in mixed farming systems, through better utilization of livestock-plant utilization for production of fertilizers. Solution4Farming project include growth modules to get better control and on data measurements. The project also focuses on ICT solutions, LCA, and cost benefits. The core of Solution4Farming is a system approach involving the Solution4Farming experts in collaboration with selected stakeholders to perform a mapping of inputs and outputs at different stages of mixed farms that is based on a declared strong interaction among stakeholders. The path outlined for the identification of stakeholders is well designed, and also the gender dimension is adequately pruned. The equipment to be used within the project's scope has been previously developed and tested in different projects.

IP	Beia Consult International. Rumania
Socios	Polonia, España, Finlandia
Presupuesto total	995.000 €
Concedido ES	119.200 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2022

Países participantes	Austria, Bélgica, Dinamarca, Estonia, Finlandia, Francia, Alemania, Irlanda, Italia, Letonia, Lituania, Polonia, Rumania, España, Suecia, Turquía, Reino Unido
Temáticas	Agricultural genetic resources Agricultural practices and farm models Agrobiodiversity and territorial systems
Presupuesto total	8.026.000 €
Concedido ES	1.172.452 €
Proyectos aprobados	8
Proyectos con MINECO/AEI	5 (3 coordinados)

Nº	Acrónimo y título del proyecto	Países participantes
1	AgroBioConnect. Connections in the landscape. Role of landscape complexity in agroecosystem sustainability.	Polonia , Italia, Reino Unido, Finlandia, Dinamarca, Suecia
2	AppleBIOME. Microbiome and genomic analysis in apple germplasm towards broadening genetic resources to breed for resilient varieties	España , Italia, Francia, Polonia, Bélgica
3	CLEAR. Collaborative Landscape planning for Enhanced Agrobiodiversity and Resilience	Alemania , Francia, Reino Unido, Polonia
4	DIVERGRAPE. Understanding and quantifying the contribution of genetic components to the diversity of grapevine environmental response	España , Francia, Austria
5	IMPRESS. Improving agrobiodiversity for resilient pest control services across landscapes	Suecia , Alemania, Italia, Austria, Lituania
6	MineLandDiv. Mining allelic diversity of maize landraces for tolerance to abiotic and biotic stress	Francia , Italia, Bélgica, España, Turquía
7	Recobar. Recovering and Exploiting Old and New Barley Diversity for Future-Ready Agriculture	España , Finlandia, Turquía, Italia, Polonia, Estonia, Irlanda
8	WheatSecurity. Identification and sustainable deployment of wheat genetic diversity to enhance the resilience and security of the European food supply	Irlanda , Francia, Italia, España, Reino Unido, Dinamarca

CONVOCATORIA NACIONAL PCI 2022

PROYECTO 2 AppleBiome. Microbiome and genomic analysis in apple germplasm towards broadening genetic resources to breed for resilient varieties

Low agrobiodiversity and the reduced ability to respond to the increasing climate change-related stresses, are detrimental effects from the current high-input agriculture. Commercial apple orchards are a prime example of intensive pesticide and irrigation practices that counteract the EU's ambitions to reduce external inputs and reverse agrobiodiversity degradation by 2030. In this context, new breeding and management practices show high potential to break out of this vicious circle and allow the development of diverse and resilient agroecosystems that require less pesticides and irrigation. Breeding has been traditionally based on the phenotypic selection of segregating populations. In the last decades, molecular markers and genomic selection have been implemented in breeding schemes. Such tools have been mainly focused on genotype-trait associations. The plant-associated microbiome is long known for its vital contributions to crop performance. However, agricultural practices and breeding have paid little attention to directly regulate and employ host-beneficial microbial functions. AppleBIOME will investigate the combined action of host and microbiome genetics (holobiont approach) under high and low-input management practices to boost the breeding for resilient varieties. AppleBIOME relies in an exceptional germplasm resource representative of the broad genetic diversity of apple in Europe: «the Apple REFPOP». The Apple REFPOP was designed and established as an output of the EU

project FruitBreedomics and consists of 534 genotypes (accessions and progenies) planted in 2016 following the same experimental design in six diverse biogeographical regions in Europe (Belgium, France, Italy, Poland, Spain, and Switzerland) with a subset also being managed under low-input practices. The densely SNPgenotyped Apple REFPOP has been successfully used to evaluate genomic predictive abilities of quantitative agronomic traits considering genotype x environment interactions (GxE). AppleBIOME brings together the hosting institutions of the Apple REFPOP to add the management component into the evaluation of the genetic mechanisms for the response to (a)biotic stresses. First, at each location, we will acquire agronomic and disease related parameters (along with climatic data) for either of two management comparisons: high vs low pesticide and high vs low water input. Genome-wide association analysis (GWAS) and genomic prediction models will (i) identify genomic regions contributing to the stress response and (ii) estimate genomic predictive ability of the traits under environmental stress. Second, we will analyze the phyllosphere microbiome in the Apple REFPOP at each site and management practice and in commercial orchards. Microbe amplicon sequences will be analyzed to determine microbiome attributes such as diversity parameters, networks and key taxa that are host-regulated and involved in stress resilience. GWAS and deep learning (DL) predictive models will then be performed to identify new loci and candidate genes that regulate microbiome-mediate stress response. Resulting molecular markers and models will be evaluated together with breeders for their suitability for direct use in current breeding schemes. As a whole, we will build on knowledge of the holobiont functional diversity in apple orchards to exploit microbiome-mediated resistance. Finally, the knowledge gained will be disseminated to stakeholders, and discussion forums will be created to weight the advantages, disadvantages, and challenges and ensure the commercial uptake of the project outcomes. Via these close collaborations with the apple production industry and related dissemination and exploitation activities, AppleBIOME will promote the development of novel varieties that can better respond to climate change-relevant stresses and pave the way towards new agrobiodiversity-based breeding and cultivation systems.

IP	Centre for Research in Agricultural Genomics CSIC-IRTA-UAB-UB (CRAG) Rosaceae genetics and genomics. España
Socios	IRTA - Institute of Agrifood Research and Technology (España), Laimburg Research Centre (Italia), INRAE-IRHS (Francia), The National Institute of Horticultural Research (Polonia), Better3fruit (Bélgica), NUFRI (España), NOVADI SARL (Francia), Variety Innovation Consortium South Tyrol (Italia)
Presupuesto total	1.050.000 €
Concedido ES	268.140 € (Centre de Recerca en Agrigenomica CSIC-IRTA-UAB-UB (CRAG) 215.250 €) y (Institut de Recerca i Tecnologia Agroalimentaries-IRTA 52.890 €)

PROYECTO 4 DIVERGRAPE. Understanding and quantifying the contribution of genetic components to the diversity of grapevine environmental response

Winegrape production is one of the most economically important agrosystems in Europe. Grapevine has a large breadth of genetic diversity at the rootstock, variety, and clone levels. Unfortunately, very little of this diversity is currently utilized and its potential role in abiotic stress response has not been properly quantified. This leaves growers with the open-question of which is the best tool(s) to adapt their vineyards to specific environmental challenges (e.g. heatwaves, drought, waterlogging,

etc). At the scientific level, it is essential to understand the genetic plasticity of rootstocks, varieties and clones (and their interactions) to further adapt and improve the current planting material and to preserve the genetic diversity of grape varieties used across Europe. Standards for physiological traits need to be defined, and the influence of the diverse genetic backgrounds to the value and flexibility of these traits under different environmental conditions needs to be understood. With this in mind, project DiverGrape has been designed including partners from four European countries with varying environmental and vineyard conditions. The partnership will exchange pre-doctoral and postdoc researchers using a standardized methodological approach based on both eco-physiology and metabolomics tools to quantify the contribution to environmental response of: i) clonal variation within given local varieties, ii) rootstock material for a given variety and iii) the interaction between rootstock and scion. Taking advantage of existing vineyards with a variety of genetic material located in different European viticulture areas, the partnership will quantify how environment drives grapevine plasticity to specific climates. At the end of the project execution, we plan that 3 Practice Abstracts will be developed including: i) a farmer guide on how to select rootstocks genotypes for adapting the main grapevine cultivars to climate change, ii) the clonal diversity contributions to the scion responses to environmental stress and iii) options to modulate vine adaptation and grape and wine composition depending on the rootstock x scion interactions. Therefore, the results obtained through project DiverGrape will provide grape growers with the knowledge to optimize the existing grapevine genetic diversity in order to adapt their vineyards to more extreme climate situations.

IP	Agencia Estatal Consejo Superior de Investigaciones Científicas- CSIC. España
Socios	INRAE (Francia), University of Natural Resources and Life Sciences, Vienna (Austria)
Presupuesto total	816.000 €
Concedido ES	261.990 €

PROYECTO 6 MineLandDiv. Mining allelic diversity of maize landraces for tolerance to abiotic and biotic stress

The core of the project is the study of up to hundred three-generation families in five European countries (Norway, Estonia, UK, Romania and Spain) over a two-year period, across different spaces online and offline, using a breadth of qualitative and participatory methods. In addition, we will do secondary analysis of longitudinal quantitative data across European countries.

IP	Institut National de Recherche Agronomique et de l'Environnement (INRAE) Biology and Plant Breeding. Francia
Socios	CREA Consiglio per la Ricerca in Agricoltura e l'Analisi dell'Economia Agraria (Italia), UCLouvain (Bélgica), ALMA MATER STUDIORUM - Università di Bologna (Italia), Mediterranea University of Reggio Calabria (Italia), Bati Akdeniz Agricultural Research Institute (Turquía), Maize Research Institute (Turquía), Consejo Superior de Investigaciones Científicas-CSIC (España)
Presupuesto total	1.665.000 €
Concedido ES	187.083 €

PROYECTO 7 Recobar. Recovering and Exploiting Old and New Barley Diversity for Future-Ready Agriculture

Barley is one of the main crops in Europe regarding cultivated area, economic output and agroecological impact. Barley success relies on an extraordinary genetic diversity that allowed its adaptation to environments far removed geographically and climatically from its centre of origin. However, future breeding must respond to the sum of challenges posed by a changing climate, increasing resource limitation, and the societal mandate for sustainable production and environment-aware agriculture. Plant scientists must rethink the processes that shaped crop adaptation, harness the wealth of scientific knowledge generated during the genomic revolution, and re-start a data-driven exploitation of genetic diversity to harness new diversity based on knowledge acquired. This project builds on a rich catalogue of germplasm, a variety of approaches addressing the use of barley diversity in novel ways, and a solid foundation of previous knowledge (genotypic, phenotypic and functional) built during past collaborations. We propose a variety of approaches to broaden barley's genetic base and its impact at different scales: exploration of the wide diversity harboured by old varieties and landraces for adaptation to shifting climates, discovery and deployment of genes affecting key traits, exploration of targeted modification of known genes, improvement of functional crop growth models applied to genomic prediction with newly unravelled genetic diversity, and evaluation of soil microbiota diversity dynamics in relation to barley diversity. The project addresses the following challenges: Harnessing extant barley diversity to expand the crop genetic base. Genetic diversity lost due to modern breeding will be explored. The potential for direct use of landraces from the Mediterranean basin, Nordic-Baltic region, and European legacy cultivars in low input agriculture will be studied by field testing of mini-core collections. Best accessions will be promoted for pre-breeding. Suitability of barley lines with modified phenology for shifting agroecosystems. Double cropping is already practised in Europe, but can be further optimised with the development of short season winter cereal crops, opening more options for crop rotations, promoting more resilient agroecosystems. The project will study a selection of already developed introgression lines after a worldwide exploration of germplasm, enriching the phenology responses of elite germplasm. These activities will be disseminated to stakeholders like farmer associations and breeding companies. Mining new traits and QTL for tolerance to abiotic stresses with new and old diversity. The project will work with a variety of plant materials already developed by consortium partners to improve barley for responses to drought, waterlogging, high temperature, low N, lodging. Landrace and legacy germplasm will be tested for high temperature and waterlogging stresses, using state-of-the-art phenotyping method, and root phenotyping of outstanding genotypes. Barley ideotyping for future agroecosystems. The most cost-effective way to test plant innovations are model-aided approaches. Models must become truly functional to become predictive tools. New models for simulation of biotic and abiotic stress impacts in barley growth will be developed. Models will be used to extend GP under climate change scenarios and genotypic responses to shifting agroecosystems, and to identify - using data from the germplasm evaluation tasks - region-specific breeding toolkits. Rhizosphere microbiota associations with crop diversity and environmental conditions. Microbiota composition responds to environmental conditions, crop management and specific cultivar. Plant domestication and modern breeding have impacted on the composition and functions of the rhizosphere microbiota. Soil microbiomics, and AMF colonisation will be explored in field trials of selected cultivars with different breeding histories, under a variety of environments.

IP	Agencia Estatal Consejo Superior de Investigaciones Científicas- CSIC. España
Socios	University of Helsinki (Finlandia), University of Cukurova (Turquía), University of Milano (Italia), Council for agricultural research and economics (Italia), University of Silesia in Katowice (Polonia), University of Tartu (Estonia), Natural Resources Institute (Finlandia), University College Dublin (Finlandia)
Presupuesto total	1.755.000 €
Concedido ES	267.279 €

PROYECTO 8 WheatSecurity. Identification and sustainable deployment of wheat genetic diversity to enhance the resilience and security of the European food supply

Professor Doohan's project, 'Identification and sustainable deployment of wheat genetic diversity to enhance the resilience and security of the European food supply,' will harness genetic resources and agrobiodiversity in order to increase the resilience and sustainability of wheat production in biogeographically and climatically diverse zones across the EU. The team will cultivate diverse germplasm panels in sites across Europe under sustainable cultivation conditions and will assess agronomic performance, quality, abiotic and biotic stress resistance/tolerance, as well as interaction with microbial ecosystem components. The resilience of diverse wheat varieties to different environmental conditions, and multiple stress responses, will be assessed and demonstrated to end users (farmers, breeders, processors, policy makers). Grain nutritional quality and industrial processing quality will be assessed. These studies will enhance our understanding of the resilience of different wheat varieties, and guide the development of cultivation practices adapted to specific environmental niches. This research will also demonstrate how to rapidly expedite the development of cultivars imbued with morpho-physiological features that meet the EU Green Deal ecological objectives. WheatSecurity will improve understanding of ecosystem functions and enhance our ability to increase the functional genetic diversity base of wheat, thereby enhancing the sustainability of Europe's food production systems.

IP	University College Dublin. Irlanda
Socios	BIOGER INRAE (Francia), Council for Agricultural Research and Economics (Italia), GDEC INRAE (Francia), Alma Mater Studiorum - Università di Bologna (Italia), Universitat de Barcelona (España), Universidad de Córdoba (España), The James Hutton Institute (Reino Unido), Teagasc (Irlanda), University of Copenhagen (Dinamarca), CropBiome Limited (Irlanda), KWS Momont (Francia), SECOBRA Recherches (Francia), UE PHACC INRAE (Francia)
Presupuesto total	2.110.000 €
Concedido ES	186.960 € (Universidad de Córdoba 93.480 €) y (Universidad de Barcelona 93.480 €)

SusAn-European Research Area on Sustainable Animal Production Systems

El sector de producción animal constituye una parte importante de la economía agrícola de Europa y desempeña un papel esencial en la provisión de productos de alta calidad para los sus ciudadanos. Sin embargo, se trata de un sector muy complejo, con diferentes especies cultivadas en sistemas de producción extensivos, semi-intensivos o intensivos que utilizan múltiples recursos para producir una amplia gama de productos animales y otros servicios. Al mismo tiempo, también enfrenta muchos desafíos, incluyendo el aumento de la demanda mundial de alimentos, el cambio climático, la competencia por los recursos naturales o la volatilidad económica. El alcance de SusAn se ha desarrollado bajo el Grupo de Trabajo Colaborativo de SCAR sobre Producción Animal Sostenible (CWG-SAP). Las organizaciones participantes, provenientes de 23 países europeos, tienen como objetivo organizar una convocatoria cofinanciada seguida de otras actividades conjuntas, incluido el desarrollo de una Agenda de Investigación e Innovación Estratégica Común sobre Producción Animal Sostenible.

Socios: **Alemania (Federal Agency for Agriculture and Food (BLE)**, Austria (Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW), Bélgica (Flanders Region (Department of Economy, Science and Innovation / Flanders Innovation & Entrepreneurship) (EWI / VLAIO), Flanders Region (Department of Economy, Science and Innovation / Flanders Innovation & Entrepreneurship) (EWI / VLAIO), Fund for Subsidiary Economic and Innovation (Hermesfond), Institute for Agricultural and Fisheries Research (EV-ILVO), Public Service of Wallonia (SPW), República Checa (Ministry of Agriculture, Department of Research, Education and Advisory Services (MZE), Dinamarca (Danish AgriFish Agency (DAFA), Estonia (Ministry of Rural Affairs (MEM), Finlandia (Ministry of Agriculture and Forestry (MMM), Francia (National Institute for Agricultural Research (INRA), National Research Agency (ANR), Alemania (Federal Ministry of Food and Agriculture (BMEL), Project Management Juelich / Research Centre Juelich (PTJ/FZJ), Grecia (Hellenic Agricultural Organisation (HAO-DEMETER), Irlanda (Agriculture and Food Development Authority (Teagasc), DEPARTMENT OF AGRICULTURE, FOOD AND THE MARINE (DAFF), Italia (Ministry of Agricultural food and Forestry Policies (MIPAAF), Ministry of Health (MOH/MDS), Letonia (State Education Development Agency (VIAA), Lituania (Lithuanian University of Health Sciences (LUHS), Ministry of Agriculture of the Republic of Lithuania (ZUM), Países Bajos (Ministry of Economic Affairs (MinEZ/MinEA), Netherlands Organisation for Scientific Research (NWO), Noruega (Research Council of Norway (RCN), Polonia (National Centre for Research and Development (NCBiR), Portugal (Foundation for Science and Technology (FCT), Eslovaquia (Ministry of Agriculture and Rural Development of the Slovak Republic (MPRV SR), Slovak Academy of Science (SAS/SAV), Eslovenia (Ministry of Agriculture and Environment (MKGP), **España (Fundación Vasca para la Seguridad Agroalimentaria (ELIKA), Centro para el Desarrollo Tecnológico Industrial (CDTI), Agencia Estatal de Investigación-Ministerio de Economía y Competitividad (AEI-MINECO), Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria (INIA)**, Suecia (Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (FORMAS), Turquía (Ministry of Food, Agriculture and Livestock (GDAR), The Scientific and Technological Research Council of Turkey (TUBITAK), Reino Unido (Biotechnology and Biological Sciences Research Council (BBSRC), Department for Environment, Food and Rural Affairs (DEFRA).

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales: 1 (2016)

Participación de la AEI en convocatorias conjuntas: 1 (2016)

CONVOCATORIA CONJUNTA 2017

Países participantes	Polonia, España, Eslovaquia, Reino Unido, Austria, Alemania, Italia, Dinamarca, Estonia, Bélgica, Finlandia, Turquía, Francia, Eslovenia, Portugal, Lituania, Países Bajos, Irlanda, Suecia, Noruega, Letonia
Temáticas	‘Economy’: Improve the productivity, resilience and competitiveness of European Animal Production; ‘Environment’: Improve and manage resource use to reduce waste and enhance the environmental sustainability of European animal production; ‘Society’: Improve on-farm practices to enhance consumer acceptability and address societal challenges associated with animal welfare, product quality and safety, biodiversity and provision of ecosystem services
Presupuesto total	15.905.000 €
Presupuesto ES	509.999 €
Proyectos aprobados	14
Proyectos con MINECO/AEI	4 (1 coordinado)

Nº	Acrónimo y título del proyecto	Países participantes
1	AnimalFuture. Steering Animal Production Systems towards Sustainable Future	Francia, Austria, Alemania, España, Reino Unido, Portugal, Países Bajos
2	BPRACTICES. New indicators and on-farm practices to improve honeybee health in the Aetina tumida era in Europe	Italia, Austria, Eslovenia, España, Turquía, Estados Unidos
3	EcoLamb. Holistic Production to Reduce the Ecological Footprint of Meat	Turquía, Alemania, Italia, Portugal, Eslovenia, España
4	FreeWalk. Develop economic sound free walk farming systems elevating animal welfare, health and manure quality, while being appreciated by society	Eslovenia, Austria, Alemania, Israel, Italia, Países Bajos, Noruega, Eslovaquia, Suecia, Estados Unidos
5	PEGaSus. Phosphorus efficiency in Gallus gallus and Sus scrofa: Bridging the gaps in the phosphorus value chain	Alemania, Dinamarca, Italia, Suecia, Reino Unido
6	PigSys. Improving pig system performance through a whole system approach	Alemania, Dinamarca, Francia, Letonia, Suecia, Reino Unido
7	ReDiverse. Biodiversity within and between European Red dairy breeds – conservation through utilization	Alemania, Dinamarca, Alemania, Letonia, Lituania, Países Bajos, Noruega, Polonia, Suecia
8	SUSTAINBEEF. Co-definition and evaluation of SUSTAINable BEEF farming systems based on resources non edible by humans	Bélgica, Francia, Alemania, Irlanda, Italia
9	SuSI. Sustainability in pork production with immunocastration	Alemania, Bélgica, Dinamarca, Francia, Países Bajos, Polonia, Eslovenia

10	SusCatt. Increasing productivity, resource efficiency and product quality to increase the economic competitiveness of forage and grazing based cattle production systems	Noruega, Alemania, Italia, Polonia, Suecia, Reino Unido
	SusPig. Sustainability of pig production through improved feed efficiency	España, Francia, Noruega, Suecia, Reino Unido, Estados Unidos, Australia
12	SusPigSys. Sustainable pig production systems	Alemania, Austria, Finlandia, Italia, Países Bajos, Polonia, Reino Unido
13	SusSheP. Sustainable Sheep Production	Irlanda, Francia, Noruega, Reino Unido
14	SusTradeOff. Understanding trade-offs between health and efficiency to improve competitiveness and sustainability of animal production by breeding and management	Francia, Dinamarca, Países Bajos, Reino Unido

CONVOCATORIA NACIONAL APCIN 2017

PROYECTO 1 AnimalFuture. Steering Animal Production Systems towards Sustainable Future

Animal-Future will design strategies for assessing and enhancing the sustainability of animal production systems (APS). Main objectives are (i) Assess the multi-dimensional consequences of innovations on benefits (cash flow, income, jobs, product quality and safety, ecosystem services etc.) and costs (use of scarce natural resources, health and welfare) of APS. (ii) Improve the capacity of European animal sector actors to facilitate sound changes based on a thorough understanding of mechanisms underlying trade-offs between benefits and costs. (iii) Provide guidance co-designed by scientists and animal production actors through which the latter can reinforce their innovation capacity.

IP	Institut National de la Recherche Agronomique, Francia
Socios	Francia (Institut de l'Elevage), Austria (Universitaet Klagenfurt), Alemania (Bayerische Landesanstalt fur Landwirtschaft), España (Centro de Investigación y Tecnología Agroalimentaria de Aragón) , Reino Unido (Scotland's Rural College), Portugal (Associação do Instituto Superior Técnico para a Investigação e Desenvolvimento), Países Bajos (Wageningen University)
Presupuesto total	1.243.000 €
Concedido ES	100.000 €

PROYECTO 2 BPRACTICES. New indicators and on-farm practices to improve honeybee health in the Aetina tumida era in Europe

This project aims to develop Good Beekeeping Practices adopting new clinical methods, and biomechanical and innovative biomolecular techniques respecting the natural behaviour of bees. The research activities will focus on developing new biosensors from honey to monitor SHB presence and PCR techniques to diagnose honeybee diseases from debris, in collaboration with the EURL for Honeybee Health. Another goal will be to accelerate and raise efficiency of the clinical

inspection of hives to detect SHB. At the apiary level, a bee-friendly management strategy will be developed to monitor and control honeybee diseases, protecting their health and avoiding the application of chemical treatments guaranteeing quality and safety of hive products.

IP	Instituto Zooprofilattico Sperimentale del Lazio e della Toscana M. Aleandri', Italia
Socios	Italia (Istituto Zooprofilattico Sperimentale delle Venezie), Austria (Austrian Agency for Health & Food Safety), Eslovenia (Agricultural Institute of Slovenia), España (Centro de Investigación Apícola y Agroambiental de Marchamola) , Turquía (University of Namik Kemal), Estados Unidos (Mississippi State University)
Presupuesto total	693.000 €
Concedido ES	93.999 €

PROYECTO 3 EcoLamb. Holistic Production to Reduce the Ecological Footprint of Meat

In order to enhance the profitability and competitiveness of the European sheep production sector, its capacity to sustain future challenges of climate change, resource use, food security and socially acceptable food production needs to be assessed. This project will assess the sustainability of diverse European sheep production systems, focusing on ecological footprint, animal welfare aspects and nutrition value of lamb meat. Ecologically sound and nutritionally superior lamb meat (EcoLamb) will be branded and marketed throughout Europe as state-of-the-art meat production technology. Direct linkage between animal welfare, meat quality and pharmaceutical use will be determined using innovative Precision Farming techniques. The project will provide a toolbox of recommendations for productive sheep farm management, supply chain, and marketing on how to improve the acceptability of lamb meat by consumers.

IP	RR Research and Development, Turquía
Socios	Alemania (Institute of Stuttgart), Italia (Turin University), Portugal (Mountain Research Centre), Eslovenia (Univerza V Novi Gorici), España (Instituto Tecnológico Agrario de Castilla y León, Fundación Centro Tecnológico da Carne, Servicio Regional de Investigación y Desarrollo Agroalimentario del Principado de Asturias)
Presupuesto total	1.041.000 €
Concedido ES	98.000 € + 96.000 € + 98.000 = 292.000 €

PROYECTO 11 SusPig. Sustainability of pig production through improved feed efficiency

Our long-term goal is to enhance sustainability of European pig production through improved feed efficiency at different scales. The supporting objectives of this goal are to: 1. Develop tools to evaluate the consequence of improved feed efficiency for behavior, physiology and immunological functions that can be used to improve robustness through genetic selection; 2. Evaluate if improved feed efficiency and animal robustness can be sustained with more reliance on local feed resources and feedstuff co-products or if a different type of animal is required; 3. Evaluate the environmental and social impact, and economic viability of improved feed efficiency on local feed

resources and feedstuff co-products; 4. Based on the obtained results, to develop future sustainable pig production systems.

IP	Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria, España
Socios	España (Instituto Tecnológico Agrario de Castilla y León - ITACYL), Francia (Institut national de la recherche agronomique and Institut du Porc), Noruega (Norges miljø- og biovitenskapelige universitet), Suecia (Swedish University of Agricultural Sciences), Reino Unido (Newcastle University), Estados Unidos (Iowa State University), Australia (University of New England)
Presupuesto total	956.000 €
Concedido ES	24.000 €

ERA CoBioTech -Cofund on Biotechnologies

La ERA-NET Cofund on BioTechnologies (CoBioTech) tiene como objetivos utilizar mejor las sinergias entre los mecanismos actuales de financiación de la investigación en biotecnología en Europa, resaltar los beneficios de una economía basada en la biología para la sociedad, y mantener y fortalecer así el liderazgo mundial de Europa en Biotecnología moderna. La convocatoria cofinanciada por los países participantes y la CE se centró en la investigación aplicada en a) Biología sintética para diseñar y construir nuevas partes, dispositivos y sistemas biológicos; b) Biología de sistemas para la ingeniería metabólica y optimización de procesos biológicos; c) Identificación y uso de potenciales metabólicos de los datos genómicos; d) Enfoques químicos y biotecnológicos para transformar moléculas de base biológica en moléculas con alto valor añadido.

Al agrupar tres ERA-Nets predecesoras en el área de biotecnología, CoBioTech incrementa significativamente la financiación pública (volumen aproximado de las convocatorias de 30M€), intensifica la colaboración entre sectores y países relevantes y, por lo tanto, adelanta la I + D en biotecnología industrial, establece la biología de sistemas y biología sintética como impulsores tecnológicos en la biotecnología aplicada y aumenta el potencial de explotación a través de la participación activa de la industria.

Los pasos y medidas necesarios para alcanzar estos objetivos se han incluido en una Agenda Estratégica de Investigación e Innovación conjunta. Además, con el "Centro Europeo de Biotecnología", CoBioTech pone en marcha un concepto completamente nuevo, llegando a actores e interesados clave de múltiples áreas relacionadas con la biotecnología para alinear diferentes instrumentos estratégicos europeos con los objetivos del programa de biotecnología KET en Horizonte 2020, y para aumentar la sensibilización pública de la biotecnología para usos industriales. Finalmente, CoBioTech está implementando actividades de financiación adicionales sin cofinanciación de la CE, promoviendo la I + D en biotecnología industrial de acuerdo con la Agenda Estratégica y los resultados del "Centro Europeo de Biotecnología". En definitiva, CoBioTech proporciona a los interesados en biotecnología un apoyo personalizado en lo que respecta a información, comunicación, redes y financiación.

Socios: Coordinador: Alemania (Project Management Juelich / Research Centre Juelich (PTJ/FZJ); Argentina (Ministry of Science, Technology and Productive Innovation (MINCYT); Bélgica (Public Service of Wallonia (SPW); Estonia (Estonian Science Foundation (ETAG); Francia (National Research Agency (ANR), New Caledonia Economic Development Agency (ADECAL); Alemania (Agency for Renewable Resources (FNR), Federal Ministry of Education and Research (BMBF), Saxon State Ministry for Sciences and the Arts (SMWK); Israel (Ministry of Health (CSO-MOH); Italia (Ministry of Education, University and Research (MIUR); Letonia (State Education Development Agency (VIAA); Países Bajos (Netherlands Organisation for Scientific Research (NWO); Noruega (Research Council of Norway (RCN); Polonia (National Centre for Research and Development (NCBiR); Portugal (Foundation for Science and Technology (FCT); Rumanía (Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI); Rusia (Foundation for Assistance to Small Innovative Enterprises (FASIE); Eslovenia (Ministry of Education, Science, Culture and Sport (MESCS/MIZS); **España (Centro para el Desarrollo Tecnológico Industrial (CDTI), Agencia Estatal de Investigación (AEI);** Suiza (Federal Department of Economic Affairs, Education and Research (DEA), Swiss Innovation Agency

(Innosuisse); Turquía (The Scientific and Technological Research Council of Turkey (TUBITAK); Reino Unido (Biotechnology and Biological Sciences Research Council (BBSRC), Innovate UK (Innovate UK), The Technology Strategy Board (TSB).

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales: 2 (2016, 2018, 2019)

Participación de MINECO-AEI en convocatorias conjuntas: 3 (2016, 2018, 2019)

CONVOCATORIA CONJUNTA INTERNACIONAL 2016

Países participantes	Argentina, Bélgica, Francia, Alemania, Israel, Italia, Letonia, Países Bajos, Noruega, Polonia, Rumanía, Rusia, Eslovenia, España (AEI-MINECO, CDTI), Suiza, Turquía, Reino Unido
Temáticas	Synthetic biology Systems Biology Industrial Biotechnology
Presupuesto total	40.000.000 €
Presupuesto ES	1.631.000 €
Proyectos aprobados	22
Proyectos con MINECO/AEI	9 (5 coordinados)

Nº	Acrónimo y título del proyecto	Países participantes
1	RHODOLIVE. Biovalorization of Olive Mill Wastewater to Microbial Lipids and Other Products via Rhodotorula Glutinis Fermentation	Turquía , Eslovenia, España, Italia, Alemania, Letonia
2	CoolWine. Model-guided evolution for balanced attenuation of wine ethanol content by developing non-GMO yeast strains and communities	España , Noruega, Suecia, Alemania
3	MEMBrane. MEbrane Modulation for Bioprocess enhANcEment	Reino Unido , España, Alemania, Países Bajos, Turquía
4	BESTER. Bioprocesses for the optimized, integrated production of butyl esters from sustainable resources	Noruega , Alemania, Reino Unido, Francia
5	INDIE. Biotechnological production of sustainable indole	Países Bajos , Eslovenia, Alemania
6	SYNTHEROIDS. Synthetic Biology for Industrial Production of Steroids	España , Rusia, Noruega, Alemania
7	C1PRO. Microbial conversion of C1 to value-added products by integrated systems and synthetic biology	Noruega , Alemania, Francia, Eslovenia
8	HOMBIOCAT. Fabrication of hierarchically organized multi-functional heterogeneous biocatalysts for the modular synthesis of ω -amino acids from renewable feedstocks	España , Reino Unido, Alemania

9	TRALAMINOL. Enzyme platform for the synthesis of chiral aminoalcohols	Alemania, España, Francia, Reino Unido
10	WOOBADH. Environmentally-friendly bioadhesives from renewable resources	España, Francia, Eslovenia, Alemania
11	BIOMETCHEM. Sustainable Production of Added Value Chemicals from SynGas-derived Methanol Through Systems and Synthetic Biology Approaches	Reino Unido, Alemania, Francia
12	YOGURTDESIGN. Microbial community modeling for the production of 'designer' yogurt	Países Bajos, Alemania, Estonia, Dinamarca
13	MISSION. Streamlined Streptomyces cell factories for industrial production of valuable natural products	Alemania, Eslovenia, España
14	SUSPHIRE. Sustainable Bioproduction of Pheromones for Insect Pest Control in Agriculture	España, Reino Unido, Alemania, Eslovenia
15	COMRADES. Computation for Rational Design: From Lab to Production with Success	Países Bajos, Alemania, Bélgica
16	MERIT. MicroalgaE as Renewable Innovative green cell facTories	Alemania, Reino Unido, Países Bajos, Argentina
17	IRONPLUGNPLAY. Electric plug adapters for proteins: Activating iron-sulfur enzymes to fully exploit Nature's catalytic potential for biotechnology	Países Bajos, Francia, España
18	BIODIMET. Methyl Transferases for the Functional Diversification of Bioactives	Países Bajos, Alemania, Reino Unido, Israel, Argentina
19	HOTSOLUTE. Thermophilic bacterial and archaeal chassis for extremolyte production	Alemania, Reino Unido, Italia, Rusia, Sudáfrica
20	SUSTAINABLE CO-PRODUCTION. Tobacco as sustainable production platform of the natural biopolymer cyanophycin as co-product to oil and protein	Argentina, Alemania, Países Bajos, Italia
21	BESTBIOSURF.	Bélgica, Países Bajos, Argentina, Alemania, Reino Unido
22	SCALEAPP. Investigating large scale bioreactor effects in microbial application	Alemania, Bélgica, Francia, Estonia

CONVOCATORIA APCIN 2018

PROYECTO 1 RHODOLIVE. Biovalorization of Olive Mill Wastewater to Microbial Lipids and Other Products via Rhodotorula Glutinis Fermentation

The main objective of RHODOLIVE Project is to develop a sustainable bioprocess for Olive mill wastewater bioremediation with *R. glutinis* in order to produce high value-added bioproducts; carotenoids (with specific focus on β -Carotene), bioactive phenolic compounds (with specific focus on luteolin), lipids, and total biomass, as well as food products that will be produced with biomass and VCPs.

IP	Düzen Biological Sciences R&D and Production Company (DUZEN), Turquía
Socios	Eslovenia (National Institute of Chemistry), España (Asociación para la Investigación, Desarrollo e Innovación del sector Agroalimentario (AIDISA)) , Italia (The Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile (ENEA)), Alemania (Leuphana University of Lüneburg, University of Kassel (UniKassel)), Letonia (University of Latvia)
Presupuesto total	1.509.000 €
Concedido ES	137.000 €

PROYECTO 2 CoolWine. Model-guided evolution for balanced attenuation of wine ethanol content by developing non-GMO yeast strains and communities

Increasing temperature in the European wine producing regions is having a negative impact on this key sector. Climate change results in a lack of balance between technological and phenolic ripening of wine grapes and, as a consequence, alcohol increase in wines. We propose a two-track strategy to reduce ethanol yield during wine fermentation. Track 1: model-guided adaptive laboratory evolution of wine yeasts. Track 2: model-guided assembly of improved communities including *S. cerevisiae* as well as alternative yeast species.

IP	Instituto de Ciencias de la Vid y del Vino-Agencia Estatal Consejo Superior de Investigaciones Científicas (ICVV-CSIC), España
Socios	España (Universitat Rovira i Virgili, Bodegas Roda S.A.), Noruega (NTNU - Norwegian University of Science and Technology), Suecia (University of Gothenburg), Alemania (European Molecular Biology Laboratory)
Presupuesto total	1.104.000 €
Concedido ES	135.000 € + 115.000 € = 250.000 €

PROYECTO 3 MEMbrane. MEMbrane Modulation for Bioprocess enhancement

The aim of this project is to collaborate and validate at pilot scale engineered robust cell factories (yeast and *Propionibacterium*) that overcome existing toxicity challenges, improve efficiency and allow their effective commercialisation. The strategies developed within this project will be applicable across the sector to facilitate rational strain engineering with far-reaching benefits.

IP	Aston University, Reino Unido
Socios	Reino Unido (University of York), España (Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC), Lallemand) , Alemania (Forschungszentrum Jülich (FZJ)), Países Bajos (The University of Groningen (Groningen)), Turquía (Pakmaya (Pakmaya))
Presupuesto total	1.810.000 €
Concedido ES	150.000 €

PROYECTO 6 SYNTHEROIDS. Synthetic Biology for Industrial Production of Steroids

The central objective of Syntheroids is to develop an integrated production process for pharmaceutical steroids using Synthetic Biology and improved processing technology. To achieve this goal, the Syntheroids project has the following four specific objectives: - Omics data integration from steroid producing Actinobacteria as a source of Synthetic Biology targets for productive strain evolution; -Creating genetically engineered bacterial strains capable of producing innovative C22-steroid precursors; - Reduce or eliminate end-product inhibition by mutagenesis, genetic engineering and process optimization; -Integrate up- and downstream processes for an eco-friendly bioconversion.

IP	Asociación de Investigación (INBIOTEC) Instituto de Biotecnología de León, España
Socios	España (Bionice), Rusia (Pharmins Ltd), Noruega (Sintef Materials and Chemistry), Alemania (TU Dortmund)
Presupuesto total	1.745.000 €
Concedido ES	197.000 €

PROYECTO 8 HOMBIOCAT. Fabrication of hierarchically organized multi-functional heterogeneous biocatalysts for the modular synthesis of ω -amino acids from renewable feedstocks

In order to overcome the limitations of chemical synthesis catalyzed by enzymes, this proposal aims to assemble multi-enzyme systems at the nanoscale of solid and porous materials aided by protein scaffolds that guarantee the hierarchical and spatial organization of the functional modules. This immobilized multi-enzyme cascade will be utilized as heterogeneous multi-functional biocatalyst to transform renewable raw materials into ω -amino acids in one-pot and with in situ cofactor regeneration.

IP	CIC biomaGUNE, España
Socios	España (Bioassays), Reino Unido (University of Nottingham), Alemania (Ruhr-Universität Bochum)
Presupuesto total	980.000 €
Concedido ES	200.000 €

PROYECTO 9 TRALAMINOL. Enzyme platform for the synthesis of chiral aminoalcohols

The TRALAMINOL project will develop sustainable biotechnological processes for the synthesis of amino alcohols through a multi-disciplinary approach. The consortium assembles leading European research groups (Germany, UK, Spain, France) with different but complementary scientific and technological expertise (4 non-profit organizations, 1 SME, 1 large company). TRALAMINOL will focus on the development of a powerful one-pot two-step biocatalytic strategy based on only two classes of reaction types: The approach makes use of key enzymes that catalyze C-C bond formation followed by enzymatic amino transfer in highly controlled fashion by exploiting the enzymes' high chemo-, regio- and enantioselectivity, while operating under mild reaction conditions. The project will span TRL 3-7 by incorporating demonstration reactions at technical scale (up to 10L reactor volume) carried out by industrial partners.

IP	Technische Universität Darmstadt, Alemania
Socios	Alemania (BASF SE), España (Instituto de Química Avanzada de Cataluña-Agencia Estatal Consejo Superior de Investigaciones Científicas (IAQC-CSIC)) , Francia (Université Clermont Auvergne (UCA), CNRS, SIGMA Clermont), Reino Unido (University College London, PROZOMIX)
Presupuesto total	2.011.000 €
Concedido ES	150.000 €

PROYECTO 10 WOOBADH. Environmentally-friendly bioadhesives from renewable resources

This project aims to study the feasibility of replacing formaldehyde in wood adhesives by natural components derived from wood or other vegetable matter. The consortium will develop new bioadhesives which are able to provide a holistic solution to the current emissions challenges facing the wood-based composites industry. The proposed solution is focused on different modifications of polyphenols, namely lignin and tannins, for producing bioadhesives that do not contain formaldehyde in its formulation, eliminating in this way the emissions of volatile organic compounds (VOC). The substrates will be Kraft lignin, from the pulp and paper industry, hardwood Organosolv lignin, as well as mimosa, quebracho and chesnut tannins. Depending on the nature of the raw material, some substrates may need to be modified at different levels for increasing their reactivity. Chemical and enzymatic approaches will be applied to modify the substrates. Then, on the modified and unmodified materials novel reactions to produce the bioadhesives will be evaluated. The key aspect to obtain such bioadhesives is the system of hardening, without which any modification will be of no use.

IP	Universidade de Santiago de Compostela, España
Socios	Francia (Universite de Lorraine), Eslovenia (University of Ljubljana), Alemania (Albert Ludwig University of Freiburg, Fraunhofer ICT)
Presupuesto total	1.135.000 €
Concedido ES	200.000 €

PROYECTO 14 SUSPHIRE. Sustainable Bioproduction of Pheromones for Insect Pest Control in Agriculture

The aim of this project is to enable bio-based manufacturing of insect pheromones in plants and fungi for the sustainable control of insect pests of agriculture and horticulture. The long term aim is production of a living bio-dispenser but SUSPHIRE will produce several intermediate marketable products including pheromone-enriched biomass; bioproduced precursors that can be used to bypass unfavourable steps and reduce the cost of chemical synthesis; and enzymes to assist chemical synthesis of complex precursors. The introduction of these biotechnology approaches to pheromone production will expand the use of sex pheromones for sustainable pest control in agriculture, reducing its current environmental impact and providing sustainable manufacturing platforms.

IP	Agencia Estatal Consejo Superior de Investigaciones Científicas, España
Socios	España (Ecología y Protección Agrícola SL) , Reino Unido (Earlham Institute), Alemania (echnische Universität Darmstadt), Eslovenia (National Institute of Biology)
Presupuesto total	1.643.000 €
Concedido ES	197.000 €

PROYECTO 17 IRONPLUGNPLAY. Electric plug adapters for proteins: Activating iron-sulfur enzymes to fully exploit Nature's catalytic potential for biotechnology

Our Consortium has identified the A-type carriers that activate IspG enzymes with FeS clusters, and it is further known that supplying more electrons to IspG improves its function. We will improve the cellular distribution networks linked to IspG to help it produce isoprenoids more efficiently. We will then move our tests from the lab bench to an industrial setting by improving an efficient IspG-dependent fermentation process that manufactures fragrances and flavours from sustainable sources. Our objective is to activate and enhance the activities of FeS enzymes used for any microbial biosynthesis application. We will specifically target FeS enzymes that inflict productivity bottlenecks in a widely-used biosynthetic pathway in order to decrease the costs of a commercial fermentation process. We will do so by mining genomes for biological parts ("plug adapters", small proteins required for FeS enzyme activity), and subsequently incorporating them into production hosts.

IP	Delft Technical University, Países Bajos
Socios	Francia (CNRS), España (Instituto de Catalisis y Petroleoquimica-Agencia Estatal Consejo Superior de Investigaciones Científicas (ICP-CSIC) , Países Bajos (Isobionics BV)
Presupuesto total	850.000 €
Concedido ES	150.000 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2018

Países participantes	Argentina, Bélgica, Francia, Alemania, Israel, Italia, Letonia, Países Bajos, Noruega, Polonia, Rumanía, Rusia, Eslovenia, España, Suiza, Turquía, Reino Unido
Temáticas	Synthetic biology Systems Biology Industrial Biotechnology
Presupuesto total	15.300.000€
Presupuesto ES	600.000 €
Proyectos aprobados	5
Proyectos con AEI	4

Nº	Acrónimo y título del proyecto	Países participantes
1	MILIMO. Microbial conversion of lignin to monomers for bio-based plastics using synthetic biology	Reino Unido, España, Alemania y Francia.
2	MIPLACE. Microbial integration of plastics in the circular economy	Reino Unido, España, Alemania y Francia
3	SyCoLim. Synthetic microbial communities for the production of limonene derived products	Reino Unido, España, Alemania, Eslovenia
4	SYN BIOGAS. Synthetic landfill microbiomes for enhanced anaerobic digestion to biogas	Reino Unido, Alemania y Francia
5	SynConsor4Butanol. Sustainable Production of n-Butanol by Artificial Consortia Through Synthetic and Systems Biology Approaches	Reino Unido, España, Alemania y Francia

CONVOCATORIA APCIN 2019-2

PROYECTO 1 MILIMO. Microbial conversion of lignin to monomers for bio-based plastics using synthetic biology

The aim of the MILIMO project is to use metabolic engineering in *Rhodococcus jostii* RHA1 and *Pseudomonas putida* KT2440 to produce pyridine-dicarboxylic acid (PDCA) bioproducts from lignin feedstocks, in commercially viable yield. The project will use synthetic biology methods to enhance the rate of lignin oxidation in *Rhodococcus jostii* RHA1 and *Pseudomonas putida* KT2440, and synthetic biology will also be used to redesign the metabolic pathways of *Pseudomonas putida* KT2440 in order to optimise the production of PDCA monomers. If successful, the industrial partner in this Project, Biome Bioplastics Ltd (UK), will seek to develop new polyester bioplastics containing PDCA monomers.

IP	University of Warwick, HES, United Kingdom
Socios	University of Stuttgart, HES (Germany), Spanish National Research Council (CSIC), REC, (Spain), Institut National de la Recherche Agronomique (INRA), REC (France), nova-Institut GmbH, SME (Germany), Biome Technologies plc, SME (United Kingdom)
Presupuesto total	1.149.000 €
Concedido ES	150.000 €

PROYECTO 2 MIPLACE. Microbial integration of plastics in the circular economy

MIPLACE (Microbial Integration of Plastics in the Circular Economy) is a multidisciplinary project that aims to transform difficult-to-degrade plastics into molecules of industrial interest. For this purpose, MIPLACE will engineer microbial communities to make them degrade plastic waste (PET and PU) and use it as feedstock to transform it into high value-added molecules. These resulting substances will be used to produce an easily degradable material of commercial interest: bio-PU. MIPLACE has a strong focus on sustainability, as it will deliver a novel biotechnological approach to manage the recycling of a material that would have ended up as waste otherwise.

IP	Imperial College London, HES, United Kingdom
Socios	RWTH Aachen University, HES (Germany), Universität Leipzig, HES (Germany), SOPREMA, PRC (France), y University of Valencia, REC (Spain)
Presupuesto total	1.442.000 €
Concedido ES	149.714 €

PROYECTO 3 SyCoLim. Synthetic microbial communities for the production of limonene derived products

The aim of this project SyCoLim is to produce high-value chemicals (with applications as pharmaceuticals, medicines, fragrances, nutraceuticals or cosmetics) from waste raw materials (recycling glycerol, the by-product of biodiesel industries). In order to achieve this objective, synthetic microbial communities between yeast and bacteria will be created. These communities will be engineered to present advantages over monocultures, such as division of labour, higher adaptability and robustness or an expanded metabolic network. The bioprocess carried out by the best strains generated will be scaled up in industrial conditions in the facilities of our industrial partner. Therefore, the project will help the lab-to-market transition of the sustainable production of valuable compounds and will combine this with the exploration of novel synthetic biology and microbial communities' methodologies that have the potential to be applicable to other bioprocesses, thus facilitating the global transition towards the bioeconomy.

IP	Imperial College London (RLA) Surrey, HES, United Kingdom
Socios	Imperial College London (GBS), HES (United Kingdom), Charité University Medicine Berlin, HES (Germany), Consejo Superior de Investigaciones Científicas, REC (Spain), Acies Bio d.o.o., SME, (Slovenia)
Presupuesto total	1.119.000 €
Concedido ES	150.000 €

PROYECTO 5 SynConSor4Butanol. Sustainable Production of n-Butanol by Artificial Consortia Through Synthetic and Systems Biology Approaches

The SynConSor4Butanol project aims to the development of new "CO₂ free" Sustainable production and conversion processes based on lignocellulosic feedstocks. This will lead to a value-added product, n-butanol, useful in the chemical industry and as a biofuel. Ultimately, the developments made will lead to new sustainable industrial processes. Engineered synthetic consortia will be derived through a combination of interdisciplinary methodologies, synthetic biology, metabolic engineering, systems biology, and fermentation development.

IP	LISBP, INSA, University of Toulouse, HES, France
Socios	University of Nottingham, HES, (United Kingdom), Technical University of Munich, HES (Germany) y Universitat de Girona, HES (Spain)
Presupuesto total	1.210.000 €
Concedido ES	150.000 €

LEAP-AGRI – A long term EU-Africa research and innovation partnership on food and nutrition security and sustainable agriculture

LEAP-AGRI es una ERA-Net Cofund cuyo propósito es satisfacer el objetivo del diálogo Europa-África en Ciencia y Tecnología, para lanzar una iniciativa emblemática conjunta en una de sus áreas prioritarias: Seguridad alimentaria y nutricional y Agricultura sostenible (FNSSA). Este partenariado está aumentando las inversiones en investigación e innovación a través de mecanismos coordinados birregionales (UE-África), destinados a reducir la fragmentación. El proyecto tiene dos pilares, (i) la preparación e implementación de una convocatoria conjunta de propuestas para proyectos de I + D en colaboración entre los socios europeos y africanos que contribuirá a la coordinación y el aumento de las actividades conjuntas entre las instituciones de I+D y sus programas entre todos los Estados miembros de la Unión Europea (y países asociados) y países africanos. Reune los recursos financieros de 22 países por un total de más de 28 M€, incluida la participación de la CE; y (ii) la identificación y prueba de instrumentos innovadores para la alineación y colaboración en I+D+i; fortalecimiento de capacidades y desarrollo de infraestructuras; especialmente enfocados a la participación, junto con las agencias nacionales de investigación, de fundaciones, agencias de desarrollo, sector privado y organizaciones de la sociedad civil. Consultando a las comunidades de agentes relevantes, incluidos los gobiernos europeos y africanos, se definirá una Agenda de Investigación e Innovación Estratégica conjunta en el contexto de la Food and Nutrition Security and Sustainable Agriculture (FNSSA).

LEAP-AGRI se encuentra alineado con el alcance y los impactos esperados del Reto 2 de Horizonte 2020 / SFS 41 2016-2017 "Alianza UE-África de Investigación e Innovación sobre seguridad alimentaria y nutricional y agricultura sostenible" en todos los aspectos. Sobre la base de experiencias anteriores como ERAfrica, PRO-IntensAfrica y ERA-ARD, LEAP-AGRI se guiará por principios de asociación sólidos como la equidad, la gobernanza compartida y el compromiso a largo plazo con la asociación por parte de organizaciones que mantienen relaciones de confianza durante muchos años.

Socios: Coordinador Francia (National Research Agency (ANR), Argelia (Ministry of Higher Education and Scientific Research (MESRS), Bélgica (Belgian Federal Science Policy Office (BELSPO), National Fund for Scientific Research (FNRS), Research Foundation Flanders (FWO), Universite Catholique de Louvain (UCL), Burkina Faso (National Fund For Research And Innovation For Development (FONRID), Camerún (Ministry of Science Research and Innovation (MINRESI), Costa de Marfil (Ministry of Higher Education and Scientific Research (MESRS), Egipto (Ministry of Higher Education and Scientific Research (MHE SR), Finlandia (Academy of Finland (AKA), The University of Jyväskylä (JYU), Francia (Agence Française de Développement (AFD), Center for International Cooperation in Agronomic Research for Development (CIRAD), Research Institute for Development (IRD), Alemania (Federal Agency for Agriculture and Food (BLE), German Aerospace Center (DLR), Ghana (Council for Scientific and Industrial Research (CSIR-GH), Italia (Mediterranean Agronomic Institute of Bari (IAMB), Kenia (The Ministry of Education, Science and Technology (MoEST), Países Bajos (DLO Foundation (DLO), Ministry of Economic Affairs (MinEZ/MinEA), Netherlands Organisation for Scientific Research (NWO), Noruega (Research Council of Norway (RCN), Portugal (Foundation for Science and Technology (FCT), Senegal (Ministry of Scientific Research (MBERRS), Sudáfrica (Department of Science and Technology (DST), National Research Foundation (NRF), Nepal (Nepad), **España (Agencia Estatal de Investigación)**, Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria (INIA),

Túnez (Ministry of Higher Education and Scientific Research (MESR), Turquía (The Scientific and Technological Research Council of Turkey (TUBITAK), Uganda (Uganda National Council for Science and Technology (UNCST).

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número de convocatorias conjuntas internacionales: 1 (2017)

Participación de MINECO en convocatorias conjuntas: 1 (2017)

CONVOCATORIA CONJUNTA 2017

Países participantes	Alemania, Argelia, Bélgica, Burkina Faso, Camerún, Costa de Marfil, Egipto, Finlandia, Francia, Ghana, Kenia, Madagascar, Países Bajos, Noruega, Portugal, Senegal, Eslovenia, Sudáfrica, España, Túnez, Turquía, Uganda
Temáticas	1. Sustainable agricultural production intensification, in relation with social, economic and environmental aspects, including aquaculture 2. Population nutrition and health in relation with agriculture and food systems 3. Access to food, expansion and improvement of agricultural markets and trade, including local and territorial dynamics
Presupuesto total	22.700.000 €
Presupuesto ES	475.392 €
Proyectos aprobados	27
Proyectos con MINECO/AEI	4

Nº	Acrónimo y título del proyecto	Países participantes
1	WAGRINNOVA. Co-innovations across scales to enhance sustainable intensification, resilience, and food and nutritional security in water-managed agricultural systems in West Africa	Burkina Faso, Ghana, Países Bajos, Senegal, España , Francia, Italia
2	MUSBCEA PROJECT. Multi-sectoral strategy for brucellosis control in Eastern Africa	Alemania, Kenia, España, Uganda
3	PASUSI. Participatory Pathways to Sustainable Intensification. Innovation platforms to integrate leguminous crops and inoculants into small-scale agriculture and local value chains	Finlandia, Ghana, Noruega, Uganda
4	Pest-free fruit. Sustainable intensification of fruit production systems through innovative pest biocontrol technologies	Bélgica, Finlandia, Francia, Kenia, Senegal
5	EaTSANE. Education and Training for Sustainable Agriculture and Nutrition in East Africa	Alemania, Kenia, Países Bajos, Uganda
6	SPEAR. Empowering small-scale farmers (SPEAR): towards the SDGs through participative, innovative and sustainable livestock and poultry value chains (LPVC)	Ghana, Kenia, Noruega , Senegal, España

7	Project AFRICA. On-site air-to-fertilizer mini-plants relegated by sensor-based ICT technology to foster African agriculture	Alemania, Ghana, Países Bajos, Portugal, Sudáfrica, Uganda
8	STEP-UP. Sustainable Transition to Entrepreneurial Production in Agriculture through Upgrading	Alemania , Kenia, Países Bajos, Uganda
9	VITAPALM. Improving nutritional quality and stability of palm oil produced by African smallholders to fulfil African consumers' needs	Camerún, Francia, Alemania, Ghana
10	AFRICA-MILK. Promote ecological intensification and inclusive value chains for sustainable African milk sourcing	Burkina Faso, Francia , Kenia, Madagascar, Países Bajos, Senegal
11	RAMSESII. Roles of Agroforestry in sustainable intensification of small farMs and food Security for Socletles in West Africa	Burkina Faso, Francia , Países Bajos, Senegal
12	MeTVAC. Ecosmart Alternative Control Strategies against T. annulata and its Tick Vectors	Argelia, Egipto, Portugal, Turquía, Reino Unido
13	LEARN. Long term Europe-Africa Research Network	Camerún, Alemania, Países Bajos, Sudáfrica
14	CLISMABAN. Phenotyping the banana biodiversity to identify climate smart varieties with optimal market potential in Africa and Europe	Bélgica , Kenia, España, Uganda
15	NOURICITY. Partnerships for Healthy Diets and Nutrition in Urban African Food Systems – evidence and strategies	Ghana, Sudáfrica, Uganda, Alemania , Países Bajos
16	UniCARSSA. University-based Community Action Research for Increasing viability of cereal-legume value chains towards improved nutrition and livelihoods in sub-Sahara Africa	Kenia, Países Bajos, Portugal, Uganda
17	SERVInnov. Strengthening innovation support SERVices to enhance INNOVations for sustainable food production, ensuring well-being of rural populations and reducing environmental degradation and resource depletion	Burkina Faso, Camerún, Francia , Alemania, Madagascar
18	Food4Cities. Exploring food system transformations in rapidly changing African cities	Bélgica, Países Bajos, Sudáfrica, Uganda
19	SmallFishFood. Small Fish and Food Security: Towards innovative integration of fish in African food systems to improve nutrition	Alemania, Ghana, Kenia, Países Bajos, Noruega , Uganda
20	CASSANDRA. CASsava Sustainable Advancement & Nurturing by discovery of Disease Resistance Alleles	Bélgica, Francia, Kenia, Sudáfrica
21	OPTIBOV. Genetic characterization of cattle populations for optimized performance in African ecosystems	Egipto, Finlandia, Países Bajos, Portugal, Sudáfrica, Uganda
22	MuVHA. Multivalent inactivated vaccine against heartwater in Africa	Benín, Burkina Faso, Francia , Níger, Portugal, Sudáfrica

23	ATMA4FS. Agricultural Trade and Market Access for Food Security: Micro- and Macro-level Insights for Africa	Bélgica, Alemania, Ghana, Países Bajos, Senegal, Sudáfrica
	Ento-Economy. Enhancing food and nutrition security through promotion of edible insects value chain in Eastern Africa	Bélgica, Alemania, Kenia, Uganda
25	NUTRIFOODS. Innovative approaches to value-addition and commercialization of climate smart crops for enhanced food security and nutrition in Africa and beyond.	Finlandia, Kenia, Países Bajos, Sudáfrica, Uganda
	SESASA. A Social-Ecological System Approach towards a Sustainable Intensification of Agricultural Production in Sub-Saharan Africa	Burkina Faso, Francia, Alemania, Ghana
27	MycoSafe-South. European-African partnership for safe and efficient use of mycotoxin-mitigation strategies in sub-Saharan Africa	Austria, Bélgica , Etiopía, Kenia, Noruega, Sudáfrica, Reino Unido

CONVOCATORIA NACIONAL APCIN 2018

PROYECTO 1 WAGRINNOVA. Co-innovations across scales to enhance sustainable intensification, resilience, and food and nutritional security in water-managed agricultural systems in West Africa

WAGRINNOVA aims at deepening on why irrigated agriculture has not resulted in the expected impact in Western Sahel, and at setting the basis for changing this, particularly now that there is a revival of investment in rehabilitating abandoned or degraded irrigated land. A multi-scale approach and participatory action research will be used to characterize and evaluate comparatively current conditions, and to codify innovations and develop environmentally friendly and economically viable systems adapted to local conditions in innovation centers. These activities are accompanied by the development of required capacities, with special attention to the participation of young people and women in the opportunities offered by crop diversification and ICT tools. The consortium aims to change the development paradigm for irrigated and other water-managed agriculture in WA and identify environmentally friendly systems in WA and Spain.

IP	Instituto de Agricultura Sostenible- Agencia Estatal Consejo Superior de Investigaciones Científicas (IAS-CSIC), España
Socios	Burkina Faso ((Institut de l'Environnement et de Recherches Agricoles (INERA), Ghana ((Savannah Agricultural Research Institute (SARI), University for Development Studies (USD), Países Bajos (Wageningen University & Research (WUR), HKV Consultants Group), Senegal (Université Gaston Berger (UGB), Institut Sénégalais de Recherches Agricoles (ISRA), España (TRAGSA, Agencia Española de Cooperación Internacional para el Desarrollo (AECID), TEPRO Consultores Agrícolas), Francia (Centre de coopération internationale en recherche agronomique pour le développement (CIRAD), Italia (Mediterranean Agronomic Institute of Bari (CIHEAM-BARI), Níger (Comité Permanent Inter-Etats de Lutte contre la Sécheresse dans le Sahel)
Presupuesto total	1.105.880 €

Concedido ES 150.000 €

PROYECTO 2 MUSBCEA PROJECT. Multi-sectoral strategy for brucellosis control in Eastern Africa

This project will be on the pastoralist and agro-pastoralist livestock systems in these Eastern African countries. A multi-sectorial strategy linking academia, private sector and other partners is proposed to provide institutional, technical, biological and social answers to the effective control of brucellosis through vaccination in these contiguous countries. Provision of requisite equipment and supplies and training of professionals in animal and human health practices will build capacity for diagnosis, surveillance as well as research on the disease. The project will identify the different Brucellas infecting livestock and hence appropriate vaccines, raise awareness, biosafety and biosecurity & determine modalities for and start control.

IP	Makerere University, Uganda
Socios	Alemania (University of Hohenheim), Kenia (University of Nairobi), Uganda (Daktari,), España (Universidad Autónoma de Barcelona (UAB), Universidad de Navarra (UN), Centro de Investigación y Tecnología Agroalimentaria de Aragón (CITA), CZ Veterinaria)
Presupuesto total	38.733€
Concedido ES	104.356 € + 43.335 € = 147.691 €

PROYECTO 6 SPEAR. Empowering small-scale farmers (SPEAR): towards the SDGs through participative, innovative and sustainable livestock and poultry value chains (LPVC)

The overall objective of SPEAR is to improve the livelihoods of small scale livestock and poultry farmers by improving the productivity and quality of local livestock and poultry value chains (LPVCs) in Senegal, Ghana, and Kenya through research (e.g., identifying constraints and opportunities for sustainable production and consumption) and innovation (e.g., insect meals as an animal feed and new livestock and poultry based products with long shelf life) that will contribute to policy.

IP	NIBIO, Noruega
Socios	Ghana (Science and Technology Policy Research Institute (CSIR), Kenia (Kenya Agricultural & Livestock Research Organisation), Noruega, Senegal (Institute of Food Technology), España (Universidad Politécnica de Madrid (UPM))
Presupuesto total	640.567 €
Concedido ES	97.701 €

PROYECTO 14 CLISMABAN. Phenotyping the banana biodiversity to identify climate smart varieties with optimal market potential in Africa and Europe

The CLISMABAN (CLimate SMArt BANana) project aims to exploit the existing genetic resources and diversity of banana to select with input from all actors of the banana value chain (consumers, farmers, processors...) the varieties that will be resilient to the constraints that are threatening production because of climate change.

To address the increasing demand for food, this project will investigate the potential of some microorganisms to be beneficial for the soil and the productivity of the banana plant. The project will combine top-notch phenotyping technologies to identify the varieties from the collection that fit the established “cahier des charges” and to test the potential benefits of microorganisms on growth of the banana plant.

The laboratory obtained results will be brought to the field in different agroecological zones of Kenya, Uganda and Canary Islands for evaluation. Producers and researchers will be trained in different aspects of the banana research to market pipeline to stimulate a better utilization of scientific results in the development of agricultural systems that will meet both the increasing demand for food and the requirement for a sustainable use of land and water that can challenge the climatic evolutions.

IP	Ghent University, Bélgica
Socios	Bélgica (KU Leuven, University Liège), Kenia (Kenyatta University), Uganda (NARO), España (Instituto Canario de Investigaciones Agrarias)
Presupuesto total	730.000 €
Concedido ES	80.000 €

SUSFOOD2 Cofund - ERA-Net Cofund on Sustainable Food production and consumption

SUSFOOD2 es una ERA NET Cofund cuyo objetivo es fomentar la investigación y la innovación en el campo de los sistemas alimentarios sostenibles. Grandes desafíos influirán en las futuras cadenas alimentarias y requerirán soluciones innovadoras para: - responder a la mayor demanda de alimentos aumentando la producción de manera sostenible (Seguridad alimentaria y nutricional); - hacer un uso óptimo de los recursos y mitigar el impacto en el medio ambiente; - reducir las pérdidas y el desperdicio; - enfoque de la cadena alimentaria desde la producción hasta el consumo; - mejora de la competitividad de la empresa agroalimentaria europea. SUSFOOD2 se centra en la sostenibilidad en la producción de alimentos después de la cosecha, cubriendo campos relevantes desde las ciencias naturales a la ingeniería alimentaria y las ciencias sociales.

Sobre la base de los logros de su predecesor en el 7PM, SUSFOOD2 Cofund fortalece los esfuerzos para apoyar y financiar investigación excelente en el área de los alimentos mediante una convocatoria cofinanciada de más de 15 M€. El consorcio también tiene como objetivo implementar otras actividades adicionales en un triple enfoque: i) fortalecer la creación de redes y la transferencia de conocimientos entre distintos actores (mediante talleres, eventos, etc.) ii) actividades de financiación adicionales sin cofinanciación de la UE (preferiblemente vinculada a otras iniciativas) iii) implementación y mayor avance de la SUSFOOD SRA (desarrollada en el 7PM). Con el enfoque descrito, SUSFOOD2 contribuirá a: - maximizar el impacto de los recursos de la cooperación transnacional (materiales e intelectuales) e implementar las mejores prácticas; - utilizar sinergias y reducir la superposición interactuando con iniciativas (internacionales) relacionadas (especialmente JPIs HDHL y FACCE); - promover los resultados de la red SUSFOOD2 y los proyectos financiados a través de la difusión dirigida, compartiendo así una visión común y creando conciencia en el campo de la sostenibilidad alimentaria.

Socios: Coordinador: Alemania (Project Management Juelich / Research Centre Juelich (PTJ/FZJ); Bélgica (Flanders Region (Department of Economy, Science and Innovation / Flanders Innovation & Entrepreneurship) (EWI / VLAIO), Fund for Subsidiary Economic and Innovation (Hermesfond), Institute for Agricultural and Fisheries Research (EV-ILVO); Dinamarca (University of Copenhagen (UCPH); Estonia (Ministry of Rural Affairs (MEM); Finlandia (Ministry of Agriculture and Forestry (MMM), Natural Resources Institute Finland (Luke); Francia (National Research Agency (ANR), The French Network of Food Technology Institutes (ACTIA); Alemania (Federal Agency for Agriculture and Food (BLE), Federal Ministry of Education and Research (BMBF), Federal Ministry of Food and Agriculture (BMEL); Irlanda (Department of Agriculture, Food and the Marine (DAFF); Italia (Ministry of Agricultural food and Forestry Policies (MIPAAF), Ministry of Education, University and Research (MIUR); Lituania (Ministry of Agriculture of the Republic of Lithuania (ZUM); Noruega (Research Council of Norway (RCN); Rumanía (Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI); **España (Centro para el Desarrollo Tecnológico Industrial (CDTI), Instituto para la Competitividad Empresarial de Castilla y León (ICE), Agencia Estatal de Investigación (AEI), Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria (INIA); Suecia (Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (FORMAS); Reino Unido (Department for Environment, Food and Rural Affairs (DEFRA), Turquía (Ministry of Food, Agriculture and Livestock (GDAR).**

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales: 1 (2017)

Participación de MINECO-AEI en convocatorias conjuntas: 1 (2017)

CONVOCATORIA CONJUNTA INTERNACIONAL 2017

Países participantes	Alemania, Bélgica, Estonia, Finlandia, Francia, Irlanda, Italia, Lituania, Países Bajos, Noruega, Rumanía, España (MINECO, CDTI), Suecia, Turquía, Reino Unido
Temáticas	Topic 1: Innovation in food processing technologies and products; Topic 2: Providing added value, increased resource efficiency and reduction of waste in sustainable food systems; Topic 3: Understanding consumer behavior and food choices.
Presupuesto total	11,5M €
Presupuesto ES	584.941 €
Proyectos aprobados	12
Proyectos con MINECO/AEI	5 (2 coordinados)

Nº	Acrónimo y título del proyecto	Países participantes
1	BIOCARB-4-FOOD. Extraction and characterization of BIOactives and CARBohydrates from seaweeds and seagrasses FOR FOOD-related applications	España , Noruega, Irlanda, Alemania, Suecia
2	InProVe. Innovative Processing of Vegetables and Potato	Noruega , Bélgica, Suecia, Turquía, España
3	FUNBREW. Biotransformation of brewers' spent grain: increased functionality for novel food applications	Finlandia, Italia, Suecia
4	MEFPROC. Improving Sustainability in Food Processing using Moderate Electric Fields (MEF) for Process Intensification and Smart Processing	Irlanda , Reino Unido, Italia, España, Suecia, Alemania, Países Bajos
5	DISCOVERY. Disaggregation of conventional vegetable press cakes by novel techniques to receive new products and to increase the yield	Alemania , Lituania, Italia
6	ProSeaFood. Innovative processing of seaweed for novel, healthy food products and ingredients	Noruega , Suecia, Noruega, Islandia, España
7	AVARE. Adding value in resource effective food systems	Finlandia , Alemania, Suecia, Noruega
8	SPAREC. Sustainable Processing of Agrofood Residues to Elicitors and Chemicals	España , Noruega, Francia, Alemania
9	ImProVE. Innovative (pre)POmace Valorization process	Italia , Reino Unido, Irlanda, Estonia, Bélgica
10	SUSPUFA. Sustainable production of health-promoting n-3 LCPUFA using agro food industry by-products through microalgae	Países Bajos , Italia, Francia, España, Serbia

SUSCHOICE.

- 11** Towards Sustainable Food and Drink Choices among European Young Adults: Drivers, Barriers and Strategical Implications

Italia, Noruega, Suecia, Alemania, Rumanía

PLATEFORMS.

- 12** Sustainable Food Platforms: Enabling sustainable food practices through socio-technical innovation

Noruega, Irlanda, Suecia, Italia, Alemania

CONVOCATORIA APCIN 2018

PROYECTO 1 BIOCARB-4-FOOD. Extraction and characterization of BIOactives and CARBohydrates from seaweeds and seagrasses FOR FOOD-related applications

Carbohydrates are the most important source of food energy in the world being also key ingredients for food formulations, serving as thickeners, stabilizers and gelling agents or providing functional attributes. Functional and technological properties of polysaccharides depend on composition, structure and physicochemical characteristics, defined by source and extraction method employed. Seaweeds and seagrasses are a valuable and under-exploited source of carbohydrates, in particular cell wall polysaccharides (phycocolloids), and bioactive compounds such as polyphenols or carotenoids. Current industrial procedures used by European companies for carbohydrate extraction from seaweeds are highly inefficient in terms of processing time, water and energy requirements. Furthermore, the remaining biomass (generally much more than 50% of the initial material) is used as compost or simply disposed as organic waste. We propose to explore, in close collaboration with industry, novel, environmentally friendly and efficient extraction techniques (ultrasound, microwave, enzymes and their combinations), combined with the exploitation of the remaining biomass, rich in bioactive compounds, to sequentially obtain novel carbohydrate-based extracts and fibers (nanocellulose) from seaweeds and seagrasses. We will characterize structure, technological properties, toxicity and bioactivity of the fractions obtained from the various extraction technologies and a life cycle assessment (LCA) will also be conducted for proving the sustainability of the procedures. The project is expected to contribute to improved process efficiency, development of ingredients with high added value from already commercialized seaweed species and from under-exploited sources (seagrasses) which can positively impact in the competitiveness of seaweed, food and non-food companies at EU scale by a better valorization of raw materials.

IP	Instituto de Agroquímica y Tecnología de los Alimentos- Agencia Estatal Consejo Superior de Investigaciones Científicas (IATA-CSIC), España
Socios	Noruega (Nofima AS), Irlanda (Teagasc), Alemania (University of Hohenheim), Suecia (RISE Research Institutes of Sweden)
Presupuesto total	955.000 €
Concedido ES	150.000 €

PROYECTO 2 InProVe. Innovative Processing of Vegetables and Potato

InProVe aims at developing sustainable food production systems addressing novel, innovative technologies for processing of potatoes and vegetables (e.g. carrot, black salsify). The novel processing technologies, including 3 types of Microwave Heating and Pulsed Electric Field (PEF) will be utilized to demonstrate the potential to combine savings in energy and water consumption

and improvement of sensorial and nutritional quality. Pre-treatment using PEF, and Supercritical Fluid Extraction (SFE) will add value to underutilized by-products and waste. Mathematical modelling and innovative process design will be used to optimize the conditions for the innovative processing technologies, with the aim to improve energy and cost efficiency. Modelling will also be used to predict how process design influences the kinetics of nutrient retention, functional properties of treated foods, and how they contribute towards desired properties and quality. Additionally, innovative canning technology introducing modified can geometries will complement process design to further optimize energy efficiency. The global volume of vegetable food waste, not including agricultural waste, is estimated to 400 million tons/year. Valorization of unused biomass during processing thus enhances food production sustainability and contributes to a lower ecological impact. Waste will be reduced in the food supply chain by pre-treatment for stabilization and efficient extraction with minimal use of solvents, for recycling into the food chain. This will be investigated using the novel technologies PEF and SFE in combination with mild technologies like Low-oxygen milling and Dry-On-Water technology. The project will increase consumers' access to safe, healthy and convenient food through novel energy efficient processing techniques and improve utilization of raw material, by-products and waste, for which valorization strategies will be developed.

IP	Nofima, Noruega
Socios	Bélgica (Institute for agriculture, fisheries and food research (ILVO) and Greenyard Prepared (GP), Suecia (Research Institutes of Sweden), Noruega (HOFF SA, Fjordland AS), Turquía (Central Research Institute of Food and Feed Control (CRIFFC), Ankara University (AU), España (Mondragon Goi Eskola Politeknikoa Jose María Arizmendiarieta S Coop. (MGEP)
Presupuesto total	959.000 €
Concedido ES	87.000 €

PROYECTO 4 MEFPROC. Improving Sustainability in Food Processing using Moderate Electric Fields (MEF) for Process Intensification and Smart Processing

The adoption of novel sustainable, innovative processing solutions capable of producing microbiologically safe, high-quality products is essential for future economic growth and advancement in the European Food Industry. Novel mass transfer (e.g. extraction/impregnation) and volumetric heating (e.g. softening, coagulation, cooking or heat processing) operations based moderate electric field (MEF) application to foods represent an extremely energy efficient yet low cost group of applications which will have a definite role in this innovation revolution. Unlike high voltage pulsed electric fields (PEF), a technology which has received considerable attention in recent years, MEF involves a simpler more direct application of electrical current (i.e. no capacitors, pulse forming networks etc.) which is in the form of AC (vs. DC in PEF) at considerably lower field strengths (i.e. V/cm vs. kV/cm) than PEF. Further process intensifications and marginal gains are possible if MEF is applied in combination with ultrasound (US). The consortium consists of (1) leading European researchers in electro processing, ultrasound, process control and computer modelling (2) MEF and US equipment manufacturers (3) food manufacturers interested in utilising MEF with US for mass transfer and/or heating applications but prevented from doing so by gaps in knowledge. The overriding objective of the proposed project is to bridge gaps in scientific and technical knowledge currently preventing uptake of MEF and US by the food industry providing innovative and sustainable processing solutions for European Food Manufacturers in a

host of sectors. Key to achieving this aim will be the quantification and demonstration of yield gain and reduced energy consumption with MEF (and US enhanced MEF) compared to existing heating and/or mass transfer operations. To assist commercial uptake, dissemination and information generation to counteract non-technical barriers to uptake are other project aims.

IP	University College Dublin, Irlanda
Socios	Reino Unido (Sheffield Hallam University), Italia (Università degli studi di Salerno), España (Universidad Politécnica de Valencia) , Suecia (Lund University), Alemania (TU Berlin), Países Bajos (University of Amsterdam)
Presupuesto total	1.353.000 €
Concedido ES	100.000 €

PROYECTO 8 SPAREC. Sustainable Processing of Agrofood Residues to Elicitors and Chemicals

The core of the project is focused on proposing sustainable processes from both an environmental and an economical point of view, being involved into the concept of circular economy. It is designed using an integrated biorefinery concept, which ensures a comprehensive use of material and energetic resources, while food residues are valorized, reusing valuable components at the farm and at industrial level. Innovative solutions to waste streams in the wine and fruit juice industries are looked for in this project, extracting medium to high-added value mixtures that are or can be used as ingredients, chemicals and additives in the food; chemical and cosmetic industries; or as plant immune-system elicitors in green-houses and farms, reducing the need for agrochemicals. Processes to value-added products from wastes are physical, chemical, physicochemical, enzymatic and microbiologic, and products will be tested for their antioxidant and plant immune system elicitor capacity, this latter at lab, pilot-plant and field scales. Therefore, the proposed strategies will reduce waste treatment costs, while improving economics at the food industry and farm levels. The consortium is well balanced considering the complementary scientific and economic background, expertise and capabilities (fundamental and applied research, laboratory, demonstration and production capacities, and public/industrial participation) of the partners to successfully address the ambitious project objectives. It is formed by eight partners from four European countries and comprises two universities (Complutense University of Madrid –Spain- and Université de Picardie Jules Verne –France-), two public research institutions (National Institute of Agriculture and Food Research and Technology –Spain- and Paper and Fiber Research Institute –Norway-) and four SMEs (ASA Spezialenzyme –Germany, ELYS Conseil SASU –France-, Plant Response, and Pago de Carraovejas –Spain-).

IP	Universidad Complutense de Madrid (UCM), España
Socios	España (Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria (INIA), PlantResponse S.L., Pago de Carraovejas) , Noruega (RISE-PFI), Francia (Université de Picardie Jules Verne and ELYS Conseil SASU), Alemania (ASA Spezialenzyme GmbH)
Presupuesto total	1.176.316 €
Concedido ES	54.000 € + 94.000 € = 148.000 €

PROYECTO 10 SUSPUFA. Sustainable production of health-promoting n-3 LCPUFA using agro food industry by-products through microalgae

The objective of the SUSPUFA project, is to develop an innovative process for sustainable production of high value n-3 long chain polyunsaturated fatty acids (n-3 LCPUFA), using agro food industry by-products through microalgae cultivation and to evaluate the produced n-3 LCPUFAs as fish oil replacement for incorporation in food formulations. Scientific evidence points out that an appropriate intake of n-3 LCPUFA, widely known as ‘omega-3’, exhibits protective effect on human health. It is recognized that regular consumption of marine n-3 LCPUFA, eicosapentaenoic acid (20:5 n-3; EPA) and docosahexaenoic acid (22:6 n-3; DHA) reduces risk of chronic and inflammatory diseases. The use of fish and fish oil, as main sources of n-3 LCPUFA is increasingly becoming under pressure due to serious public health and ecological concerns. Fish oil quality is dependent on fish diet, it may contain harmful contamination and from sustainability perspective there is a growing issue related to the resilience of current n-3 LCPUFA sources. The main idea of this project is the production of n-3 LCPUFA through an algae oil production chain, which implies a sustainable approach related to the use of food waste and exploitation of marine n-3 LCPUFA sources. The development of an innovative, cost effective and sustainable process for the production of n-3 LCPUFA will increase the resilience of the current supply chain of n-3 LCPUFA and lower the final cost for these, presently expensive, ingredients, consequently allowing the wider use of n-3 LCPUFA in food consumer goods. Health-promoting algae n-3 LCPUFA produced in a sustainable way will be incorporated in formulations in order to create high added values food products intended to improve the health status of the consumer.

IP	Wageningen University and Research, Países Bajos
Socios	Italia (Università degli Studi di Napoli 'Federico II'); Francia (University Pierre et Marie Curie - Paris 6 and Inalve SAS); España (Universidad de Granada) ; Países Bajos (Nutricia Research B.V); Serbia (University Novi Sad)
Presupuesto total	633.392 €
Concedido ES	99.941 €

CORE Organic Cofund - Coordination of European Transnational Research in Organic Food and Farming Systems Cofund

La agricultura orgánica se considera una de las vías de desarrollo importantes hacia una agricultura y producción de alimentos más sostenibles. Este desarrollo depende y dependerá de una investigación e innovación continuas. CORE Organic comenzó en 2004 y ha evolucionado durante más de una década. El proyecto CORE Organic Cofund actualiza y consolida la serie de convocatorias de investigación transnacionales que apoyan un esfuerzo de investigación e innovación centrado y coordinado que cubra los desafíos más importantes a lo largo de las cadenas de valor orgánicas, por ejemplo: aumentar el potencial de producción orgánica, potenciando la eficiencia de los recursos, y mejorando el bienestar animal. Además, esta investigación e innovación juega un papel clave en la adaptación a las nuevas regulaciones de la UE sobre agricultura orgánica. En CORE Organic Cofund participan 25 socios de 19 países.

Socios: Coordinador: Dinamarca (Aarhus University (AU)); Austria (Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW)); Bélgica (Flanders Region (Department of Economy, Science and Innovation / Flanders Innovation & Entrepreneurship) (EWI / VLAIO), Wallon Agricultural Research Centre (CRA-W); Bulgaria (National Science Fund of Bulgaria (BNSF)); Dinamarca (Danish AgriFish Agency (DAFA); Estonia (Ministry of Rural Affairs (MEM); Finlandia (Ministry of Agriculture and Forestry (MMM); Francia (Ministry of Agriculture, General Direction for Forest and Rural Affairs (DGFAR), National Institute for Agricultural Research (INRA); Alemania (Federal Agency for Agriculture and Food (BLE); Federal Ministry of Food and Agriculture (BMEL); Italia (Ministry of Agricultural food and Forestry Policies (MIPAAF); Ministry of Education, University and Research (MIUR); Letonia (State Priekuli Plant Breeding Institute (SPPB); Países Bajos (Ministry of Economic Affairs (MinEZ/MinEA), Netherlands Organisation for Scientific Research (NWO); Noruega (Research Council of Norway (RCN); Polonia (National Centre for Research and Development (NCBiR); Rumanía (Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI); Eslovenia (Ministry of Agriculture and Environment (MKGP); **España (Ministerio de Economía y Competitividad (MINECO), Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria (INIA);** Suecia (Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (FORMAS); Suiza (Federal Department of Economic Affairs, Education and Research (DEA); Turquía (Ministry of Food, Agriculture and Livestock (GDAR); Reino Unido (Department for Environment, Food and Rural Affairs (DEFRA).

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales: 1 (2016)

Participación de MINECO-AEI en convocatorias conjuntas: 1 (2016)

CONVOCATORIA CONJUNTA INTERNACIONAL 2016

Países participantes	Austria; Bélgica; Bulgaria; Dinamarca; Estonia; Finlandia; Francia; Alemania; Italia; Letonia; Países Bajos, Noruega, Polonia; Rumanía; Suiza; España; Eslovenia; Suecia; Turquía
Temáticas	Animal feed; Livestock systems; Organic food processing; Plant production Systems

Presupuesto total	14.705.000 €
Presupuesto ES	250.000 €
Proyectos aprobados	12
Proyectos con financiación AEI	2

Nº	Acrónimo y título del proyecto	Países participantes
1	BIOVINE. Plant diversity in the vineyard can help controlling grapevine pests	Italia , España, Suiza, Rumanía, Eslovenia, Francia
2	DOMINO. Innovative orchard management enhances soil fertility, biodiversity and economic sustainability	Italia , Bulgaria, Polonia, Francia, Suiza, Alemania
3	FreeBirds. Encouraging organic chickens and hens to be more outdoor	Suecia , Italia, Dinamarca, Países Bajos, Polonia, Bélgica, Turquía.
4	GrazyDaiSy. Cows meet their natural needs through health-support, grazing and cow-calf-togetherness	Dinamarca , Alemania, Países Bajos, Francia, Estonia, Polonia, Noruega, Turquía
5	GREENRESILIENT. How to implement agroecological practices in organic greenhouse production in Europe	Italia , Suecia, Bélgica, Suiza, Francia, Dinamarca, Austria, Países Bajos
6	MIX-ENABLE. Strategies for sustainable and robust organic mixed livestock farming	Francia , Austria, Bélgica, Suiza, Alemania, Suecia, Italia
7	POWER. To strengthen welfare and resilience in organic pig production	Dinamarca , Austria, Francia, Países Bajos, Alemania, Suecia, Italia, Suiza
8	ProOrg. How to make the best choice for careful, minimal and mild processing method	Italia , Dinamarca, Países Bajos, Alemania, Polonia, Suiza, Francia, Hungría,
9	ProRefine. New methods for producing high quality feed locally	Noruega , Italia, Turquía, Francia, Suecia, Dinamarca
10	PROYOUNGSTOCK. Young stock and cows benefit from natural feeding systems	Suiza , Alemania, Polonia, Eslovenia, Suecia, Austria, Francia, Italia
11	SureVeg. Strip-cropping and recycling of waste and plant biomass for biodiverse and resource-efficient intensive vegetable production	Dinamarca , Bélgica, Países Bajos, Italia, Finlandia, España
12	SUSORGPLUS developing smarter organic processing chains	Alemania , Noruega, Suecia, Rumanía, Italia

CONVOCATORIA APCIN 2018

PROYECTO 1 BIOVINE. Plant diversity in the vineyard can help controlling grapevine pests

BIOVINE will develop natural solutions based on plant diversity to control pests (harmful organisms, including arthropods, nematodes, oomycetes and fungi), reduce pesticide dependence, increase plant health and services provided from the ecosystems to humans.

BIOVINE will exploit plant diversity in the vineyard to control pests in order to provide farmers with alternative solutions to pesticides. Solutions proposed will be tested in Italy, France, Romania, Spain, Slovenia and Switzerland.

IP	Università Cattolica del Sacro Cuore, Italia
Socios	España (Universitat Politècnica de València) , Suiza (Agroscope), Rumanía (Research Station for Viticulture and Enology Murfatlar), Eslovenia (Agricultural Institute of Slovenia), Francia (Institut National de la Recherche Agronomique)
Presupuesto total	895.400 €
Concedido ES	100.000 €

PROYECTO 11 SureVeg. Strip-cropping and recycling of waste and plant biomass for biodiverse and resource-efficient intensive vegetable production

SUREVEG will develop and implement new diversified, resource-efficient and intensive vegetable cropping systems. The systems are based on strip-cropping, and fertility strategies combined from recycling of waste and plant-based soil-improvers and fertilizers. The purpose is to meet the needs of the organic vegetable sector comprising ecological intensification, resilience, fertilization, resource-efficiency and biodiversity.

Field experiments are conducted in seven countries. The partners will by a combination of on-station and on-farm trials test the use of strip-cropping and fertility strategies for organic vegetable production.

IP	Aarhus University, Dinamarca
Socios	Dinamarca, Bélgica (Institute for Agricultural and Fisheries Research (ILVO), Inagro vzw. (INAGRO), Países Bajos (Louis Bolk Institute (LBI), Italia (Council for Agricultural Research and Agricultural Economics Analysis (CREA), Finlandia (Natural Resources Institute Finland (LUKE); University of Eastern Finland (UEF), España (Universidad Politécnica Madrid (UPM); Agencia Estatal Consejo Superior de Investigaciones Científicas, M.P., Centre for Automation and Robotics (CSIC-CA)
Presupuesto total	1.327.800 €
Concedido ES	75.000 € + 75.000 € = 150.000 €

ForestValue – Innovating forest-based bioeconomy

El objetivo general de ForestValue es promover una mayor innovación y competitividad del sector forestal en Europa, apoyando su transformación de un sector intensivo en recursos a uno productivo, intensivo en conocimiento y eficiente. La sostenibilidad y la modernización de los sistemas forestales y las cadenas de valor posteriores, incluidos conceptos comerciales innovadores y tecnologías de producción, son necesarias para desarrollar el sector forestal y la bioeconomía europea, de los cuales la silvicultura representa una gran parte. El objetivo de ForestValue es la implementación conjunta de una convocatoria transnacional de propuestas para la investigación, el desarrollo y la innovación en el sector forestal con un claro compromiso financiero de los programas de investigación nacionales (o regionales) participantes y de la UE. ForestValue se basa en el éxito de tres ERA-NET anteriores relacionados con bosques: WoodWisdom-Net (Creación de redes e integración de programas nacionales en el área de la ciencia de materiales de la madera e ingenierías de cadenas de valor silvícolas), SUMFOREST (Abordando los desafíos en la silvicultura sostenible y multifuncional a través de mejora de la coordinación de la investigación para las decisiones políticas, 2014-2017) y FORESTERRA (Mejora de la investigación forestal en el Mediterráneo mediante una mejor coordinación e integración, 2012-2015). El consorcio está formado por 31 socios que representan diferentes programas en el sector de la financiación de la bioeconomía, procedentes de diferentes regiones y países dentro y fuera de Europa.

Socios: **Coordinador** **Filandia** (Ministry of Agriculture and Forestry (MMM); Argentina (Ministry of Science, Technology and Productive Innovation (MINCYT); Austria (Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW); República Checa (Forestry and Game Management Research Institute (FGMRI), Ministry of Agriculture, Department of Research, Education and Advisory Services (MZE); Egipto (Academy of Scientific Research and Technology (ASRT); Finlandia (Academy of Finland (AKA), Finnish Funding Agency for Technology and Innovation (TEKES), Ministry of the Environment (FIMO); Francia (Agency for Environment and Energy Management (ADEME), National Research Agency (ANR); Alemania (Agency for Renewable Resources (FNR), Federal Agency for Agriculture and Food (BLE), Federal Ministry of Consumer Protection, Food and Agriculture (BMEL); Irlanda (Department of Agriculture, Food and the Marine (DAFF); Jordania (National Center for Agricultural Research And Extension (NCARE); Letonia (Latvian Academy of Agricultural and Forestry Sciences (LAAFS), State Education Development Agency (VIAA); Noruega (Research Council of Norway (RCN); Polonia (National Science Centre (NCN); Eslovenia (Ministry of Education, Science, Culture and Sport (MESCS/MIZS); **España (Centro para el Desarrollo Tecnológico Industrial (CDTI), Agencia Estatal de Investigación (AEI)**; Suecia (Swedish Energy Agency (SWEA), Swedish Governmental Agency for Innovation Systems (VINNOVA), Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (FORMAS); Suiza (Federal Department of Economic Affairs, Education and Research (DEA), Federal Department of the Environment, Transport, Energy and Communications (DETEC); Túnez (Institution of Agricultural Research and Higher Education (IRESA); Turquía (The Scientific and Technological Research Council of Turkey (TUBITAK); Reino Unido (The Forestry Commissioners (FCGB).

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales: 1 (2017)

Participación de la AEI en convocatorias conjuntas: 1 (2017)

CONVOCATORIA CONJUNTA INTERNACIONAL 2017

Países participantes	Argentina, Bélgica, República Checa, Egipto, Finlandia, Francia, Alemania, Irlanda, Jordania, Letonia, Noruega, Polonia, Eslovenia, España, Suecia, Suiza, Túnez, Turquía, Reino Unido
Temáticas	Innovative sustainable management of multifunctional forests Innovative industrial production and processing technologies, products, concepts and services
Presupuesto total	21.500.000 €
Presupuesto ES	641.324 €
Proyectos aprobados	17
Proyectos con MINECO/AEI	5

Nº	Acrónimo y título del proyecto	Países participantes
1	AVATAR. Advanced Virtual Aptitude and Training Application in Real Time	Alemania, Noruega, Suecia
2	CLICK DESIGN. Delivering fingertip knowledge to enable service life performance specification of wood	Reino Unido, Canadá, Alemania, Finlandia, Francia, Noruega, Suecia, Eslovenia
3	DynaTTB. Dynamic Response of Tall Timber Buildings under Service Load	Suecia, Francia, Noruega, Eslovenia, Reino Unido
4	FIREWOOD. Improved fire design of engineered wood systems in buildings	Noruega, Suiza, Alemania, Suecia
5	FunEnzFibres. From fundamentals to valorization: Enzymatic oxidation of cellulosic fibres and underlying mechanisms	Finlandia, Austria, Noruega
6	GreenLane. Fast-tracking value and resilience for industrial wood supply	Noruega, Austria, Suecia
7	hardwood_joint. Innovative joints in hardwoods	Alemania, Austria, Francia, Suecia
8	I-MAESTRO. Innovative forest MANagEment STRategies for a resilient bioeconomy under climate change and disturbances	Francia, Alemania, Polonia, Eslovenia
9	InFutUReWood. Innovative Design For the Future – Use and Reuse of Wood (Building) Components	Suecia, España, Alemania, Finlandia, Irlanda, Eslovenia, Reino Unido
10	InnoCrossLam. Innovative Solutions for Cross Laminated Timber Structures	Eslovenia, Austria, Alemania, España, Suecia
11	MultiForest. Management for multifunctionality in European forests in the era of bioeconomy	Finlandia, Austria, Alemania, Noruega, Suecia
12	MULTIFOREVER. Towards intensification of conifer production through multi-varietal forestry based on somatic embryogenesis	Francia, Argentina, Alemania, España, Finlandia, Francia, Suecia

13	NOBEL. Novel business models and mechanisms for the sustainable supply of and payment for forest ecosystem services	Austria, Alemania, España, Francia, Noruega, Portugal, Suecia
	READiStrength. Resource-Efficient And Data-driven integrated log and board Strength grading	Suecia, Austria, Alemania
15	SMALLWOOD. Small diameter wood utilization with innovative stand management for multifunctional forests and a growing sustainable bio-economy	Suecia, España, Finlandia, Eslovenia
	StrongComposite. A novel material concept for high strength cellulose composites	Suiza, Austria, Finlandia, Suecia
17	ValoFor. Small Forests – Big Players: Valorising small scale forestry for a bio-based economy	Austria, Alemania, Finlandia, Suecia, Eslovenia

CONVOCATORIA NACIONAL APCIN 2019

PROYECTO 9 InFutUReWood. Innovative Design For the Future – Use and Reuse of Wood (Building Components

The project focuses on the reuse of current reclaimed wood in the circular economy as structural material but also on creating a “design for deconstruction” for future building. The main objective is to develop a method for ensuring future possibility of circulation of timber products with true consideration of whole life-cycle, and practical industry issues at design, construction and deconstruction phases. The objectives of the project are: -to develop a method for ensuring future possibility of circulation of timber products with true consideration of whole life-cycle, and practical industry issues at design, construction and deconstruction phases; -to plan primary design to facilitate deconstruction rather than demolition, and to pay attention to the use of chemical treatments, adhesives and other synthetic materials including to decide whether their use technically is necessary and avoid over-specification; to optimize the primary design to enhance resource efficiency as well as reduce environmental impacts along the life cycle (build and deconstruction); to allow grading for quality of recovered wood, and similarly variable new wood from more diverse sources, in a way that is compatible and equivalent to grading of new timber from the main commercial species (including the basis in European standardization); -to identify potential new construction products using recovered timber; -to examine the business, economic, and environmental factors over the life-cycle to inform what is to be optimized, encouraged and avoided in design (to be described by a "rebuilding factor"); -to inform current engineers, architects and wood-based construction product manufacturers through professional development, industry bodies, codes and standards.

IP	RISE Research Institutes of Sweden, Suecia
Socios	Suecia (Tekniska verken i Kiruna AB (The technical service of Kiruna), Svenskt Trä (Swedish Wood), Derome Hus, Isotimber, The Swedish Federation of Wood and Furniture Industry), España (Universidad Politécnica de Madrid (UPM) - Technical University of Madrid, Stora Enso España S.A.U., Klimark+Novadomus Hábitat, (technical office + Timber construction company), Alemania (Technical

	University München, Architecture Bureau Hariolf Brenner), Finlandia (Aalto-korkeakoulusäätiö [AALTO], Puutuoteteollisuus ry), Irlanda (National University of Ireland Galway (NUIG), University College Dublin, Hegarty Demolition SIP Energy, Connaught Timber), Eslovenia (University of Ljubljana, Jelovica HISE, d.o.o), Reino Unido (Edinburgh Napier University, Offsite Solutions Scotland (OSS), Balcas Limited)
Presupuesto total	1.695.827 €
Concedido ES	140.000 €

PROYECTO 10 InnoCrossLam. Innovative Solutions for Cross Laminated Timber Structures

InnoCrossLam aims at increasing even further the competitiveness of cross laminated timber (CLT) as a versatile engineered product, by increasing its predictability in demanding design situations not covered by the guidelines of today, or codes and standards foreseeable in a near future. In addition, the project will further develop a previously suggested (proof-of-concept) multi-functional use of CLT in terms of its thermal activation. This is achieved by allowing conditioned air flow through channels in the CLT elements, making them an integrated part of a heating/ventilation system. By inviting architects and engineers to define challenges faced in practice, the project will develop solutions making use of cutting-edge methods in research. The topics covered relate to a multitude of disciplines: structural design, mechanical characterisation, building physics, fire resistance and sound insulation and the work includes a multi-disciplinary and holistic approach. The project results will include new solutions with recommendations and design approaches for the use of CLT in new applications/design situations, thus increasing further its competitiveness.

IP	Slovenian National Building and Civil Engineering Institute (ZAG), Eslovenia
Socios	Austria (TU Wien), Alemania (Technical University of Munich (TUM), España (Universidad de Navarra), Suecia (Lund University, Division of Structural Mechanics)
Presupuesto total	1.232.595 €
Concedido ES	109.000 €

PROYECTO 11 MULTIFOREVER. Towards intensification of conifer production through multi-varietal forestry based on somatic embryogenesis

Multi-varietal forestry (MVF), i.e. the deployment of vegetatively propagated plants for a range of selected varieties, can intensify forest production. This strategy is a future-oriented, complementary alternative to seed-based plantation forestry by focusing on a bio-based economy. The opportunity of clonal propagation to control productivity and other desirable traits is of significant and indisputable advantage. The development of efficient and flexible cost-effective methodologies to fully utilize clonal reproduction strategies for new varieties may therefore become essential in the near future. Genetic gains may be realized in forestry operations at a significantly reduced time, enabling increased yields and productivity. Moreover, environmental issues (e.g. genetic diversity and resilience) and socio-economic constraints (e.g.

market needs for optimal productivity and wood quality) could be more easily addressed with real-time adaptations for planted forests. Somatic embryogenesis, the production of unlimited numbers of identical embryos from a vegetative cell, is the preferred and most promising vegetative propagation system for implementing MVF in recalcitrant species such as conifers. The technology has all the required characteristics for industrial scale up. Based on recent advances and breakthrough innovations from leading researchers of seven research organizations in five EU countries and Argentina, the project’s ambition is to apply novel approaches to clone a genotype, not only from juvenile, but also from mature tissues (WP1, WP2), and to develop a valueadded chain and joint strategy to bring high-quality somatic trees at acceptable costs towards MVF of economically relevant conifers (pine, spruce, larch, Douglas-fir). Further, a demonstration test network (WP3), scaling-up and a concept for pilot commercial production (WP4), and the raise of professional, as well as public awareness and acceptance (WP5) will support the endeavor.

IP	FCBA – The French Institute of Technology for Forest-based and Furniture Sectors, Francia
Socios	Francia (French National Institute for Agricultural Research (INRA), Argentina (Instituto Nacional de Tecnología Agropecuaria (INTA), Alemania (Humboldt-Universität zu Berlin (HUB), Institute of Biology, AG Botany and Arboretum), España (Basque Institute for Agricultural Research and Development (NEIKER), Finlandia (Natural Resources Institute Finland (LUKE), Suecia (Umeå Plant Science Centre (UPSC)
Presupuesto total	1.344.205 €
Concedido ES	96.824 €

PROYECTO 13 NOBEL. Novel business models and mechanisms for the sustainable supply of and payment for forest ecosystem services

Payments for Ecosystem Services (PES) are an important mechanism to link the demands of the society with the service providers. The objectives of the project NOBEL are (i) to develop business models and mechanisms to internalise the socio-economic value of forest ecosystems, (ii) combine public policy tools with business models for implementing payments for forest ecosystem services (FES) at multiple levels, and (iii) demonstrate and compare alternative approaches for payments in case studies in Europe. NOBEL will explore the requirements for disseminating spatial information for the development of business models and innovative policies for the provision of FES. In NOBEL three types of business models will be considered a) direct interaction between FES providers and FES beneficiaries b) interaction between business companies and FES providers where companies pay directly to providers and pass the costs (totally or partially) to their clients, and c) interaction between government and FES providers, where the government pays providers for their services and passes the costs to consumers via taxes or fees. In implementing these business models, alternative mechanisms for the payments (e.g. voluntary payments, natural capital markets) will be explored. A web-based auctioning platform and a spatial information platform will be developed to support the design of business models for multifunctional forest management. For the prediction and optimization of multiple FES a framework of indicators will be designed and available forest ecosystem models will be applied.

IP	University of Natural Resources and Life Sciences Vienna, Austria
Socios	Alemania (Technische Universität München (TUM)), España (Forest Sciences and Technology Centre of Catalonia (CTFC)), Francia (French National Institute for Agricultural Research (INRA)), Noruega (Norwegian University of Life Sciences (NMBU)), Portugal (School of Agriculture / Instituto Superior de Agronomia (ISA)), Suecia (Swedish University of Agricultural Sciences (SLU))
Presupuesto total	1.477.736 €
Concedido ES	145.500 €

PROYECTO 15 SMALLWOOD. Small diameter wood utilization with innovative stand management for multifunctional forests and a growing sustainable bio-economy

Trees from Small Diameter Stands (SDS), resulting from thinning, coppice, forest fire prevention cutting, and linear areas such as roadsides, are a large underutilized wood resource with high potential to support growth of the forest-based bioeconomy in Europe. Aiming at increasing harvesting efficiency and reducing operational costs, the Smallwood project will develop and bring two Harvesting and Extraction Innovations (HEIs) of specific SDS relevance closer to the market. These include 1) Multi-tree harvesting techniques combined with new working methods; and 2) Combined harvesting and chipping. The overall objective is to increase the sustainable utilization of small diameter wood through improved management to generate higher long-term value and stability of forests, and further boost new SMEs and work opportunities in rural areas. By evaluating the HEIs in four European countries, we will provide a comprehensive understanding of their efficiency, innovation potential, environmental impact and contribution to sustainability, as well as the social and economic effect of increased SDS utilization. Further, we will develop new business models and assess how forest owner motivation and innovation uptake can be stimulated. Mobility and training is at the core of Smallwood, which by sharing knowledge between countries and sectors, has a strong potential to develop a new system for SDS utilization that is applicable all over Europe and beyond. Furthermore, the Smallwood project will contribute to the development of European machine manufacturing companies since increased SDS management also will lead to the need of more machines, and in the long run, more developed innovative solutions to perform this management.

IP	Swedish University of Agricultural Sciences (SLU)/ Department of Forest Biomaterials and Technology, Suecia
Socios	España (Universidad Politécnica de Madrid (UPM)), Finlandia (University of eastern Finland, School of Forest Sciences (UEF)), Eslovenia (Faculty of Economics and Business, University of Maribor (FEB) Slovenian Forest Institute (SFI))
Presupuesto total	1.064.000 €
Concedido ES	150.000 €

BLUEBIO ERANET Cofund - Coordinated R&D funding scheme to strengthen Europe's position in the blue bioeconomy

El principal objetivo de BlueBio COFUND es establecer un plan coordinado de financiación de I+D que fortalecerá la posición de Europa en la bioeconomía azul. La primera convocatoria cofinanciada por los Estados participantes y la CE se lanzó el 17 de diciembre de 2018, con un presupuesto total de 30M€. El objetivo es mejorar las formas existentes de llevar al mercado productos y servicios de base biológica y encontrar nuevas formas de crear valor desde la bioeconomía azul. Junto a la convocatoria cofinanciada, contribuye a las prioridades nacionales, así como a la agenda de investigación estratégica de JPI Oceans, y las ERA-NETs COFASP y MBT. Los países participantes en BlueBio COFUND son Bélgica, Croacia, Dinamarca, Estonia, Finlandia, Alemania, Grecia, Islandia, Irlanda, Italia, Malta, Noruega, Portugal, Rumanía, España y Suecia.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales: 3 (2018; 2020, 2021)

Participación de la AEI en convocatorias conjuntas: 1 (2018)

CONVOCATORIA CONJUNTA INTERNACIONAL 2018

Países participantes	Dinamarca, Suecia, Alemania, Noruega, Grecia, Malta, Italia, Irlanda, España, Rumanía, Portugal, Islandia, Bélgica, Finlandia, Portugal, Islas Feroe, Estonia
Temáticas	• New bio-resources • Improvements in fisheries and aquaculture • Synergies across sectors
Presupuesto total	27.242.000 €
Presupuesto ES	871.880 €
Proyectos aprobados	19
Proyectos con MINECO/AEI	6

Nº	Acrónimo y título del proyecto	Países participantes
1	AQUAHEAL3DII. 3D Printed Biomarine Wound Healing Accelerant	Dinamarca, Suecia
2	AQUAHEALTH. Microalgae Microbiomes – A natural source for the prevention and treatment of diseases in aquaculture	Dinamarca, Alemania, Noruega
3	AQUATECH4FEED. Novel sustainable aquaculture technologies for the production of innovative feeds for improved fish stocks.	Grecia, Malta, Italia, Irlanda, Alemania, España
4	BESTBROOD. Identification of broodstock performance indicators and markers to boost the aquaculture of emerging fish species	Noruega, Grecia, Italia, España

5	BESTBROOD. Identification of broodstock performance indicators and markers to boost the aquaculture of emerging fish species	Noruega, España, Italia
6	BIOSHELL. Recycling crustaceans shell wastes for developing biodegradable wastewater cleaning composites	Rumanía, Portugal, Noruega
7	BIOZOOSTAIN. Sustainable utilization of zooplankton as by-products	Islandia, Dinamarca, Italia, España
8	BlueCC. Commercial exploitation of marine collagen and chitin from marine sources	Bélgica, Italia, Alemania
9	CASEAWA. Advanced materials using biogenic calcium carbonate from seashell wastes	Italia, Alemania, España
10	DIGIRAS. Optimizing land-based fish production in next generation digital recirculating	Noruega, Alemania, Finlandia, Portugal, Alemania
11	ImprovAFish. Improving aquaculture sustainability by modulating the feedmicrobiome-host axis in fish	Dinamarca, Suecia, Noruega, Irlanda
12	InEVal. Increasing Echinoderm Value Chains	Irlanda, Noruega, Alemania, Italia
13	MARIKAT. New catalytic enzymes and enzymatic processes from the marine microbiome for refining marine seaweed biomass	Dinamarca, Suecia, Grecia, Islas Feroe
14	MedSpon. Characterization of new antibiotic principles against WHO priority pathogens of sustainable produced marine sponges for nutraceutical applications	Grecia, Alemania, Italia
15	MINERVA. Marine Innovation using Novel Enzymes for waste Reduction and Valorisation of Algal biomass	Irlanda, Suecia, Islandia
16	PLASTISEA. Novel enhanced bioplastics from sustainable processing of seaweed	Noruega, Suecia, Dinamarca, España
17	RASbiome. Microbial management in RAS for sustainable aquaculture production	Dinamarca, Bélgica, Noruega
18	SIDESTREAM. Secondary bio-production of low trophic organisms utilizing side streams from the Blue and Green sectors to produce novel feed ingredients for European aquaculture	Noruega, Alemania, Italia, Portugal, España
19	SNAP. Seaweeds for Novel Applications and Products	Noruega, Suecia, Estonia, Alemania, Italia
20	SuReMetS. Microalgae Microbiomes – A natural source for the prevention and treatment of diseases in aquaculture	Irlanda, Alemania, Noruega

CONVOCATORIA NACIONAL APCIN 2020

PROYECTO 3 AQUATECH4FEED. Novel sustainable aquaculture technologies for the production of innovative feeds for improved fish stocks

AquaTech4Feed will develop a novel sustainable aquaculture production process based on the production of proteinaceous and high nutritional value feed utilizing aquaculture waste-streams from Recirculating Aquaculture System (RAS). The aim will be to improve fish production and final product quality by novel fish feed from alternative biomass sources, such as algae, duckweed, microbiomes (bioflocs), and insects. The production process will consist of a closed recirculation system for nutrients and water recycling targeting to improved biosafety. Conventional and new technologies and methods will be applied to ensure novel feeds safety and new production processes will be proposed. The project includes feeding trials with lumpfish, salmon and sea bream in order to assess fish production and define production and quality benchmarks.

IP	Institute of Technology of Agricultural Products, Grecia
Socios	Grecia, Malta, Italia, Irlanda, Alemania, España
Presupuesto Total	1.493.636 €
Concedido ES	150.000 €

PROYECTO 4 BESTBROOD. Identification of broodstock performance indicators and markers to boost the aquaculture of emerging fish species

Appropriate broodstock management is essential for supporting reproductive function and reliable and consistent production of gametes and high-quality eggs, critical for the rapid increase in juveniles supply and turn aquaculture into a profitable industry. In all species commercialized to date, this has been the first significant challenge to overcome and it is still so for many emerging species. The BESTBROOD project aims to build upon state-of-the-art from previous EU and National projects and, evolve biotechnologies that significantly improve broodstock management methods and enhance reproductive performance of selected emerging species (Senegalese sole, greater amberjack, spotted wolffish and lumpfish). All these species are in an early commercial stage, but all have showed suitability for farming, high economic value and market demand. To create the BEST BROODstocks the project plans to: 1) develop genetic markers and bioindicators; 2) create knowledge on the best rearing conditions; 3) improve the control of the maturation cycles; 4) test hormonal therapies and artificial fertilization methods and; 5) reduce dependence on wild fish for egg production. As a result, the BESTBROOD will lead to a more stable and predictable supply of high volumes of high-quality eggs for the production of juveniles to meet market demands for sustainability, and increase Europe's aquaculture competitiveness.

The BESTBROOD brings together a multi-disciplinary consortium of partners with established expertise in fish breeding and reproductive biology to develop, validate and up-scale to the industry new tools and technologies and ensure research efforts are targeted to overcome the main reproductive bottlenecks affecting the project's focus species. The BESTBROOD Multi-Actor Approach is oriented to the needs and demands of the aquaculture industry, improving knowledge exchange, innovation, communication and dissemination and thus increasing the final impact of the projects.

IP	Nord University, Noruega
Socios	Aquaculture Innovation and New Species, Fram Centre, Noruega; Hellenic Centre for Marine Research Institute of Marine Biology, Biotechnology & Aquaculture; Instituto Andaluz de Investigación y Formación Agraria, Pesquera, Alimentaria y de la Producción Ecológica (IFAPA); University of Bari Aldo Moro, Department of Emergency and Organ, Transplantation, Section of Veterinary Clinics and Animal Production, Italia; Argosaronikos SA, DELIGIANNI & TELAMONOS, Grecia; Cultivos Piscícolas Marinos S.A. (Cupimar), España
Presupuesto Total	1.921.854 €
Concedido ES	149.000 €

PROYECTO 7 BIOZOOSTAIN. Sustainable utilization of zooplankton as by-products

The main objectives of BIOZOOSTAIN is to fully process valuable ingredients, such as taxanthin, chitin, polyunsaturated omega-3 fatty acids, wax-esters and enzymes from marine ooplankton, such as Calanus finmarchicus, which are taken ashore and introduced as a side raw material or by-catch during pelagic fishing. The aim is to use these ingredients to develop new high quality products for the food supplement, cosmetic and nutra-/pharmaceutical markets in a sustainable and ethical way. Novel processing methods will be compared to traditional methods to obtain optimized processing lines for environmentally friendly and sustainable utilization of the zooplankton as bycatch and attain a zero waste goal in the process of pelagic fisheries. Novel high quality product prototypes for human consumption (foodfirst) from sustainable zooplankton will be developed within the project, based on their physicochemical, sensory, bioactivity and metabolomic/FoodOmic characteristics these prototypes may have on the human body upon consumption. The feasibility and environmental impact of the production of these prototypes will be assessed by life cycle assessment (LCA) and their market introduction will be prepared.

Prediction tools for identification of catching hot-spots and times for the pelagic species and their by-catch will be developed, as well as spectroscopic prediction tools for processing optimization. The innovation potential of the BIOZOOSTAIN project is both very high and ambitious, but also realistic based on the current knowledge and excellence of the project consortium.

IP	Univerity of Iceland, Faculty of Food Science and Nutrition, Reykjavik, Islandia
Socios	DTU Aqua, Lyngby, Dinamarca; Matis ohf., Food and Biotech R&D, Islandia; Icelandic University Hospital (LSH), Islandia; Università' di Bologna, Dept. of Agricultural and Food Sciences – DISTAL, Italia; Universitat Politècnica de Valencia, Department of Food Technology, España; FF Skagen Magangement, DinamarcaSíldarvinnslan (SVN), Research and Development, Islandia
Presupuesto Total	1.288.907 €
Concedido ES	149.880 €

PROYECTO 9 CASEAWA. Advanced materials using biogenic calcium carbonate from seashell wastes

The project “Advanced Materials using Biogenic Calcium Carbonate from Seashell Wastes” (CASEAWA) aims at producing chemically and physically functionalized biogenic calcium carbonate particles (FbCCP) using fishery industry waste seashells from mussels and oysters (7 Mton/year). FbCCP will be used in polymeric compounds and to obtain nano-apatites, as representatives of applications in the industrial world and as biomaterials.

CASEAWA will produce FbCCP that preserve the inorganic/organic composite nature of seashells and will take advantage of the organic matrix presence. The latter is absent in geogenic calcium carbonate and cannot be entrapped within the calcium carbonate by synthetic procedures. The organic matrix represents the additional value of the seashells resulting from 3.5 M year evolution to achieve high performing functional properties (e.g. resistance to fracture).

CASEAWA is organized in six workpackages (WPs). WP1 regards the handling procedures of waste seashells and their grinding applying by specific grinding aids. The functionalization, blending and characterization of the micro-bCCP will be carried chemically in WP2 by polymeric molecules and physically in WP3 by graphene. WP4 will produce and characterize nano-apatites from nano-FbCCP for regenerative medicine.

WP5 will use FbCCP for the production of strengthened and conductive Levirex® compounds. WP6 will take care of management and dissemination activities of CASEAWA. CASEAWA consortium includes University of Bologna (WP1-2, 6), University of Konstanz (WP3,5,6), Spanish National Research Council (WP4,6) and Finproject industry (WP5,6). Their cooperation will ensure CASEAWA success covering the value chain of the waste seashells with a starting TRL2 up to a TRL5.

CASEAWA is a clear example of circular economy, since seashells are a valuable biomaterial; it improves the sustainability of the aquaculture industry and provides secondary economic benefits to shellfish growers and processors.

IP	Alma Mater Studiorum – Università di Bologna, Chemistry “Giacomo Ciamician”, Bologna, Italia
Socios	Consejo Superior de Investigaciones, Científicas, Instituto Andaluz de Ciencias de la Tierra, España; University of Konstanz, Alemania; FINPROJECT SPA, Italia
Presupuesto Total	750.940 €
Concedido ES	123.000 €

PROYECTO 16 PLASTISEA. Novel enhanced bioplastics from sustainable processing of seaweed

Conventional plastic materials are made from non-renewable resources and pollution by these materials represents a global threat to marine environments. The EU recently voted for a complete ban of the most common single-use plastics by 2021, which has significantly stimulated the interest in bio-based and biodegradable materials, particularly in the food packaging and service industries. However, bioplastics still face challenges related to sustainability of the feedstock, low biodegradability and/or recyclability and unsatisfactory properties, limiting their applications and

widespread implementation. The main objective of PlastiSea is to develop novel bioplastic materials based on cultivated and wild species of brown algae. The project will thus provide innovative and sustainable bioplastic substrates with promising properties, and simultaneously add value to a growing seaweed industry in Europe. The seaweed biomass will be processed to obtain polysaccharide-rich fractions, employing various degrees of refinement toward high-volume applications in the food industry as well as high-performance products for the biomedical sector. Novel bioplastic substrates will be developed with a focus on competitive structural properties and biodegradability, utilizing inherent properties of seaweed polysaccharides combined with novel bioplastic formulations and structuring technology. High-volume products will be developed toward pilot-scale manufacture and future industrial-scale implementation after the project's end. The value chain from raw material to products will be evaluated from an environmental and economic perspective to identify and address challenges and opportunities in scaling and ensure a sustainable pipeline for value creation.

The PlastiSea consortium consists of partners from Norway, Sweden, Denmark and Spain, and combines research expertise with industrial innovation to achieve the project's goals and fulfil the visions of the Blue Bioeconomy.

IP	SINTEF AS, Biotechnology and Nanomedicine, Trondheim, Noruega
Socios	Seaweed Energy Solutions AS, Noruega; B'ZEOS, Noruega; AITIIP TECHNOLOGICAL CENTRE, España; Aalborg University, Dinamarca; KTH Royal Institute of Technology; Suecia
Presupuesto Total	2.167.076 €
Concedido ES	150.000 €

PROYECTO 18 SIDESTREAM. Secondary bio-production of low trophic organisms utilizing side streams from the Blue and Green sectors to produce novel feed ingredients for European aquaculture

To which extent is it possible to recycle nutrients from aquaculture and agriculture waste by secondary bio-production? Which organisms and approaches are best suited? Can these organisms serve as ingredients for feed stuff? How safe are feed ingredients produced on waste? What is the market potential and economic feasibility of feed ingredients produced following sustainable circular principles?

SIDESTREAM addresses these questions to push forward the frontier for production of high value compounds by utilization of low trophic marine invertebrates and bacteria, which will be reared on waste streams following circular principles. Several industries are in demand for high value compounds such as marine-originated lipids, proteins and pigments such as astaxanthin. Omega-3 long-chain ($\geq C20$) polyunsaturated fatty acids ($\omega 3$ LC-PUFA) are marine lipids that are abundant in fish oils and fish meals ("marine ingredients"). $\omega 3$ LC-PUFA in aquafeeds ensures both growth and health of farmed species and their nutritional value for consumers. Aquaculture is by far the largest consumer of marine ingredients thus requiring novel high nutritional quality ingredients to critically ensure sustainable expansion. Additionally, there is a trend towards natural bioactive compounds such as astaxanthin as a natural bioactive stimulant (nutraceutical), which adds value to the resulting feed.

SIDESTREAM partners have shown that polychaetes and crustaceans can produce ω 3 LC-PUFA de novo. Such striking capacity will be exploited in SIDESTREAM. We will take side streams from aquaculture, agriculture and biogas sectors, and produce polychaetes and gammarids on the solid phase and bacterial astaxanthin on the liquid phase. Biomasses will be processed and tested as feed ingredients for fish and shrimp during all life stages. SIDESTREAM cutting-edge approach will enable value creation from resources hitherto considered as waste, allowing for innovation and sustainable use in aquaculture.

IP	Sintef Ocean Environment & New Resources, Trondheim, Noruega
Socios	Consejo Superior de Investigaciones Científicas, Instituto de Acuicultura Torre de la, Ribera de Cabanes, España; Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research, Alemania; Bielefeld University Biology & Center for Biotechnology, Alemania; Nofima AS Nutrition and Feed Technology, Noruega; Project s.a.s, Italia; University of Porto, Portugal; Wollan Biokraft AS, Noruega
Presupuesto Total	2.144.400 €
Concedido ES	150.000 €

ERANet ICRAD - International Coordination of Research on Infectious Animal Diseases (ICRAD)

El objetivo general de ICRAD es apoyar la investigación transversal para mejorar la salud animal y, en consecuencia, el bienestar animal. La convocatoria conjunta cofinanciada bajo el paraguas de ICRAD abarca los principales grupos de enfermedades infecciosas de los animales, incluidos peces y abejas, y las infecciones por patógenos, priones y enfermedades multifactoriales virales, bacterianas, parasitarias y fúngicas, con especial énfasis en la PPA y la gripe animal.

Las áreas de investigación financiadas son:

- Área de investigación 1: Mejor comprensión de epidemias y enfermedades infecciosas animales emergentes;
- Área de investigación 2: plataformas tecnológicas
- Área de investigación 3: tecnologías de detección en genéricas para producir vacunas nuevas y / o mejoradas; campo de alto rendimiento, rápido, preciso y fácil de usar.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales: 2 (2020, 2022)

Participación de la AEI en convocatorias conjuntas: 2 (2020, 2022)

CONVOCATORIA CONJUNTA 2020

Países participantes	Dinamarca, Bélgica, Estonia, Francia, Alemania, Grecia, Hungría, Irlanda, Italia, Letonia, Países Bajos, Noruega, Polonia, Rusia, España, Suiza, Suecia, Turquía, Reino Unido, Rusia y Lituania
Temáticas	Improved understanding of animal-human-environment interface (Área 1) y Detection and Prevention (Área 2)
Presupuesto total	23.700.000 €
Concedido ES	964.000 €
Proyectos aprobados	19
Proyectos con MINECO/AEI	6 (2 coordinados)

Nº	Acrónimo y título del proyecto	Países participantes
1	NucNanoFish. Nucleic NanoVaccines for Fish	Bélgica , Francia, Noruega, Reino Unido
2	Bruce-GenoProt. A comprehensive proteogenomic analysis of Brucella to understand the epidemiology, biology, virulence mechanisms, and host-pathogen interaction	Alemania , Grecia, Turquía

3	Plants4Nemavax. Plant-based production of glyco-engineered nematode vaccines	Bélgica , Países Bajos, Reino Unido
4	ASFVInt. Decoding a virus Achilles heel: the African swine fever virus interactome	Francia, Estonia, Alemania, España, Reino Unido
5	NEOVACC. Novel strategies to enhance vaccine immunity in neonatal livestock	Reino Unido, Francia, Noruega, Suecia, Suiza
6	RODENTGATE. Future Rodent Management For Pig And Poultry Health	Bélgica, Alemania, Países Bajos, Polonia, Reino Unido
7	CAE-RAPID. Development of a rapid screening test for on-site serological diagnostics of caprine arthritis-encephalitis using individual milk samples	Polonia, Hungría, Lituania, Noruega, Suiza
8	TechPEPCon. Use of frontline technologies to screen pathogens, environment and pigs for a better disease control in swine herds	Bélgica, Grecia, Hungría, Italia, Polonia, Rusia
9	FluNuance. Virulent Non-Notifiable Avian Influenza; Determinants of virulence of emerging viruses	Holanda, Alemania, Hungría, Polonia, Reino Unido
10	TCWDE. Tackling chronic wasting disease in Europe	Reino Unido, Francia, Alemania, Noruega, España, Suecia
11	PREVENTER. Deciphering the role of influenza D virus in bovine and human respiratory diseases in Europe	Francia, Bélgica, Italia, Suecia, Turquía
12	MUSECoV. Multi-scale Eco-evolution of Coronaviruses: from surveillance toward emergence prediction	Francia , Italia, España, Polonia
13	FMDV_PersIstOmics. From proteogenomic host response signatures of persistent foot-and-mouth disease virus (FMDV) infection to diagnostic markers and therapeutic control	Francia , Bélgica, Alemania, Suecia, Turquía
14	ASF-RASH. African Swine Fever pathogenesis and immune responses in Resistant And Susceptible Hosts	Alemania , Bélgica, Dinamarca, Países Bajos, Suiza
15	BM-FARM. Biomarkers and Microbiome in Farms for Antimicrobial Resistance Management	Irlanda , Francia, España
16	PIGIE. Understanding the dynamics and evolution of swine influenza viruses in Europe: relevance for improved intervention and sustainable pig production	Francia , Dinamarca, Alemania, Italia, España, Reino Unido
17	Biosens4PrecisionMastitis. Channel-based biosensors to support a precision agriculture approach for improved bovine mastitis management	España , Hungría, Letonia, Polonia
18	ConVErgence. Assessing swine as potential hosts for emerging Coronaviruses	Italia , Países Bajos, Reino Unido
19	IFNASF. Characterization of virus- and host-specific modulation of type I IFN in African Swine Fever Virus virulence or attenuation	España , Alemania, Polonia, Suecia

CONVOCATORIA NACIONAL APCIN 2020-2

PROYECTO 10 TCWDE. Tackling chronic wasting disease in Europe

Chronic wasting disease (CWD) is an emergent disease first identified the late 1960s, which has since spread rapidly among wild and captive cervids (deer, elk, moose) across the USA and Canada, with devastating consequences for populations in some areas. CWD is a prion disease, similar to scrapie in sheep and bovine spongiform encephalopathy (BSE, or “mad cow disease”) in cattle. BSE transmitted to humans has resulted in >200 deaths from variant Creutzfeldt-Jakob disease, thus the zoonotic potential of any emerging animal prion disease must be investigated to prevent similar incidents. Although there is no epidemiological evidence to date suggesting spread of CWD to humans, recent reports of experimental oral transmission to non-human primates give cause for concern.

The threats posed by the emergence of CWD in Europe depend critically on how rapidly the disease can spread through wild cervid populations, and how likely it is that infection can transmit from wildlife to farmed deer, other livestock species and man. Differences in European CWD strains and deer species/populations mean that risk assessments and control strategies cannot not be solely based on evidence from CWD in North America, and further research specific to the European context is urgently required.

This project will integrate research on the epidemiology and population dynamics of the disease in affected countries, with experimental approaches to study host/pathogen interactions relevant to disease transmission in wildlife, livestock and people. Using mathematical and statistical models, information on CWD cases in Norway and Sweden and population data will be used to evaluate surveillance strategies, to predict if and how CWD may spread in affected populations, and indicate potential for transmission through contacts with semidomesticated reindeer and other livestock. Analysis of genetic susceptibility to CWD in the most numerous, widespread and economically important species of wild and farmed cervids in Europe will be assessed by PRNP gene sequencing and testing the effect of novel variants on prion replication using in vitro assays. The outcomes of this analysis will have an impact on the modelling of CWD spread, and may also identify PRNP alleles associated with disease resistance that could be used in selective breeding programmes for disease control. The risks of transmission of European CWD isolates to sheep, cattle, pigs and humans will be assessed using the in vitro protein misfolding amplification assay (PMCA) and in vivo models (transgenic mice expressing PrP from the target species). Understanding which CWD strains.

are most likely to cross species barriers, and which species are most at risk, will allow better targeting of surveillance and control measures.

IP	University of Edinburgh, Reino Unido
Socios	Francia, Alemania, Noruega, España (Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria (INIA), Suecia
Presupuesto Total	2.237.000 €
Concedido ES	150.000 €

PROYECTO 12 MUSECoV. Multi-scale Eco-evolution of Coronaviruses: from surveillance toward emergence prediction

Due to the potential of CoVs to cross the species barrier the first aim of the project will be to evaluate the circulation of SARS-CoV-2 in companion and domestic animals and to perform in-vitro studies that analyse its potential to replicate in cells derived from different animals. We will also address the cross-species potential of other coronaviruses from wildlife and domestic animals. To investigate these questions, we propose a consortium involving teams from France, Spain, Italy and Poland. It will ensure the collection of thousands of samples from diverse animals and different geographic locations. Using standardized RT-qPCR and serological analyses, the eventual diffusion of SARS-CoV-2 in domestic animals in different European countries of the consortium will be evaluated. The functional in vitro assays will complete these investigations and focus on the mechanistic aspects such as receptor function and specific intracellular host determinants. The second aim of the project is to better understand the global circulation of animal CoVs and their genetic evolution dynamics under different constraints and ecological context. Samples collected from bats, domestic carnivorous, ruminants, poultry and wildlife over time in different European locations, will allow the analysis of their evolution rates at a multi-scale level (temporal and geographic), under natural conditions. These studies will be complemented by in vitro assays that will evaluate the frequency of recombination between different virus strains of the same species (avian or pig) when inoculated simultaneously onto cell cultures.

IP	ANSES, Francia
Socios	Italia, España (Fundació Institut Català de Nanociència i Nanotecnologia), Polonia
Presupuesto Total	1.105.000 €
Concedido ES	145.000 €

PROYECTO 15 BM-FARM. Biomarkers and Microbiome in Farms for Antimicrobial Resistance Management

The excessive use of antimicrobials (AMs) in both humans and animals has resulted in the proliferation of bacteria resistant to most available antibiotics (multi-resistant bacteria) that have also spread to the environment. When these bacteria infect humans, there is no treatment to stop them and it is expected more deaths due to this microorganisms than due to cancer by 2050. Pigs are the main AM user in volume, especially in-feed, and there is a need for methods to reduce the use of AMs and the amount of multiresistant bacteria present in pig farms. However, antibiotics are not the problem and are just the consequence of other measures failing to control infectious diseases in pig farms. A better understanding of the relationship between the host (pig), the pathogen and the environment they share will result in lower levels of clinical disease and dramatic reductions in antimicrobial use (AMU) and AMR. There is plenty of research available and ongoing in this area but there are still gaps, especially projects that offer integrated approaches combining different solutions. It is already clear that there is no magic bullet to reduce AMU in all situations. Project BM-FARM includes extensive expertise in the area of prudent AMU and has identified two areas that need further research. The first area is the use of biomarkers (molecules to study the physiological status of the animal) and the second area is the use of new molecular technologies to manage microbial populations in farms. In both areas there is knowledge in experimental situations, but they need to be applied at farm level to produce real impact and should be used in combination with other information to understand disease. The BM-

FARM consortium has been successful using an entirely farm based approach working with a cohort of 60 commercial farms (1/3 of the Irish pig herd) to promote prudent AMU during the last 5 years. This approach allows achieving rapid impact at the same time as high-quality science.

IP	Teagasc, Irish Agriculture and Food Development, Irlanda
Socios	Francia, España (Universidad De Murcia)
Presupuesto Total	902.000 €
Concedido ES	120.000 €

PROYECTO 16 PIGIE. Understanding the dynamics and evolution of swine influenza viruses in Europe: relevance for improved intervention and sustainable pig production

Pig production has grown dramatically worldwide over the last 20 years, leading to increased herd sizes with weekly production cycles of piglets. In the meantime, the dynamics of infections with swine influenza A viruses (swIAV) have changed, from epizootic acute respiratory outbreaks to self-sustaining infected status of affected herds. Moreover, the genetic and antigenic diversity of swIAVs in European pig populations has dramatically increased in recent years, possibly driven by changes in rearing conditions and/or reverse zoonotic incursion of the H1N1 virus responsible for the 2009 human pandemic, which now is circulating concurrently with three formerly endemic swIAV lineages. Thus, novel reassortants and antigenic variants have emerged regionally, that can escape control strategies based on vaccines licensed for use in Europe.

The self-sustaining forms of swine influenza (SI) in large holdings adversely affect animal health and welfare, and prompts the excessive use of antibiotics when swIAV is associated with other respiratory pathogens in the porcine respiratory disease complex (PRDC), resulting in severe economic losses. Further, continuous exposure of humans to swIAVs in confined herds, including viruses that may have changed their inter-species transmission capabilities, constitutes an increasing risk for public health.

The conditions sustaining recurrent swIAV infections, by influencing swIAV transmission and spread, may depend on factors such as production systems, biosecurity level, housing conditions, co-infections, vaccination protocols, vaccine strain composition and pre-existing herd immunity, but many of them are poorly understood. Thus, there is an urgent need to increase knowledge of within-herd virus dynamics and evolution in order to design intervention and prevention measures to limit swIAV persistence in intensive herds and counteract continuous production losses and emergence of new swIAVs.

The objectives of the research project PIGIE are:

- to define the epidemiological and economic factors that drive the prevalence and dynamics of swIAV in large pig herds, - to evaluate the impact that swIAV enzootic infections have on animal welfare, production parameters and economic productivity, - to study the genetic and antigenic diversity of swIAV in Europe, - to identify the host-pathogen factors that would foster swIAV evolution, - to provide a better understanding of long-lasting and protective immunological memory responses developed in the infected hosts, - to identify mitigation points in continuously infected herds, - to implement and evaluate control strategies that would help to counter sustained infections in closed intensive herds.

IP	French Agency for Food, Environmental and Occupational, Francia
Socios	Francia, Dinamarca, Alemania, Italia, España (Universidad Autónoma de Barcelona), Reino Unido
Presupuesto Total	1.758.000 €
Concedido ES	150.000 €

PROYECTO 17 Biosens4PrecisionMastitis. Channel-based biosensors to support a precision agriculture approach for improved bovine mastitis management

El proyecto tiene como objetivo el desarrollo de una herramienta para el diagnóstico precoz de mastitis en vacas. El diagnóstico de la mastitis bovina es de suma importancia por su impacto económico, social y ambiental. La mastitis no solo afecta la salud y el bienestar de los animales, sino que también puede poner en riesgo a los consumidores de leche. El coste económico para la industria láctea es enorme. La mastitis reduce la producción y la calidad de la leche, lo que provoca la pérdida de las primas de calidad. La intervención tardía y deficiente se debe a las limitaciones de los métodos de diagnóstico utilizados. Cuando se detectan altas tasas de infección dentro del rebaño, se recomienda el sacrificio. Si los signos indican que la infección se puede controlar, se administran antimicrobianos y se aíslan las vacas infectadas. Preocupa el hecho de que los antibióticos a menudo se administran sin confirmar el diagnóstico, incluso a rebaños enteros durante los periodos de secado, lo cual agrava seriamente el problema de resistencia a antibióticos. Además de afectar directamente a la respuesta inmunitaria de los animales, los residuos de antibióticos pueden aparecer en la leche, así como contaminar agua y suelo. Por tanto, es preocupante el efecto que la falta de un diagnóstico adecuado de la mastitis animal tiene sobre la aparición de nuevas resistencias a antimicrobianos. Este diagnóstico tiene diversas complicaciones. El diagnóstico en granja se basa principalmente en el recuento de células somáticas, aunque este método depende de múltiples factores, como el tipo de patógeno causante. El diagnóstico de mastitis en laboratorio, mediante cultivo celular y/o pcr, identifica eficazmente patógenos bacterianos, pero su uso no es generalizado debido al tiempo y coste involucrados.

IP	Universitat Rovira i Virgili, España
Socios	Hungría, Letonia, Polonia
Presupuesto Total	1.040.000 €
Concedido ES	199.000 €

PROYECTO 19 IFNASF. Characterization of virus- and host-specific modulation of type I IFN in African Swine Fever Virus virulence or attenuation

La peste porcina africana (PPA) sigue siendo la mayor limitación para el desarrollo de la industria porcina en África y una gran amenaza en todo el mundo. Desde el primer brote en el Cáucaso en 2007, la peste porcina africana se propagó a catorce países de Europa. En China, la enfermedad ha provocado el sacrificio de más de 1.000.000 de cerdos domésticos, lo que enfatiza el peligro que representa la PPA para la industria mundial. Tanto la biología como la epidemiología del virus de la peste porcina africana es compleja, y después de largos periodos en las áreas infectadas,

las tasas de mortalidad de los animales pueden disminuir y con frecuencia surgen formas subagudas, crónicas o subclínicas de la infección producidas por virus de baja virulencia, llamados “virus naturalmente atenuados”. El conocimiento sobre la respuesta inmune efectiva contra este patógeno sigue siendo incompleto, y los mecanismos precisos del huésped para defenderse del virus y, por lo tanto, la base para el diseño racional de una vacuna, aun son inciertos. De manera inequívoca, no se desarrollarán vacunas eficaces y seguras contra la peste porcina africana sin un conocimiento completo de la interacción entre el virus y el huésped, específicamente sobre los mecanismos virales para evadir la respuesta inmune innata. El potencial de innovación de IFNASF comienza con la original estrategia para manipular el genoma de diferentes cepas de asfv utilizando un sistema crispr/cas9 (CSIC) desarrollado en nuestro laboratorio, dirigido a genes de regiones no esenciales de ADN viral, que se ha demostrado que tienen funciones relacionadas con patogenia, diseminación y virulencia. Estos virus recombinantes se probarán in vitro para caracterizar los pasos de las rutas de ifn (cgas/sting y jak/stat) interferidas por los genes virales. Además, el potencial innovador de utilizar este tipo de “prototipos reguladores de ifn” incluirá otros de los elementos más innovadores de nuestra propuesta: la combinación de nuevos enfoques para generar vectores mva que codifican genes reguladores del asfv (LMU, CSIC), que serán más tarde utilizados en ensayos con cerdos (piwet), y finalmente analizar los genes precisos que inhiben la síntesis de ifn tipo y en los animales mediante secuenciación de arn de célula única (scrna-seq) (sva). los métodos de secuenciación de alto rendimiento han revolucionado la biología desde la perspectiva de estudiar transcriptomas completos utilizando rna-seq.

IP	CBMSO-CSIC-UAM, España
Socios	Alemania, Polonia, Suecia
Presupuesto Total	1.061.000 €
Concedido ES	200.000 €

CONVOCATORIA INTERNACIONAL CONJUNTA 2022

Países participantes	Argentina, Bélgica, Dinamarca, Estonia, Francia, Alemania, Grecia, Irlanda, Italia, Letonia, Lituania, Países Bajos, Noruega, Polonia, Rusia, España, Suecia, Turquía, Reino Unido
Temáticas	Improved understanding of animal-human-environment interface (Área 1), Detection and Prevention (Área 2), Research to support the development of novel and improved vaccine and diagnostic tools and platforms will be supported (Área 3)
Presupuesto total	5.6 M
Concedido ES	1.017.610 €
Proyectos aprobados	10
Proyectos con AEI	5 (1 coordinado)

Nº	Acrónimo y título del proyecto	Países participantes
1	AdapTB Defining the Molecular Determinants of Mycobacterial Adaptation and host: pathogen Interaction to inform bTB control	Reino Unido , Irlanda, Francia, Argentina
2	Emerging porcine influenza and coronaviruses	Bélgica , Países Bajos, España, Reino Unido
3	FLU-SWITCH Identification of factors driving the emergence and spread of avian influenza viruses with zoonotic potential.	Francia , Alemania, Países Bajos, Italia, Reino Unido, Polonia, Turquía
4	LEPTIMMUNHOST Comparative host and species-specific immune responses of macrophages infected with zoonotic Leptospira interrogans	Francia , Argentina, Reino Unido, Lituania, Canadá
5	NanoZoo Protein nanoparticle vaccine platform for rapid response against zoonotic viruses in poultry and swine	Países Bajos , Reino Unido, Dinamarca, Australia
6	POC4AIV Preventing zoonoses by screening Avian Influenza Virus (AIV) in wildlife birds and poultry using a novel rapid point of care system	Dinamarca , Italia, Polonia, Letonia, Estonia, Turquía, Francia
7	Q-Net-Assess Improved molecular surveillance and assessment of host adaptation and virulence of Coxiella burnetii in Europe	Reino Unido , Alemania, Bélgica, Países Bajos, España, Francia
8	ScIce Classical Scrapie in Iceland, a model for prion diseases worldwide	Alemania , Reino Unido, Francia, España, Italia, Islandia
9	ScResGoats Classical scrapie in genetically resistant goats: questioning current concepts and policies	Reino Unido , Grecia, Italia, España
10	imdiTBap Improving the diagnosis of tuberculosis in domestic ruminants through the use of new antigens and test platforms	España , Reino Unido, Irlanda, Italia, Turquía

CONVOCATORIA NACIONAL PCI 2023

PROYECTO 2 EPICIVR. Emerging porcine influenza and coronaviruses

Influenza viruses and coronaviruses have caused some of the deadliest pandemics in humans, and pigs are natural reservoirs. Swine influenza A viruses (swIAV) and porcine respiratory coronavirus (PRCV) are enzootic in pigs, infecting airway epithelial cells. However, they differ in their pathogenicity and immune response. Cattle are the natural host for influenza D virus (IDV), but it is now an emerging virus in swine (swIDV), and its pathogenesis is unknown. The genetic diversity of the swine influenza virus is enormous and continues to increase, with many "reassortant" genotypes co-circulating and constituting a zoonotic threat with proven pandemic characteristics. The pandemic potential of PRCV and swIDV is not known. We compare the transmission, pathogenesis, and host tropism of six different genotypes of swIAV, swIDV, and PRCV to answer the following four questions: 1) What are the transmission dynamics of swIVs and PRCV between pigs and from pigs to ferrets? The latter is a model for humans. 2) What key early events and immune mediators govern the outcome of swIV and PRCV exposure that may tip the balance

toward mild or severe disease? 3) What is the zoonotic potential of swIV and PRCV? Do some new H1 swIVAV genotypes pose a higher risk than those already known? How efficiently do swIDV and PRCV replicate in the human airways? What viral traits can contribute to host switching? 4) Can an integrated mathematical model of viral replication, transmission, pathogenesis, and immune control identify key events in virus-host interaction to inform control strategies? We perform in vivo studies (Q1, 2) in the porcine and ferret host and in vitro studies (Q3) in discrete cultures of the porcine, human, and ferret airways, with maximum similarity to the in vivo situation. Finally, we use novel mathematical models to provide quantitative information from the integrated data (Q4).

IP	Ghent University Faculty of Veterinary Medicine. Bélgica
Socios	Países Bajos, España, Reino Unido,
Presupuesto Total	1.744.000€
Concedido ES	242.000 € (Universidad Pontificia de Comillas 60.500 €) y (Agencia Estatal Consejo Superior de Investigaciones Científicas-CSIC 181.500 €)

PROYECTO 7 Q-NET-ASESS. Improved molecular surveillance and assessment of host adaptation and virulence of Coxiella burnetii in Europe.

The Q-Net-Assess project will take a functional genomics approach to understand Coxiella burnetii host adaptation and virulence. Combined analysis of whole genome sequence (WGS) data from C. burnetii strains from different hosts, of in vitro phenotypes and of georeferenced meta-data will reveal molecular determinants that control C. burnetii host adaptation and link genetic traits to differences in zoonotic potential and clinical relevance. This information can be used to determine upcoming zoonotic threats posed by C. burnetii and provide a framework for assessing the risk and severity of future Q fever outbreaks. The assembled consortium unifies a unique expertise in C. burnetii surveillance and genomics and is linked to national Q fever Reference Laboratories from six European countries which will benefit the new requirements for national Q fever monitoring as a consequence of recent changes to EU Animal Health Law and aligned Great Britain regulations. Throughout the project a comprehensive isolate collection and sample biobank (WP1) will be established. Additionally, the project aims to optimize C. burnetii isolation methodologies (WP2) from field samples and will apply long-read sequencing (MinIon) and short-read sequencing (Illumina) to assemble fully annotated genomes (WP3). Genome association studies (WP4) will be supported by surveillance data and the use of in vitro assays for phenotypic characterization (WP4.1). Novel bioinformatic approaches will be used to identify molecular determinants of C. burnetii host range and virulence (WP4.2), which may be used to rapidly determine host/virulence potential of circulating isolates. Project outcomes will facilitate a framework for molecular surveillance (WP5) of C. burnetii, which will be evaluated by project partners within each of the six European countries.

IP	Moredun Research Institute. Reino Unido
Socios	Alemania, Bélgica, Países Bajos, España, Francia
Presupuesto Total	1.715.000 €
Concedido ES	136.730 €

PROYECTO 8 ScIce. Classical Scrapie in Iceland, a model for prion diseases worldwide

Prion diseases, such as scrapie or classic scrapie (sc) and other transmissible spongiform encephalopathies (tees), are the result of the conversion of the prpc protein into an abnormal isoform (prpsc), and it is well known that the diversity of prion strains they give rise to different biological behaviours. Although certain cs strains have been shown to cross the human species barrier in certain animal models, the mechanisms that control the evolution of prion strains nor the factors that determine the zoonotic potential of a prion strain are still not completely known. Polymorphisms of the prion protein gene (prnp) have a strong impact on susceptibility to prions and influence the evolution of strains. Iceland has a unique sheep breed and a well-documented history of sc since its introduction by an infected ram in 1878, despite the strong efforts to eradicate the disease. This situation provides a unique model to study the evolution of prion strains and the genetic and environmental factors involved under field conditions. The proposed multidisciplinary approach intends to study the variation of the prnp sequence in Iceland sheep, examine the effect of Iceland prnp polymorphisms on resistance to sc, characterize how prion strains are modified in Iceland over time and determine the effect of the environmental contamination with sc prions in the reappearance of the disease. The results will be used for the epidemiological analysis and the development of flexible economic models. The knowledge acquired in this project will be fundamental to control the reappearance of diseases and prevent the appearance of new zoonotic threats.

IP	Friedrich-Loeffer-Institut. Alemania
Socios	Reino Unido, Francia, España
Presupuesto Total	1.275.700 €
Concedido ES	181.500 €

PROYECTO 9 SCRESGOAT. Classical scrapie in genetically resistant goats: questioning current concepts and policies.

Classical scrapie (CS), a transmissible spongiform encephalopathy (TSE), is characterized by vacuolation and accumulation of PrPSc, the causative agent of TSE, in the brain. PrPSc represents pathogenic conformers of PrPC, a natural host protein. Because CS is associated with bovine spongiform encephalopathy (BSE), a known zoonosis, extensive measures have been implemented to monitor, minimize and wherever possible eradicate CS. Certain polymorphisms of the PrP sequence are associated with resistance to scrapie and have been used to minimise CS from many European national flocks. However, with the single exception of Cyprus, similar schemes are not readily available for goats either because polymorphisms with clear protective effect have not been identified or their prevalence is low. Substitution of the wild type Q (glutamine) for K (lysine) at codon 222 represents such a polymorphism as even in heterozygous animals (222QK) it can confer resistance to the disease, although not absolute. EFSA recommends the use of 222K as a selective marker for breeding for disease resistant (BDR) and there is a strong policy drive within the EU and UK to use this codon for BDR schemes. In Greece an unusually high proportion of 222QK animals are associated with CS compared to other countries. This increase is associated with certain herds located in specific geographical regions suggesting that at least under certain conditions the protective power of 222K may be compromised. The aims of the current proposal are to investigate whether other PrP-associated genetic factors or strain specific parameters, or

the effect of infectious load can account for these 222QK CS cases from Greece. To achieve these aims it is proposed that 222QK CS cases from several geographical areas of Greece are genotyped and fully characterized using in vitro methods and bioassays in experimental animals. These CS cases will be compared with 222QK and 222QQ cases from Greece and other European countries

IP	Animal& Plant Health Agency. Reino Unido
Socios	Grecia, Italia, España
Presupuesto Total	366.000 €
Concedido ES	181.500 €

PROYECTO 10 **IMDITBAP. Improving the diagnosis of tuberculosis in domestic ruminants through the use of new antigens and test platforms**

Tuberculosis (tb) is a zoonosis of great importance and worldwide distribution that affects cattle and other species. The effectiveness of eradication campaigns is compromised by the imperfect sensitivity of current diagnostic techniques, when they are used in situations of low prevalence of the disease; as well as due to the low specificity of the tests in certain epidemiological situations. We will provide diagnostic tools not commercially available and that present greater performance compared to current techniques for the in vivo and in vitro diagnosis of bovine tuberculosis. Obtaining p22, a multiprotein complex, is carried out in our laboratory from ppdb using cz ppdb and a specific monoclonal antibody developed by us as a source. This product, which will be available to all member of the consortium, will be used for diagnosis: a) in vivo (idtb); e b) in vitro in the determination of immunological parameters. 1) cellular based (interferon gamma) or; 2) humoral base (elisa). in addition, we will use p22 to develop a lateral flow type rapid diagnostic test, which, if successful, will be of great impact, especially for the diagnosis of bovine tuberculosis in wildlife, since it can be carried out in situ and in a time no longer than 15 minutes. Also, but for antigen detection, we will develop a sandwich type elisa, using for these 3 monoclonal antibodies, - generated in our laboratory, which recognize the specific proteins of m. bovis mpb70, mpb83, hspx and esat-6, and one that recognizes one shared with m. avium la and meromycolate acyl carrier protein. The use of these antibodies will allow us to carry out a joint and differential diagnosis of animals infected with m. bovis and/or m. avium. Evaluation of the performance of the above-mentioned diagnostic techniques in medium/large scale field studies could increase the market participation of european companies in the sector. It will provide a stimulus for eradication campaigns and will contribute to achieving the eradication of the disease. the project is conceived and designed to achieve the transfer to the market of all the scientific and technological results derived from it.

IP	Universidad Complutense de Madrid. España
Socios	Reino Unido, Irlanda, Italia, Turquía
Presupuesto Total	798.000 €
Concedido ES	275.880 € (Universidad Complutense de Madrid 174.450) y (Instituto de Salud Carlos III de Madrid- ISCIII 100.430 €)



RETO 3

**Energía, seguridad y modelos energéticos
seguros, sostenibles y eficientes**



RETO 3: ENERGÍA, SEGURIDAD Y MODELOS ENERGÉTICOS SEGUROS, SOSTENIBLES Y EFICIENTES

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SOLAR-ERA.NET Cofund

SOLAR-ERA.NET Cofund reúne a 16 organizaciones nacionales que poseen y/o administran grandes programas de investigación e innovación de energía solar en toda Europa, cubriendo la energía fotovoltaica (PV) y la energía solar de concentración (CSP). De acuerdo con los desafíos abordados en el programa de trabajo sobre energía baja en carbono, SOLAR-ERA.NET Cofund tiene diferentes objetivos:

- Implementar una convocatoria conjunta sobre temas de máxima prioridad y valor añadido europeo en línea con la Iniciativa de la Industria Solar Europa dentro de la Estrategia Plan de tecnología energética (SET).
- Reunir recursos y proporcionar una masa crítica para proyectos innovadores y altamente relevantes a nivel transnacional.
- Movilizar 20 MEUR de financiación pública (nacional y comunitaria) y, junto con los recursos proporcionados por el sector de la industria privada, un total de 40 MEUR.
- Mejorar la coordinación, la coherencia y la creación de redes entre los programas nacionales SOLAR-ERA.NET Cofund contribuirá a la reducción sustancial de los costos de las tecnologías de energía solar, el desarrollo económico del sector de energía solar europeo y a reforzar la posición fuerte de Europa en tecnologías de energía solar. La reducción del costo de la tecnología y el avance de las tecnologías de fabricación, las aplicaciones y la integración de la red / sistema son esenciales para aumentar el despliegue de las tecnologías de energía solar.

De esta manera, SOLAR-ERA.NET Cofund contribuye en gran medida a:

- Acelerar el tiempo de comercialización mediante el avance de las tecnologías.
- Lograr soluciones tecnológicas asequibles, rentables y eficientes en recursos.
- A la descarbonización del sistema energético.
- Al suministro y finalización de energía sostenibles y seguros del mercado interno de energía
- Al fortalecimiento de la base tecnológica industrial europea y al crecimiento y empleo en Europa.

Socios: Coordinador: Suiza (NET NOWAK ENERGIE & TECHNOLOGIE AG (NET), Austria (Austrian Climate and Energy Fund (KLIEN), Austrian Federal Ministry of Transport, Innovation and Technology (BMVIT), Austrian Research Promotion Agency (FFG), Chipre (Research Promotion Foundation (RPF/IPE), Francia (Agency for Environment and Energy Management (ADEME), Alemania (Project Management Juelich / Research Centre Juelich (PTJ/FZJ), Grecia (Centre for Renewable Energy Resources (CRES), Países Bajos (Ministry of Economic Affairs (MinEZ/MinEA), Polonia (National Centre for Research and Development (NCBiR), **España (Centro para el Desarrollo Tecnológico Industrial (CDTI), Agencia Estatal de Investigación (AEI)**, Suecia (Swedish Energy Agency (SWEA), Suiza (Federal Department of the Environment, Transport, Energy and Communications (DETEC), Turquía (The Scientific and Technological Research Council of Turkey (TUBITAK), Reino Unido (The Technology Strategy Board (TSB).

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales: 3 (2016, 2018, 2019)

Participación de AEI en convocatorias conjuntas: 3 (2016, 2018, 2019)

CONVOCATORIA CONJUNTA 2016

Países participantes	Austria, Chipre, Francia, Alemania, Países Bajos, Polonia, España, Suecia, Suiza, Turquía, Reino Unido
Temáticas	Photovoltaics and concentrating solar power
Presupuesto total	10.000.000 €
Presupuesto ES	681.500 €
Proyectos aprobados	16
Proyectos con MINECO/AEI	5 (3 coordinados)

Nº	Acrónimo y título del proyecto	Países participantes
1500-SIC.		
1	Develop a new photovoltaic Inverter with SiC full power operation at 1500V	España, Austria, Suiza
BI-FACE.		
2	High-efficiency bifacial PV Modules and Systems for flat roof applications	Austria, Países Bajos
CEFRABID.		
3	Clean energy from road acoustic barriers infrastructure development	Polonia , España, Austria, Chipre
Cover Power.		
4	Smart Glass Coatings for Innovative BiPV Solutions	Austria, Suiza
ENMESH.		
5	ENabling Micro-ConcEntrator PhotovoltaicS with Novel Interconnection MethOds	España , Reino Unido, Suiza
Erigenia.		
6	Enabling rising penetration and added value of photovoltaic generation by implementation of advanced storage systems	Chipre, Austria, Reino Unido, Turquía
HEAVENLY		
7	High-efficiency PERT and IBC cell development focussing on paste and CVD optimization for longterm stability	Reino Unido, Alemania
Hyconsys.		
8	Hydrogen control in solar thermal parabolic trough heat transfer fluid systems	Alemania, España
MASTERPV.		
9	Innovative manufacturing solutions for cost-efficient semitransparent BiPV	España , Alemania
NELL.		
10	Novel encapsulant for long lifetime high voltage PID-resistant PV modules	España, Alemania
NEXT-FOIL.		
11	Next generation conductive solar foil for flexible photovoltaics	Austria, Suiza

PANELPV.		
12	Sanwich panels with integratef PV with freedom of size and color	Países Bajos, Francia, Suiza
13	PROGNOSIS. Intra-hour prediction of solar electricity generation from Photovoltaics	Chipre, España
14	Pearl. PERC meets self-aligned selective emitter technologies based on inkjet printing and silver less plating	Alemania, Países Bajos, Reino Unido
15	Pvtool. Development of tools for effective control of large PV power plants	España, Suecia
16	RHINO. RHINO: Realization of High efficiency Industrial N-type solar cells	Alemania, Países Bajos, Francia

CONVOCATORIA NACIONAL APCIN 2018

PROYECTO 3 CEFRABID. Clean energy from road acoustic barriers infrastructure development

The CEFRABID Project Proposal concentrates on advanced photovoltaic (PV) products applications in road and rail (r&r) transport infrastructure. It is focused on PV grid integrated with noise barriers and passenger stop shelters along local r&r infrastructure for needs of powering this infrastructure, e.g. for signaling, lightning of neuralgic sections of roads and rail platforms, including r&r crossings, and last but not least, warming or cooling the passenger stop shelters of special innovatory design. The focus is on innovative manufacturing of and solutions for r&r infrastructure constructions integrated PV systems. The following issues are addressed and goals pursued: - Dimensional and outlook flexibility with customised sizes, shapes and colours, freeform module technology, and bifacial (especially for N-S oriented r&r) solar cells and modules, electrical design for energy output optimization (shadows, various tilt and orientation angles, safety issues, all of which will be part of extended preliminary tests at specialized Partner's facilities of their different configurations, including both laboratory tests, as well as outdoor tests on partially movable platforms (PMPs). - Holistic approach for the energy performance, enabling accumulation of energy for night or worsening weather conditions periods, assuming also backup power supplies from conventional electric grid in emergency states. - Easiness of installation / application based on modular designs of largely independent and self-sufficient Hybrid PV Noise Road (Rail) Barriers' (HPVNRBs) modular sections, which may be easily prolonged and included in the grid (in series when independent, and in parallel layout, for mutual replacement needs) by their suitable reciprocal multiplication. The traditional road transport infrastructure will be supplemented with the help of these new solutions of HPVNRBs and other surfaces of r&r infrastructure, using innovative and reinforced PV products.

IP	Główny Instytut Górnictwa, Polonia
Socios	Polonia (ML System S.A.), España (Universidad de Jaén), Austria (IBV-Fallast), Chipre (University of Cyprus)
Presupuesto total	411.545 €
Concedido ES	70.000 €

PROYECTO 5 ENMESH. ENabling Micro-ConcEntrator PhotovoltaicS with Novel Interconnection MetHods

The Swiss company Insolight is developing a patented PV module that promises a reduction in LCOE for roof-based solar from 0.16€/kWh to 0.011€/kWh. The system uses an array of micro-solar cells with optics and integrated microtracking to produce a low-profile rooftop-compatible solar system with an independently demonstrated efficiency of over 36%, a 100% efficiency gain over cSi. This high efficiency is made possible through the use of advanced multi-junction cells under concentrated light, a technology known as CPV. Specifically, the product represents one of the first commercial examples of micro-CPV (μ CPV), wherein the cells are 1mm² in size or less. μ CPV increases performance (due to reduced cell operating temperature, higher optical efficiency and lower series resistance losses) and lowers costs. Insolight innovation has further improved the μ CPV concept by embedding sun tracking internally in a 50mm-thick panel, enabling roof-top or BIPV installations and avoiding bulky and expensive trackers. An outstanding technological challenge in μ CPV is the need to use massive cell interconnection processes due to the large number of micro-cells involved, 5000 cells/m² for the Insolight module. The current state of the art is wire bonding, however this inherently serial process is prohibitive for thousands of cells. The Universidad Politécnica de Madrid, in collaboration with Dycotec Materials Ltd, offer an innovative cell interconnection process involving direct printing of ultra-durable nano-particle coatings systems to allow the massively parallel connection of solar cells in a cost-effective high volume roll-to-roll or sheet fed printing process, paving the way for the low-cost manufacture of μ CPV. We will partner with Insolight in order to develop, test, and validate this interconnection technology for their module, leading to the production of 20cm x 20cm micro-cell boards in a pilot line which will be assembled into a final 10 m² demonstrator system.

IP	Universidad Politécnica de Madrid, España
Socios	Reino Unido (Dycotec Materials Technology), Suiza (Insolight)
Presupuesto total	513.979 €
Concedido ES	125.000 €

PROYECTO 9 MASTERPV. Innovative manufacturing solutions for cost-efficient semitransparent BIPV

MasterPV proposes the development and demonstration of low cost innovative processes for cost efficient semi-transparent (ST) Cu(In,Ga)(S,Se)₂ (CIGS) BIPV solutions. The project involves the replacement of the Mo back contact in the traditional CIGS device architecture by chemical vacuum-free based TCO (Transparent Conductive Oxide) electrodes. This will allow achieving a significant improvement in the aesthetic quality of the ST devices, with the elimination of the back mirror effect that is determined by the remaining Mo regions in the modules. Improvement of the aesthetic quality of CIGS ST devices is strongly relevant to ensure a higher level of acceptance of these solutions in the BIPV market. The proposed solutions will contribute to a more efficient exploitation of the potential of CIGS technologies for lowering of manufacturing costs, with the replacement of the vacuum-based Mo sputtering deposition processes by lower cost approaches that are based in low CAPEX vacuum-free chemical strategies. At quantitative level the main target is the demonstration of medium size (30x60 cm²) ST modules (transparency in 20%-30% range) with additional costs (in relation to those from conventional building elements) below 100€/m², in agreement with the strategic targets defined at the SET plan (reduction of 50% of additional costs by 2020), and with device efficiencies comparable to the high efficiency values

that have already been achieved with standard Mo based contacts. This will imply a special effort in the optimization of TCO based contacts suitable for high efficiency devices, which will be based in the development of surface contact configurations including nanometric transition metal oxides (TMO) that have already been demonstrated as efficient hole transport layers in organic based technologies and are strongly promising for optimization of the valence band alignment at the back contact/CIGS interface.

IP	IREC, Instituto Catalán de Investigación Energética, España
Socios	España (Francisco Alberio S.A.U), Alemania (Martin-Luther- University)
Presupuesto total	712.177 €
Concedido ES	187.500 €

PROYECTO 13 PROGNOSIS. Intra-hour prediction of solar electricity generation from Photovoltaics

The concept of PROGNOSIS is related to the development of a dynamic data assimilation model for nowcasting solar irradiance and cloud coverage without using meteorological data. This can be achieved through the utilization of dynamic real-time electricity data from a dense multipoint network of grid connected Photovoltaics (PVs). The primary key novelty (patent pending) is that through the development of a dynamic flow map of the power output of the PVs, irradiance/clouds/aerosols/etc, not only over the PVs, but over whole regions/countries can be visualized and predicted with high accuracy. PROGNOSIS will be mainly implemented in the energy sector as an operational management approach for precise intra-hour forecasts of solar energy production through an open communication protocol. It will be primarily be used in Building Energy Management Systems as an integrated tool for forecasting energy production and demand from the building and in the further development and management of city-wide microgrids. Additionally, it will be used as a service to large scale or aggregated PV managers, to provide them to system operators for capacity management and scheduling. Moreover, a database of the monitored data will be developed, that will be disseminated to various stakeholders groups. PROGNOSIS can also be used by other industries, such as agriculture, tourism, outside events, sports, aviation, film making, etc. Overall, PROGNOSIS is a tool which shall contribute to the objectives of the call and of the Declaration on Strategic Targets in the context of an Initiative for Global Leadership in Photovoltaics (Set-Plan). It aims to increase the flexibility of the electricity grid by integrating solar energy production and energy demand under the same platform, quantify the energy generation from small scale urban PVs on buildings and enable their management as aggregated systems and develop a high resolution solar database over the areas of the implementation of PROGNOSIS.

IP	Alexandros Charalambides, Cyprus University of Technology, Chipre
Socios	Chipre (Johnsun Heaters Ltd), España (Instituto Valenciano de la Edificación)
Presupuesto total	309.000 €
Concedido ES	111.000 €

PROYECTO 15 Pvtool. Development of tools for effective control of large PV power plants

Large PV power plants need to ensure a smooth injection of the generated renewable power into the grid where they are connected, while providing the required ancillary services. Depending on the grid nature, such requirements can differ considerably, ranging from frequency or voltage support for PV power plants connected to power systems based on conventional synchronous generators, to grid-forming capability in systems or microgrids where PV is the main generation source. The Pvtool project aims at developing relevant control architectures and control algorithms to ensure optimal performance in different kinds of systems. Such control schemes will take into account the distributed nature of the different elements (inverters, transformers, energy storage systems, reactive power compensation equipment, cables) and the necessity for control coordination. The option of using or not communication systems in different control layers will be analyzed, suggesting appropriate architectures depending on the given requirements. The risk for interactions between power converters and different system elements will be investigated in order to develop methodologies and tools that ensure the overall system stability. Potential unstable resonances will be carefully analyzed and the key quantities and elements that can trigger them will be identified. The developed methodologies will be applied to selected case studies inspired from actual installations. The project aims at developing and implementing tools to allow PV power plant engineers to design the controllers of large PV power plants in a systematic way.

IP	Oriol Gomis, Universidad Politécnica de Cataluña, España
Socios	España (GreenPowerMonitor Data Acquisition & Project Management), Suecia (Chalmers University of Technology)
Presupuesto total	919.448 €
Concedido ES	188.000 €

CONVOCATORIA CONJUNTA 2018

Países participantes	Austria, Chipre, Francia, Alemania, Países Bajos, Polonia, España, Suecia, Suiza, Turquía, Reino Unido
Temáticas	1. Advanced industrial PV technologies 2. Emerging PV technologies 3. Building and infrastructure integrated PV 4. Operation, diagnosis and system integration of PV plants 5. CSP low cost and next generation technologies
Presupuesto total	9.000.000 €
Concedido ES	1.150.400 €
Proyectos aprobados	15
Proyectos con MINECO/AEI	7

Nº	Acrónimo y título del proyecto	Países participantes
1C4PV		
1	One intelligent cloud for PV Assets Diagnosis and Maintenance	España, Turquía y Chipre
2	Ambi PV Adapted Modules for Bifacial Photovoltaics	Austria, Suiza, Alemania, Alemania e Islandia
3	BOBTANDEM Band Offset selective Barrier Three Terminal perovskite on silicon high efficiency Tandem Solar Cell	Francia, Suiza, Francia, Alemania y Países Bajos
4	CHEER-UP - Low Cost High Efficiency and Reliable Umg Pv cells	España, España, España y Turquía
5	ECOSun Economic COgeneration by Efficiently CONcentrated SUNlight	Austria, Turquía, Austria, Turquía y España
6	FUN Sputtered and otherwise deposited a-Si for Fabricating passivated screen- printed contacts for an indUstrially feasible productionN	Alemania, Alemania, Países Bajos y Alemania
7	In4CIS New in-line optical methodologies for advanced assessment of high efficiency CIGS industrial processes	España, España, España, Alemania y Alemania
8	Nano4CSP Nanomaterials for reduced maintenance costs in CSP plants	Grecia, Chipre, Grecia y Austria
9	NFA4R2ROPV Industrial roll-to-roll (R2R) printing of highly efficient non-fullerene acceptor (NFA)-based organic photovoltaics (OPV)	Suecia, Alemania, Países Bajos, Suecia y Alemania
10	PERDRY Dry production routes for large-area benign metal halide perovskite solar cells	España, Islandia, Países Bajos, Suecia, Suecia, Suecia e Islandia
11	PV-ANALYTIC Advanced photovoltaic system monitoring and analytics solution enhanced with intelligent interoperable data-driven features for efficient big data real-time analysis, failure diagnosis, automated management and integrated micro-grid control	Austria, Chipre
12	UNIQUE Carbon Based Perovskite Solar Cells with UNI-Directional Electron Bulk Transport: in the QUest of a Short Time to Market	Alemania, Francia, Francia, suiza, Italia, Reino Unido, España, Suecia y Suiza
13	ROM-PV Reducing the photovoltaic operation and maintenance (O&M) costs through an advanced online platform	Chipre, España y Chipre
14	SCALEUP Large scale molecular simulation of perovskite solar cells	España, España, Alemania, Suiza, Islandia y Países Bajos
15	SUCCESS Sequential, high Uniformity, Cost Competitive Elemental Selenization and Sulphurization for CIGSSe2	Países Bajos, Alemania, Francia, Países Bajos y Alemania

CONVOCATORIA NACIONAL APCIN 2019-2

PROYECTO 3 CHEER-UP - Low Cost High Efficiency and Reliable UMG PV cells

Upgraded Metallurgical Silicon (UMG) is an ecological alternative to solar-grade silicon in terms of energy payback time (50% less) and CO₂ emissions (70% less). It also has the potential to reduce the cost of raw material (around 25%). For all this, making UMG a commercial product is an opportunity to re-build European technological leadership in the photovoltaic sector by innovating upstream in the value chain. CHEER-UP will demonstrate that UMG multicrystalline silicon is a competitive alternative for polysilicon to produce high efficiency solar cells, in terms of economics and environmental impact. This scope will be addressed with a Passivated Emitter and Rear Cell architecture (PERC) that incorporates black silicon texturization.

IP	Universidad Politécnica de Madrid (ES)
Socios	Universitat Politècnica de Valencia (ES), Aurinka PV Group (ES), Center for Solar Energy Research and Applications (TK)
Presupuesto	853.883 €
Concedido ES	79.500 €

PROYECTO 5 ECOSun - Economic COgeneration by Efficiently COncentrated SUNlight

ECOSun targets a radical cost reduction of electricity and heat co-generation via a CPV-T system, by applying low-cost materials and advanced industrial manufacturing methods. Solar radiation is captured in a parabolic through concentrator based on a novel support structure fabricated by injection molding and focused on a Co-Generation Absorber Module (CAM), where special c-SiPV-cells are operated under concentration. The heat dissipated through the cells is transferred into a heat transfer fluid (HTF) and - in combination with the generated electricity - can be used for various applications, such as solar cooling or heating, significantly increasing system efficiency.

IP	Graz University of Technology (AT)
Socios	GÜNAM (TK), IMK (AT), iTech (TK) y CTTC UPC (ES)
Presupuesto	853.883 €
Concedido ES	79.500 €

PROYECTO 7 In4CIS - New in-line optical methodologies for advanced assessment of high efficiency CIGS industrial processes

In4CIS aims to establish and demonstrate at pre-industrial level optical advanced methodologies for the in-line assessment of advanced processes in Cu(In,Ga)Se₂ (CIGS) thin film photovoltaic technologies. These will be applied to the monitoring of innovative postdeposition treatments (PDT) that are developed for the production of very high efficiency CIGS devices, in order to ensure a successful transfer of these CIGS process concepts from cell (lab) level to a pre-industrial module level. PDT processes are based in alkaline postdeposition doping treatments and have allowed

achieving solar cells with reproducible efficiency values > 20% (with a record certified value of 22.6%), in the frame of the Sharc25 H2020 European project that was coordinated by the ZSW partner (<http://sharc25.eu/>). The successful transfer of these process concepts to pre-industrial module level requires for a detailed assessment of the uniformity of the processed layers when the processes are scaled from cell (cm²) to module (m²) device dimensions. Appearance of inhomogeneities in the layers when scaled to module dimensions constitutes one of the main reasons for the decrease of the efficiency of the modules in relation to that from the individual cells. Optimisation of the uniformity of the processes implies the need for high sensitivity tools and methodologies allowing the advanced assessment at in-line monitoring level of the uniformity of the processed layers, detecting at an early stage the appearance of in-homogeneities in the processed surfaces at the process line. This implies the need for non-destructive methodologies – as those based in optical techniques- allowing the fast inspection of the processed surfaces in the process line.

IP	Institut de Recerca de l'Energia de Catalunya (ES)
Socios	Universitat de Barcelona (ES), Lenz Instruments (ES), Center for Solar Energy and Hydrogen Research Baden-Württemberg (DE) y MANZ AG (DE)
Presupuesto	853.883 €
Concedido ES	79.500 €

PROYECTO 10 PERDRY - Dry production routes for large-area benign metal halide perovskite solar cells

Solar cells employing metal halide perovskite, HaP, light absorbers have developed tremendously over the past years. So far, best efficiencies (>22%) were all obtained with lead-based HaPs, prepared by non-scalable spin-coating using often toxic solvents. Hence, to reach a TRL >5 it is essential to develop scalable processes with no toxic solvents and either replace the lead or ensure safe “end-of-life” protocols. We will use dry processing to prepare uniform large-area and benign HaP thin films and integrate them into efficient photovoltaic devices. Physical vapour-based processes such as co-evaporation, flash evaporation and pulsed laser deposition of the binary constituents or pre-formed powders will be used. The current TRL of these processes is 3-4 for flash and co-evaporation and 2 for pulsed laser deposition. The main benefit of these dry processes is that they are solvent-free and additive (allowing for multiple layer films). They allow for a very high compositional freedom, because no common solvent is needed to process/dissolve the precursor salts. Furthermore, control over the numerous interfaces in the stacked layer device is less problematic than for solution-based addition of layers. We will leverage this important advantage to develop more benign HaP films, by replacing toxic lead with tin, bismuth, or antimony and a mono-valent cation. Our Solar Cell manufacturing partner, 3GSolar, will provide the consortium with end-user information and with knowledge regarding rigorous encapsulation. The latter will prevent contact of the perovskite with ambient atmosphere, which strongly increases the lifetime and eliminates risk of lead contamination to the environment. To demonstrate TRL=5 partner Solmates will prepare 10 by 10 cm films using vapour-based processes and integrate them into solar cell demonstrators (PCE>19%, and stability over 5000 hours).

IP	Universitat de València (ES)
Socios	Bar Ilan University (IS), Solmates BV (NL), Karlstad University (SW), JB EcoTech AB (SW) Glava Energy Center AB (SW) y 3GSolar Photovoltaics Ltd (IS)
Presupuesto	853.883 €
Concedido ES	79.500 €

PROYECTO 12 UNIQUE - Carbon Based Perovskite Solar Cells with UNI-Directional Electron Bulk Transport: in the QUEst of a Short Time to Market

Unique European know-how and industrial involvement is combined here to realize high-efficient large area perovskite devices with long lifetimes for a truly commercially viable perovskite PV technology. Sustainable, industrial-relevant processes and low-cost materials are implemented to aim at a competitive new-generation of PV. Short energy- and CO₂-payback times and a low CO₂ emission are key factors accounted for in this project.

Printable solution-processed inorganic porous metal oxides with carbon counterelectrode, functionalized interfacial passivating layers and high quality perovskite crystals will compose the enhanced cell architecture to achieve a uni-directional charge transport. The outcome of this approach is the manufacture of stable CPSCs with 23% steady-state certified power conversion efficiency (PCE) on < 1 cm.

IP	Fraunhofer Institute for Solar Energy Systems ISE (DE)
Socios	CEA (FR), LEPMI - University of Savoie Mont Blanc (FR), EPFL (CH), University of Rome Tor Vergata (IT), Swansea University - SPECIFIC (GB), Universidad Autonoma de Madrid (ES) Dyenamo AB (SE), y Solaronix (CH)
Presupuesto	853.883 €
Concedido ES	79.500 €

PROYECTO 13 ROM-PV - Reducing the photovoltaic operation and maintenance (O&M) costs through an advanced online platform

A challenge in the scope of facilitating further the uptake of photovoltaic (PV) technology is the reduction of levelised cost of energy (LCOE) by increasing the lifetime output, quality and sustainability as targeted by the SET-Plan. This can be achieved by improving the lifetime energy yield and operation and maintenance (O&M) costs through online data-driven and statistical algorithms that will enable the analysis of measurements collected from constant monitoring of PV plants. In this sense, a main challenge for ensuring quality of PV power plant operation is to safeguard reliability and optimum performance by detecting, classifying and accurately quantifying performance losses and failures. The ROM-PV project has been initiated to overcome these challenges by developing and commercialising a product that will enable preventive and predictive maintenance and ensure optimal PV plant performance while also reducing the associated O&M costs. This will be achieved through the development of a cloudbased solution that will host innovative algorithms able to a) ensure data quality and b) allow failure and

performance loss diagnosis (open- and short-circuit failures, inverter and bypass diode faults, shading, degradation, soiling, etc.) without disrupting the normal operation of the PV plant. The methodology will be primarily based on real-time analysis of measurement data, machine learning and statistical analysis and will be verified experimentally against field measurements from existing PV systems installed worldwide.

IP	University of Cyprus (CY)
Socios	University of Jaén (ES) y Alectris Hellas IKE (CY)
Presupuesto	853.883 €
Concedido ES	79.500 €

PROYECTO 14 SCALEUP - Large scale molecular simulation of perovskite solar cells

Metal halide perovskites (MHP) have emerged as one of the most studied semiconductors due to their excellent optoelectronic properties. This is evidenced by the rapid development of perovskite solar cells (PSCs) with a record certified photoconversion efficiency nowadays of 25.2%, similar to those of silicon cells (<https://www.nrel.gov/pv/cell-efficiency.html>). Nonetheless, industrial application of PSCs is critically hampered by instability issues, including intrinsic, environmental, and operational factors. Instability is attributed to several chemical and dynamical processes that occur at very distinct time scales, like slow ionic rearrangements and physical and chemical interactions in the bulk and at interfaces with contact layers. These phenomena cause IV hysteresis, and ultimately, device degradation. In this proposal, we combine the complementary capacities of classical and quantum computational tools to develop versatile numerical models for large scale molecular dynamics, capable to capture the physics and chemistry that trigger processes causing instability issues.

IP	Universidad Pablo de Olavide, de Sevilla (ES)
Socios	Universidad Pablo de Olavide, de Sevilla (ES), Universität zu Köln (DE), Flumix Inc. (CH) Israel Institute of Technology (IS) y Eindhoven University of Technology (NL)
Presupuesto	853.883 €
Concedido ES	79.500 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2019

Países participantes	Austria, Chipre, Francia, Alemania, Países Bajos, Polonia, España, Suecia, Suiza, Turquía, Reino Unido
Temáticas	1. Advanced industrial PV technologies 2. Emerging PV technologies 3. Building and infrastructure integrated PV 4. Operation, diagnosis and system integration of PV plants 5. CSP low cost and next generation technologies

Presupuesto total	9.000.000 €
Presupuesto ES	300.000 €
Proyectos aprobados	9
Proyectos con MINECO/AEI	2

Nº	Acrónimo y título del proyecto	Países participantes
1	AID4PV. UAV-based decision-making and modular approach to support PV plant diagnosis using EL, RGB, IRT imagery, correlated with electrical data analysis and advanced reporting and geovisualization	España , Chipre, Grecia
2	Bussard. Busbarless solar cells with passivated contacts for Next Gen Module Integration	Alemania , Suiza, Israel, Países Bajos
3	HIPER XL. High-Efficiency Si PERovskite Tandem Solar Cells eXtra Large	España , Turquía, Reino Unido, países Bajos
4	ORION. Organic Photovoltaic Greenhouse	Grecia , Israel, Alemania
5	PEROSOLAR. Development of Efficient, Stable and Pb-Free Perovskite Solar Modules	Turquía , Grecia
6	PROPERPHOTOMILE. Towards Prediction of Operational Lifetime of Perovskite Photovoltaics: Acceleration Factors in Stability Study through Machine Learning	España , Israel, Suiza, Alemania, Estados Unidos
7	PV40+. Pv module with an enhanced lifetime of more than 40 years and reduced environmental impact	Austria , Alemania, Turquía
8	S3. Smart Solar System	Alemania , Chipre, Grecia
9	SUNSETS. Modular Control Systems for Maximising Solar Energy Utilisation and Grid Service Provisions by Residential PV Systems coupled with Thermal Storage (SUNSETS)	Grecia , Suiza

CONVOCATORIA NACIONAL APCIN 2020

PROYECTO 3 HIPER XL. High-Efficiency Si PERovskite Tandem Solar Cells eXtra Large

Last year, the IEA concluded that based on projections of the Sustainable Development Scenario, the annual renewable energy capacity needs to grow on average by 300GW per year between 2018 and 2030. Unfortunately, the annual capacity expansion in 2017 and 2018 were similar at a level of 180GW. According to the ISE PV report (©Fraunhofer ISE: Photovoltaics Report, updated: 14 November 2019), the global annual production of PV in 2017 and 2018 was roughly 100 GW. If

we take into account the relatively low capacity factor of PV systems, it becomes clear there is a need to accelerate the commissioning of PV systems on a global level.

Effective ways to increase the deployment of PV include, but are not limited to: cost reduction and social acceptance. Social acceptance is especially relevant in densely populated areas. Here increased module efficiency can help to reduce the required surface area for PV systems, or in other words, generate more power from a given area. To reduce the cost of solar electricity, increased module power output is also key. The share of the module cost compared to the overall PV system cost is well 50%. Therefore increasing the module power output acts as a lever to reduce the levelized cost of electricity from the PV system.

The Hiper XL consortium proposes to increase, in a cost effective manner, the overall power output of PV systems by combining two proven methods: firstly the use of hybrid perovskite / cSi tandems to increase the module efficiency and secondly, to increase the modules power output by application of bifacial modules. The target is a four terminal bifacial hybrid tandem module with a (bifacial equivalent) efficiency of 26%, fabricated using industrially relevant, scalable processes. The stability and annual yield of these modules are evaluated during outdoor tests in two different climate zones (Turkey and The Netherlands). A cost assessment is made to evaluate the economic potential of bifacial hybrid tandem PV modules.

IP	TNO Solliance, Países Bajos
Socios	España, Turquía, Reino Unido
Presupuesto	853.883 €
Concedido ES	79.500 €

PROYECTO 6 PROPERPHOTOMILE. Towards Prediction of Operational Lifetime of Perovskite Photovoltaics: Acceleration Factors in Stability Study through Machine Learning

Halide perovskite solar cells (PSCs) have revolutionized the photovoltaic arena providing power conversion efficiencies currently above 25 %, low cost and ease of fabrication. Their low-weight, semi-transparency and flexibility make them ideal energy sources for applications in self-powered devices required for the future internet of things (IoT). Their combination in tandem architectures with Silicon solar cells will permit building terawatt-scale energy production required for low-carbon economy, shaping the energy future of our society. However, the limited lifetime of PSC is a drawback for the deployment and commercialization of this technology. Accelerated stability testing is needed to identify promising materials and device architectures, as well as to predict the expected PSC lifetime. Despite world-wide efforts in stabilityrelated investigations, large variability are noted between different devices, experimental procedures and parameters reported, making the required analysis extremely challenging. We have recently published a consensus on how to test PSCs for stability, and how to accurately report data, setting the base for international concerted efforts. However, correlating large amounts of data is still a challenge. Towards that end, herein we propose to join forces with the emerging field of big data analysis using automated machine learning. This interdisciplinary research is aimed at developing an automated scheme for analysing PSC stability data, generated using standardized accelerated testing.

Such analysis will determine the accelerated test most relevant to normal operating conditions, as well as the acceleration factor (which relates the measured stability parameters with PSC operational lifetimes) and expected PSC lifetimes. The knowledge gained will be implemented to strengthen the productivity and competitiveness of European PV industry, as well as within the PSC research and manufacturing sector.

IP	Instituto Catalán de Nanociencia y Nanotecnología (ICN2), España
Socios	España, Israel, Suiza, Alemania, Estados Unidos
Presupuesto total	2.019.276 €
Concedido ES	187.000 €

CSP ERA.NET

La ERANET CSP (Energía Solar de Concentración) es el resultado de una colaboración conjunta de la Unión Europea para cerrar la existente brecha entre la investigación y el despliegue comercial en la tecnología de la Energía Solar Concentrada (CSP), ya que esta tecnología puede desempeñar un papel principal en la generación de electricidad renovable europea a medio plazo.

Esta ERANET tiene como objetivo coordinar los esfuerzos de los Estados miembro, países asociados y de las regiones para lograr los objetivos del Plan CSP SET, mediante la puesta en común de sus recursos financieros para implementar convocatorias conjuntas de propuestas de Investigación e Innovación, dando como resultado proyectos estratégicos con volúmenes sustanciales de inversión, que no pueden ser asignados por países individuales o por la Comisión Europea de manera independiente.

Áreas temáticas:

1. Cost reduction and efficiency increase in components Advanced linear concentrator Fresnel technology with direct molten salt circulation;
2. Improved Central Receiver Molten Salt technology;
3. Multi-tower central receiver beam down system;
4. Next Generation of Central Receiver Plants with molten sal receiver;
5. Thermal energy storage;
6. Parabolic trough with molten salts;
7. Parabolic trough with silicon oil;
8. Solar tower power plant to commercially scale-up and optimize the core components of the open volumetric air receiver technology.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales: 3 (2020, 2021, 2022)

Participación AEI en convocatorias conjuntas: 3 (2020, 2021, 2022)

CONVOCATORIA CONJUNTA INTERNACIONAL 2020

Países participantes	Alemania, Grecia, Israel, España (CDTI + AEI + Agencia Extremeña de la Energía AGENEX), Italia, Portugal, Suiza y Turquía
Temáticas	1. Cost reduction and efficiency increase in components Advanced linear concentrator Fresnel technology with direct molten salt circulation 2. Improved Central Receiver Molten Salt technology 3. Multi-tower central receiver beam down system 4. Next Generation of Central Receiver Plants with molten sal receiver 5. Thermal energy storage 6. Parabolic trough with molten salts 7. Parabolic trough with silicon oil 8. Solar tower power plant to commercially scale-up and optimize the core components of the open volumetric air receiver technology
Presupuesto total	13.000.000 €
Presupuesto ES	1.085.500 €

Proyectos aprobados	6
Proyectos con MINECO/AEI	4 (3 coordinados)

Nº	Acrónimo y título del proyecto	Países participantes
1	TES4Trig. Thermal Energy Storage for On-demand Solar Trigenation	Grecia, Alemania, España,
2	InnoSolPower. INNOvative SOLar micro-TES with high-POWER density	Turquía, Grecia, Italia
3	CSP PLUS. Techno-economical evaluation of different thermal energy storage concepts for csp plants	Israel, Turquía, España
4	EUROPATMOS. European parabolic trough with molten salt	Alemania, Italia, España, Portugal
5	NEWCLINE. Advanced thermocline concepts for thermal energy storage for csp	Alemania, Suiza, España
6	SI-CO. High performance parabolic trough collector and innovative silicone fluid for csp power plants	Alemania, Israel, España

CONVOCATORIA NACIONAL APCIN 2020

PROYECTO 3 CSP PLUS. Techno-economical evaluation of different thermal energy storage concepts for csp plants

The objective of CSPplus is to reduce 30% the capital expenditure (CAPEX) and 3-4% the operating expenditure (OPEX) in the next generation of CSP plants. This reduction translates into a decrease of the levelized cost of energy (LCOE) (with a final LCOE lower than 0.10 €/kWh, as indicated by the SET-Plan strategic targets). Such objective will be achieved by increasing the peak operating temperature of the system to 750°C, an upgrade that will be exploited fully thanks to CSP specifically designed components. Several storage candidates can theoretically achieve this goal, but there is no single solution when all the boundary system is considered. The aim of this project is to develop a new tool capable of fully identify, develop, and compare new storage concepts in an easy manner, providing a reliable and cost-effective solution based on the specific conditions of each possible scenario. This development will impulse the fully dispatchable CSP industry into new markets, and all the steps of this project will include societal objectives to increase awareness and acceptance of the new technology.

IP	Universitat de Lleida, España
Socios	University of Lleida - GREiA Research Group, Ben-Gurion University of the Negev Mechanical Engineering, University Chemistry Department, Abengoa, Universitat de Barcelona Materials Science and Physical Chemistry, Teknolojik Tesisat Sistemleri Sanayi ve Ticaret Ltd.Şti R&D
Presupuesto total	1.796.380 €
Concedido ES	149.000 € + 199.000 €

PROYECTO 4 EUROPATMOS. European parabolic trough with molten salt

EuroPaTMoS pulls together the European expertise and testing infrastructure for parabolic trough (PTC) with molten salt (MS), to accelerate transfer of technology from R&D to commercial deployment. Two leading European CSP companies (TSK Flagsol and Rioglass Solar) join forces with three SMEs providing risk assessment and quality assurance services (CSP Services GmbH), quality assurance equipment and measurement services (CSP Services España), electrical scope and operating teams for CSP (Ductolux) to develop a selling proposition with reduced risk and competitive cost.

IP	Deutsches Zentrum für Luft- und, Alemania
Socios	Deutsches Zentrum für Luft- und Raumfahrt EV, CSP Services GmbH, DUCTOLUX, S.L. (DUCTOLUX) R&D, Italian National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA) Energy Technologies Department, Rioglass Solar SCH S.L. TSK Flagsol Engineering GmbH, Universidad Complutense de Madrid (UCM). Chemical and Materials Engineering, Universidad de Extremadura (UEX) Mechanical, Energetic and Materials Engineering, University of Évora (UEVORA) Renewable Energies Chair, CSP Services España, S.L.
Presupuesto total	3.404.387 €
Concedido ES	138.930 € + 149.700 €

PROYECTO 5 NEWCLINE. Advanced thermocline concepts for thermal energy storage for csp

Hermocline is a cost efficient thermal storage system able to reduce capital costs up to 40%. The objective of this project is to develop new thermocline concepts that can be applicable to different csp plants (pt, cr, lf). Two different, but complementary, concepts related to the materials (media) are proposed. The first concept involves the use of innovative structured ceramic filler refractories. The other is an innovative combination of solid filler material (the ceramic one is the preferred option) with specially selected encapsulated phase change material (pcm) located at the top and bottom regions of the tank (multi-layered thermocline concept with pcm and filler). Both concepts will be experimentally tested in a lab-scale set up, where attention is focused on the analysis of the relevant thermal and fluid dynamic aspects that characterize the new packed bed. The two concepts will also be experimentally tested at relevant pilot scale of 4 mwh with at least 50 charge/discharge cycles.

Detailed simulation of both concepts will be mainly validated with the experimental data generated in this project. based on the simulation tools already developed by the partners, both concepts will be evaluated and optimized in terms of system integration and lcoe savings on a csp system level and up-scaling for CSP target applications.

IP	Universitat Politècnica de Catalunya, España
Socios	Universitat Politècnica de Catalunya- BarcelonaTech (UPC) Máquinas y Motores Térmicos, German Aerospace Center (DLR) Institute of Engineering Thermodynamics, University of Applied Sciences Rapperswil (HSR) Institute for Solar Technology (SPF), NEBUMA GmbH KRAFTBLOCK, Empresarios Agrupados
Presupuesto total	2.453.130 €
Concedido ES	248.830 €

PROYECTO 6 SI-CO. High performance parabolic trough collector and innovative silicone fluid for csp power plants

The Si-CO project aims to techno-economically demonstrate a new optimized and large-scale parabolic trough collector (Si-PTC) design that operates using HELISOL®XLP at 430°C, a siliconebased heat transfer fluid (Si-HTF). This project also pursues to demonstrate and evaluate the exchange of this Si-HTF in existing power plants. The combination proposed (Si-PTC + Si-HTF), enables a cost reduction in the solar field, HTF and TES CAPEX of 12% and a 14% in OPEX for new solar plants.

The technology proposed will enhance the annual energy production of a commercial PTC plant by 7.5% and the global capacity factor by 2%. Altogether, this translates in a LCOE reduction of up to 15%. Furthermore, the exchange application of the Si-HTF in existing plants, designed for an operation T of 400°C, has the potential to fix the H2 permeation issues because HELISOL®XLP shows almost zero formation at 400°C. After the HTF exchange, the use of HELISOL®XLP will avoid any future H2-HCE issues increasing its performance while prolonging its service time and reducing power plant down time, presenting clear O&M and environmental advantages for existing plants even if they can't operate at 430°C. This also applies to new power plants with higher working T.

Therefore, Si-CO pursues the 2 independent actions above mentioned, both based on the new HELISOL®XLP, which has additional cost reduction and better performance potential with respect to the other 2 commercial existing HELISOL®XLPgrades, because it has a lower vapour pressure during operation and can be operated at 430°C. The Si-CO project stands in a row with three international demonstration projects (SING, SITEF, SIMON) that successfully established Si-HTF as a very promising alternative with respect to the state-of-the-art HTF.

IP	ACCIONA INDUSTRIAL S.A. España
Socios	ACCIONA INDUSTRIAL S.A., Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR) Solarforschung, WACKER Chemie AG Silicones, Rioglass Solar Systems LTD. R&D, THERMAL POWER ENGINEERING SL, Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT) Plataforma Solar de Almería, Rioglass Solar SCH S.L., Senior Flexonics GmbH
Presupuesto total	3.375.589 €
Concedido ES	200.000 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2021

	Alemania, Israel, España, Suiza, Turquía
Temáticas	- Advanced linear concentrator Fresnel technology with direct molten salt circulation - Parabolic trough with molten salts - Parabolic trough with silicon oil - Solar tower power plant to commercially scale-up and optimize the core components of the open volumetric air receiver technology - Improved central receiver molten salt technology

	• Next Generation of Central Receiver Plants with molten salt receiver • Multi-tower central receiver beam down system • Advanced Thermal energy storage
Presupuesto total	6.005.000 €
Presupuesto ES	799.500 €
Proyectos aprobados	4
Proyectos con MINECO/AEI	3 (1 coordinado)

Nº	Acrónimo y título del proyecto	Países participantes
1	ADVIAMOS. Advancing innovations in molten salt	Alemania, España, Portugal
2	DISOPED. Digital twin analysis of SOLar Parabolic trough collector plant to scale to higher powers for the integration into Electrical Distribution network	Turquía, España
3	LEIA. Solar field measurements to improve performance	España, Alemania
4	MIRAGE. Characterization and Optimization of High Reflectivity Mirrors for Solar Towers	Turquía, Alemania

CONVOCATORIA NACIONAL PCI 2022

PROYECTO 1 ADVIAMOS: Advancing innovations in molten salt

Using molten salt as both heat storage and heat transfer medium in CSP plants offers the potential of higher operation temperatures in the solar field, but brings along technical challenges. The ADVIAMOS consortium focuses on molten salt-specific aspects in the operation of parabolic trough and central receiver systems, aiming in improved O&M procedures and thus, reduced costs. The partners follow a multiscale approach, from aspects on materials and components up to system level. BrightSource and Solarlite, two world leaders in commercial CSP systems, bring in their experience in the development, installation and operation of solar tower and parabolic trough CSP plants, respectively. Whereas BrightSource will provide special coating samples used in Power Towers subcontracted by DLR. Together with Ductolux, who cover the process control scope, and Steinmueller Engineering, who bring in their know-how on customized steam generation systems, the consortium's expertise covers over all aspects of the industrial operation of CSP with molten salt. The industrial partners join forces with two universities, the University of Extremadura and the University Complutense de Madrid, and a large R&D institution, DLR, with complementary know-how on molten salt-specific fundamentals and technologies. Jointly with the University of Évora, DLR manages and operates the Évora Molten Salt Platform (EMSP). This unique constellation allows the project partners to jointly tackle crucial aspects in the operation of molten salt-based CSP systems, from material aspects such as salt degradation and corrosion to system-level aspects such as enhanced process control and automation. Even though the architecture of parabolic trough and solar tower systems is inherently different, many of these

operational issues are very similar. The overall project aim is to resolve main bottlenecks in molten salt-based CSP systems, in order to reduce the operation and maintenance costs in both solar tower and parabolic trough systems.

IP	DLR - German Aerospace Center - Institut of Solar Research. Alemania
Socios	Steinmüller Engineering GmbH (Alemania), Universidad de Extremadura (España), Universidad Complutense de Madrid (España), Ductolux, S.L. (España), Solarlite CSP Technology GmbH (España), University of Évora (Portugal)
Presupuesto total	1.800.994 €
Concedido ES	246.000 € (Univesidad de Extremadura 123.000 €), (Universidad Complutense de Madrid 123.000 €)

PROYECTO 2 DISOPED. Digital twin analysis of SOLar Parabolic trough collector plant to scale to higher powers for the integration into Electrical Distribution network

In the CSP sector there is at present a serious market failure in Europe to move new technologies from demonstration to first-of-a-kind commercial-scale plants (FOAKs). FOAKs are a fundamental step to re-activate the deployment of CSP in Europe and that priority should be given to deployment efforts that demonstrate the validity of the cooperation mechanisms set out in the Renewable Energy Directive. In this project, the TCP-100 facility of CIEMAT at Plataforma Solar de Almería is considered the prototype over which all the analysis will be done. Since it is estimated that an approximate investment of 0.9 - 3.3 billion EUR would be necessary for the CSP FOAKs, the deployment need huge investment. In order to minimize the risk of failure, the project aims to simulate all sub-components such as collectors, mirrors, receivers, valves, heat exchanger and steam generator of CSP and systems, subsystems associated and storage materials available, including pumps, valves, instrumentation, tank(s) and heat exchanger equipment of Thermal Energy Storage (THS) in a software component based on the digital-twin concept. The digital twin of CSP and THS sets in different capacities and subsystems will be integrated and operated in simulation in a electrical network grid. The operational objectives like a peak shaving or power purchase agreement (PPA) mechanism will also be validated by changing the main design parameters of the prototype the CSP plant, lie the capacities of digital twin CSP and thermal storage. The activities in the project will answer all open questions and objectives concerning operation, performance and durability of all involved elements of the system to reach bankability at the end of the Project, under the simulated scenario defined by a Turkish electrical Distribution Operator.

IP	GDZ Elektrik Dağıtım AŞ. Turquía
Socios	Inelso Enerji Sistemleri Sanayi Ticaret İthalat İhracat Anonim Şirketi (Turquía), Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (España), Unda Mühendislik A.Ş.(Turquía)
Presupuesto total	580.460 €
Concedido ES	184.500 €

PROYECTO 3 LEIA. Solar field measurements to improve performance

The aim of the project is to contribute to the market deployment of the next generation of innovative, reliable, and smart Concentrated Solar Power (CSP) plants focusing on new control and Operation and Maintenance (O&M) solutions for the central receiver technology using molten salts, as the most promising cost-effective solution with the highest market potential. To achieve it, the LEIA project will develop and test at PSA, CENER, and the Cerro Dominador CSP plant: - Smart heliostat field control solutions to automate and improve calibration and characterization. - Smart Receiver Control solutions to measure receiver temperature, emittance, and high solar irradiance distribution. - Solar Field O&M control strategies such as Automated Soiling Inspection and a Smart Energy Management system. The proposed developments will affect the following Key Performance Indicators taking as reference the business model applied on the Cerro Dominador CSP plant (100MWe, 17.5h of storage and lifecycle of 25 years): - A CAPEX increase of 0.05% and OPEX decrease of 1.1% in the solar field due to monitoring and measurement systems. - An increase of 5.6% in the annual generation of the plant due to the control strategies. - This results in a reduction of 7.9% on the LCOE for a final LCOE of 70.9 €/MWh. In view of the foregoing, LEIA puts together a team of 7 partners from 2 different countries with expertise in the main strategic CSP fields. The LEIA approach merging renowned renewable energy technology developers, research centers, and relevant EPC final users will facilitate its replication worldwide, promoting and consolidating the technological leadership of the EU in the Renewable Energy industry. The LEIA framework is completed by a Stakeholder Board conformed by PROTERMOSOLAR, ESTELA, ACSP, UNE, Sandia National Laboratory, and Cerro Dominador. All of them putting the foot down and really moving from intentions to actions in the development of the next generation of CSP plants.

IP	CIEMAT. España
Socios	Acciona Industrial S.A (España), CSP Services GmbH (Alemania), Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR) (Alemania), Tewar Engineering (España), Fundación Cener (España), Siemens Energy Global GmbH & Co. KG (Alemania)
Presupuesto total	2.692.989 €
Concedido ES	369.000 €, Centro de Investigación Energética Medioambiental y Tecnológica- CIEMAT 215.250 €, Fundación Cener- CIEMAT 153.750 €



NEWA- New European Wind Atlas ERA-NET PLUS

NEWA pretende integrar y coordinar los distintos esfuerzos nacionales en torno a iniciativas de I+D para la creación y publicación de un Nuevo Atlas Eólico Europeo que permitirá un uso más eficiente de los recursos financieros y de las capacidades de investigación. El proyecto se centra en la mejora de las competencias de modelado del flujo atmosférico y sus interacciones con los aerogeneradores y parques eólicos. NEWA cubre todos los Estados Miembros de la UE y algunos Países Asociados, así como sus zonas económicas exclusivas, tanto en tierra como en mar. El resultado del proyecto será la creación de una herramienta que permitirá la minimización de factores de incertidumbre en la determinación de las condiciones de viento.

Socios: Coordinador: Dinamarca (EUDP Danish Energy Authority), Bélgica (SPW Public Service of Wallonia; EWI Department of Economy, Science and Innovation Flemish Government), Alemania (BMU Federal Ministry for the Environment, Nature Conservation and Nuclear Safety), Letonia (LZA Latvijas Zinatnu Akademija), Portugal (FCT Fundação para a Ciência e a Tecnologia), **España (Ministerio de Economía y Competitividad)**, Suecia (SEA The Swedish Energy Agency), Turquía (The Scientific and Technological Research Council of Turquía TÜBİTAK).

Presupuesto total ERA-Net (financiación UE): 33% de la aportación de los países.
Concedido España (financiación UE): financiación directa a los beneficiarios.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas: 1 para financiar un proyecto a 5 años.

CONVOCATORIA CONJUNTA INTERNACIONAL: NEW EUROPEAN WIND ATLAS JOINT PROGRAMME

Países participantes	Alemania, Bélgica (WL, FL), Dinamarca, España, Letonia, Portugal, Suecia, Turquía
Presupuesto	8.800.000 €
Presupuesto ES-MINECO:	1.500.000 €
Proyectos aprobados	1 (con participación española; 7 subproyectos)

Nº	Acrónimo y título del proyecto	Países participantes
1	NEWA. Development of a New European Wind Atlas	Dinamarca, Alemania, Bélgica, España Letonia, Portugal, Suecia, Turquía

CONVOCATORIA NACIONAL APCIN 2014

PROYECTO 1 NEWA Development of a New European Wind Atlas

The wind energy industry is still troubled by many projects showing considerable negative discrepancies between calculated and actually experienced production numbers and operating conditions. The New European Wind Atlas is aimed at reducing these uncertainties, and is structured around three areas of work.



1. Creation and publication of a European wind atlas in electronic form, which will include the underlying data and a new EU wind climate database which will as a minimum include: wind resources and their associated uncertainty; extreme wind and uncertainty; turbulence characteristics; other adverse weather conditions and their probability of occurrence; the
2. level of predictability for short-term forecasting and assessment of uncertainties; guidelines and best practices for the use of data especially for micro-siting.
3. Development of dynamical downscaling methodologies and open-source models validated through measurement campaigns, to enable the provision of accurate wind resource and external wind load climatology and short-term prediction at high spatial resolution and covering Europe. The developed downscaling methodologies and models will be fully documented and made publicly available and will be used to produce overview maps of wind resources and other relevant data at several heights and at high horizontal resolution.
4. Measurement campaigns to validate the model chain used in the wind atlas. At least five coordinated measurement campaigns will be undertaken and will cover complex terrains (mountains and forests), offshore, large changes in surface characteristics (roughness change) and cold climates.

Subproyectos españoles

1. IP: Fundación CENER-CIEMAT, Navarra
2. Financiación MINECO: 265.000 €
3. IP: Fundacio Privada Institut Catala de Ciencies del Clima
4. Financiación MINECO: 88.000 €
5. IP: Universidad de las Islas Baleares
6. Financiación MINECO: 120.000 €
7. IP: (Centro de Investigación Energética Medioambiental y Tecnológica (CIEMAT)
8. Financiación MINECO: 150.000 €
9. IP: Universidad Complutense de Madrid (UCM)
10. Financiación MINECO: 85.000 €
11. IP: Universidad Complutense de Madrid (UCM)
12. Financiación MINECO: 86.000 €
13. IP: Barcelona Supercomputing Center
14. Financiación MINECO: 107.000 €

CONVOCATORIA NACIONAL APCIN 2016

Proyecto 1

1. IP: Universidad Complutense de Madrid (UCM)
2. Financiación MINECO: 45.000 €
3. IP: Barcelona Supercomputing Center- Centro Nacional de Supercomputación
4. Financiación MINECO: 94.000 €
5. IP: Universidad Complutense de Madrid (UCM)
6. Financiación MINECO: 45.000 €
7. IP: Centro de Investigación Energética Medioambiental y Tecnológica (CIEMAT)
8. Financiación MINECO: 65.000 €

Proyecto 2

1. IP: Universidad de las Islas Baleares
2. Financiación MINECO: 7.000 €
3. IP: Fundación CENER-CIEMAT
4. Financiación MINECO: 80.000 €

ERA-NET COFUND BESTF3 -Bioenergy Sustaining the Future 3

BESTF3 reúne a varias organizaciones nacionales y transnacionales interesadas en promover un mayor uso de la bioenergía. Continuación de dos iniciativas anteriores de BESTF ERA-NET Plus lanzadas en 2013, al igual que sus predecesoras, tiene como objetivo impulsar la inversión a gran escala en la implementación de bioenergía cerca del mercado, ayudando así a alcanzar los objetivos clave de la industria industrial europea.

El objetivo general de este BESTF3 es implementar un programa conjunto para proyectos de demostración de bioenergía para demostrar tecnologías de bioenergía mejoradas que ayudarán a Europa a avanzar hacia el logro de sus objetivos para 2016 y 2020. Aprovechará las asociaciones público-privadas para gestionar los riesgos y compartir la financiación de proyectos de bioenergía cercanos al mercado.

Los objetivos clave de BESTF3 son: implementar una única convocatoria conjunta de proyectos enfocados a la generación de bioenergía; mantener y mejorar la coherencia y la creación de redes entre los programas nacionales de bioenergía en toda la UE; promover la demostración de tecnologías bioenergéticas mejoradas para ayudar a desarrollar planes de proyecto robustos para una variedad de plantas demostradoras y emblemáticas que ayudarán a Europa a lograr sus objetivos energéticos entre 2016 y 2020; y difundir el conocimiento adquirido del programa y los proyectos individuales en toda la UE.

Socios: **Reino Unido (Department of Energy and Climate Change (DECC))**, Austria (Austrian Federal Ministry of Transport, Innovation and Technology (BMVIT)), Dinamarca (Danish Energy Authority (DEA/ENS)), Finlandia (Finnish Funding Agency for Technology and Innovation (TEKES)), Alemania (Agency for Renewable Resources (FNR)), Países Bajos (Ministry of Economic Affairs (MinEZ/MinEA)), Polonia (National Centre for Research and Development (NCBiR)), **España (Centro para el Desarrollo Tecnológico Industrial (CDTI), Agencia Estatal de Investigación (AEI))**, Suecia (Swedish Energy Agency (SWEA)).

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales: 4 (2016, 2017, 2018, 2019)

Participación de AEI en convocatorias conjuntas: 2016

CONVOCATORIA CONJUNTA 2016. BIOENERGY SUSTAINING THE FUTURE 3

Países participantes	Dinamarca, Finlandia, Países Bajos, Polonia, España, Suecia, Reino Unido
Temáticas	Bioenergy demonstrations of the European Industrial Bioenergy Initiative
Presupuesto total	22.000.000 €
Presupuesto ES-MINECO	130.000 €
Proyectos aprobados	3
Proyectos financiados por AEI	1 (1 coordinado)

Nº	Acrónimo y título del proyecto	Países participantes
	Segrabio.	
1	Develop and demonstrate the production of bio-ethanol and biogas from second grade and low cost biomass	Dinamarca, Suecia
	Waste2bio.	
2	Demonstrate a global process for organic Municipal Solid Waste, through the recovery of bioethanol and biogas in order to enhance valorization of residues, thus reducing energy costs and the negative impact of waste management.	España, Reino Unido
	Phoenix.	
3	Development of port injection of gas engines to provide a novel approach to power generation from sygas derived from biomass gasification or other sources	Reino Unido, Países Bajos

CONVOCATORIA NACIONAL APCIN 2016

PROYECTO 1 Waste2bio. Demonstrate a global process for organic Municipal Solid Waste, through the recovery of bioethanol and biogas in order to enhance valorization of residues, thus reducing energy costs and the negative impact of waste management

The principal idea of WASTE2BIO is to develop a more sustainable and efficient alternative to the current methods by producing bioethanol from biodegradable materials present in the MSW and to process the residual feedstock into biogas using anaerobic digestion. The WASTE2BIO project aims to validate and demonstrate a global process for treatment of organic Municipal Solid Waste (MSW), through the recovery of bioethanol and biogas thus enhancing the valorization of residues, reducing energy costs and impacts from waste management.

IP	Industrias Mecánicas Alcudía, S.A. (IMECAL), España
Socios	España (Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), IMDEA ENERGY), Reino Unido (Exergy Limited)
Presupuesto total	1.459.545 €
Concedido ES	88.000 € + 42.000 € = 130.000 €

DemoWind 2 – DemoWind 2 ERA-NET Cofund action – delivering cost reduction in offshore wind

DemoWind 2 reúne a una serie de organizaciones nacionales y transnacionales interesadas en acelerar la reducción de costos en la energía eólica marina. Sigue la primera iniciativa DemoWind que se lanzó en 2014 y, al igual que su predecesora, se centra en permitir que la industria, a través de la asociación, impulse las tecnologías a través de los TRL 5-6 a 6-7 en proyectos financiados a nivel transnacional. El objetivo es conectar las oportunidades de demostración de energía eólica marina existentes y las nuevas, intercambiar conocimientos y facilitar la aceleración de la reducción de costos de tecnologías innovadoras para la comercialización.

Esta acción contribuye a los objetivos de reducción de costos europeos para la energía eólica marina, el desarrollo económico del sector eólico marino europeo y ayuda a mantener la posición de liderazgo internacional de la UE en energía eólica marina.

Socios: **Coordinador Reino Unido (Department of Energy and Climate Change (DECC),** Bélgica (Agency for Innovation by Science and Technology (IWT), Dinamarca (Danish Energy Authority (DEA/ENS), Países Bajos (Ministry of Economic Affairs (MinEZ/MinEA), Noruega (Enova SF, Research Council of Norway (RCN), **España (Centro para el Desarrollo Tecnológico Industrial (CDTI), Agencia Estatal de Investigación-Ministerio de Economía y Competitividad (MINECO),** Taiwan (Ministry of Science and Technology (MoST Taiwan).

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales: 1 (2016)

Participación de MINECO en convocatorias conjuntas: 2016

CONVOCATORIA CONJUNTA 2016

Países participantes	Bélgica, Dinamarca, Países Bajos, España (CDTI, MINECO), Reino Unido
Temáticas	Delivering Cost Reduction in Offshore Wind in the following areas: Turbine components; Floating offshore turbines; Foundation structures; Electrical networks/multi terminal DC networks; Metocean data measurement and forecasting; Installation, decommissioning and 'end-of-life' techniques and Operations and maintenance
Presupuesto total	24.600.000 €
Concedido ES	750.000 €
Proyectos aprobados	5
Proyectos financiados por AEI	1

Nº	Acrónimo y título del proyecto	Países participantes
1	CHEF. Compact Holistic Efficient Floating Turbine	España, Reino Unido
2	FORTHWIND. Forthwind Offshore Demonstration Project	España, Reino Unido
3	ODB. Offshore Demonstration Blade	España, Dinamarca, Reino Unido, Países Bajos
4	SPOWTT. Improving Safety and Productivity of Offshore Wind Technician Transit - Crew health monitoring	Reino Unido, Países Bajos,
5	WFCT. Offshore Wind Accelerator - Wind Farm Control Trials	Reino Unido, Dinamarca, Países Bajos,

CONVOCATORIA NACIONAL APCIN 2017

PROYECTO1 ODB. Offshore Demonstration Blade

The Offshore Demonstration Blade (ODB) project is supporting the research, development and demonstration of wind turbine blade innovations, including aerodynamic and structural enhancements, blade monitoring systems and blade erosion protection solutions. The objective of this project is to reduce the Cost of Energy of offshore wind by demonstrating a set of blade technologies aimed at increasing the rotor energy performance and reducing its O&M costs

IP	Offshore Renewable Energy Development Services Ltd, Reino Unido
Socios	España (Aerox, CENER, Universidad Cardenal Herrera de Valencia, Siemens Gamesa Renewable Energy), Dinamarca (Bladena, DIS, Technical University of Denmark, GEV Wind Power), Países Bajos (Netherlands Organisation for Applied Scientific Research)
Presupuesto total	2.189.926 €
Concedido ES	64.179 € + 100.000 € = 164.179 €

ERA-NET COFUND ACT - Accelerating CCS technologies

ERA-NET COFUND ACT es una colaboración transnacional en tecnología de captura y almacenamiento de CO₂ (CCS). La CCS es considerada como una de las principales rutas de Europa para mitigar el cambio climático. Nuestra iniciativa "Acelerar la tecnología CCS como un nuevo vector de energía con bajas emisiones de carbono" (ACT) apunta principalmente al sector energético, pero también tendrá beneficios para las industrias que consumen mucha energía. La visión de ACT es garantizar que el sector energético contribuya mejor a la protección del clima mediante el desarrollo de una colección de diferentes tecnologías CCS listas para su comercialización.

El principal objetivo de ACT es facilitar el surgimiento de CCS mediante llamadas conjuntas transnacionales significativas que estimularán la cooperación estrecha entre los investigadores y la industria para acelerar el despliegue de CCS. Durante estas convocatorias, el consorcio abordará las brechas de RD&D más relevantes en la cadena de CCS. ACT acercará a los investigadores y partes interesadas de CCS de varios países en un esfuerzo conjunto que generará un impulso hacia el despliegue de la tecnología de CCS en Europa. ACT financiará proyectos transnacionales de I + D e innovación, facilitará lugares de reunión para compartir conocimientos, garantizará sinergias con proyectos piloto y de demostración, e invitará a discusiones con partes interesadas en el campo de CCS. ACT también garantizará la difusión de los resultados de los proyectos financiados por ACT.

Socios: **Coordinador Noruega** (Research Council of Norway (RCN), Alemania (Research Centre Juelich (PTJ/FZJ), Grecia (Centre for Research and Technology Hellas (CERTH), Países Bajos (Ministry of Economic Affairs (MinEZ/MinEA), Noruega (Gassnova), Rumanía (Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI), **España (Agencia Estatal de Investigación-AEI)**, Suiza (Federal Department of the Environment, Transport, Energy and Communications (DETEC), Turquía (The Scientific and Technological Research Council of Turkey (TUBITAK), Reino Unido (Department of Energy and Climate Change (DECC).

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales 3: 2016,2018, 2020
Participación de AEI en convocatorias conjuntas: 2016, 2018

CONVOCATORIA CONJUNTA INTERNACIONAL 2016

Países participantes	UE, Alemania, Grecia, Noruega, Rumanía, Países Bajos, España (MINECO), Reino Unido, Suiza, Turquía
Temáticas	CCS Chain integration; Capture; Transport ; Storage; Utilisation
Presupuesto total	41.200.000 €
Concedido ES	105.000 €
Proyectos aprobados	8
Proyectos financiados por AEI	1

Nº	Acrónimo y título del proyecto	Países participantes
1	3D-CAPS. Three dimensional Printed Capture Materials for Productivity Step-Change	Países Bajos, Noruega, Rumanía, Reino Unido
2	ACORN. ACORN	Reino Unido, Países Bajos, Noruega
3	ALIGN. Accelerating Low carbon Industrial Growth through CCUS: ALIGN-CCUS	Países Bajos, Alemania, Noruega, Rumanía, Reino Unido
4	DETECT. Determining the risk of CO ₂ leakage along fractures in caprocks using an integrated monitoring and hydro-mechanical - chemical approach	Países Bajos, Alemania, Reino Unido
5	ECO-BASE. Establishing CO ₂ enhanced Oil recovery Business Advantages in South Eastern Europe	Noruega, Países Bajos, Rumanía, Grecia, Turquía
6	ELEGANCY. Enabling a Low-Carbon Economy via Hydrogen and CCS	Bélgica, Alemania, Noruega, Suecia, Suiza, Países Bajos, Reino Unido
7	GasTech. Demonstration of Gas Switching Technology for Accelerated Scale-up of Pressurized Chemical Looping Applications	Noruega, Rumanía, Suiza, Países Bajos, Turquía, España
8	Pre-ACT. Pressure control and conformance management for safe and efficient CO ₂ storage - Accelerating CCS Technologies	Noruega, Reino Unido, Alemania, Países Bajos

CONVOCATORIA NACIONAL APCIN 2017

PROYECTO1 GasTech. Demonstration of Gas Switching Technology for Accelerated Scale-up of Pressurized Chemical Looping Applications

The GaSTech project will accelerate the development of gas switching technologies by developing a business case for further technology scale-up.

The business case will have two main components: lab-scale demonstration (TRL 4) of gas switching reactor concepts; and large-scale technology implementation studies to evaluate the techno-economic feasibility of process concepts incorporating gas switching reactors.

IP	Shahriar Amini, SINTEF, Noruega
Socios	Noruega (Norwegian University of Science and Technology NTNU), Países Bajos (Euro Support Advanced Materials B.V.), Alemania (Technische Universität Hamburg TUHH), Rumanía (Universitatea Babes Bolyai UBB), Turquía (Hayat), Suiza (ETH Zürich), España (Universidad Politécnica de Madrid (UPM))
Presupuesto total	1.702.000 €
Concedido ES	105.000 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2018

Países participantes	UE, Alemania, Grecia, Noruega, Rumanía, Países Bajos, España, Reino Unido, Suiza, Turquía
Temáticas	CCS Chain integration; Capture; Transport ; Storage; Utilisation
Presupuesto total	40.000.000 €
Concedido ES	364.000 €
Proyectos aprobados	12
Proyectos con MINECO/AEI	2

Nº	Acrónimo y título del proyecto	Países participantes
1	AC2OCEM. Accelerating Carbon Capture using Oxyfuel technology in Cement production	Alemania, Noruega, Suiza, Grecia y Francia
2	ACTOM. ACT on Offshore Monitoring	Noruega, Reino Unido, Estados Unidos,
3	ANICA. Advanced Indirectly Heated Carbonate Looping Process	Noruega, Reino Unido, Alemania
4	DIGIMON. Digital Monitoring of CO ₂ storage projects	Alemania, Estados Unidos, Grecia, Alemania, Países Bajos, Reino Unido
5	LAUNCH. Lowering absorption process uncertainty, risks and costs by predicting and controlling amine degradation	Países Bajos, Noruega, Reino Unido, Alemania y Estados Unidos
6	MemCCSea. Innovative membrane systems for CO ₂ capture and storage at sea	Grecia, Noruega, Estados Unidos, Alemania
7	NEWEST-CCUS. Negative Emissions in the Waste to Energy Sector: Technologies for CCS	Reino Unido, Noruega, Alemania.
8	PrISMa. Process-Informed design of tailor-made Sorbent Materials for energy efficient carbon capture	Reino Unido, Suiza, Estados Unidos, Noruega
9	REX-CO2. Reusing existing wells for CO ₂ storage operations	Noruega, Francia, Países Bajos, Rumanía y Reino Unido
10	SUCCEED. Synergetic Utilisation of CO ₂ storage Coupled with geothermal Energy Deployment	Reino Unido, Países Bajos, Turquía, Italia e Islandia
11	FUNMIN. Estudios fundamentales de carbonatación mineral con aplicaciones en secuestro de CO ₂	Reino Unido, Francia, España, Países Bajos
12	SENSE. Asegurar la integridad de los lugares de almacenamiento de CO ₂ a través de la monitorización de la superficie del suelo	Noruega, Alemania, Francia, España, Estados Unidos

CONVOCATORIA NACIONAL APCIN 2019-2

PROYECTO 11 FUNMIN. Estudios fundamentales de carbonatacion mineral con aplicaciones en secuestro de CO₂

Mineralization of carbon dioxide represents a principal raw material feedstock for carbonate-based materials, revenues of which are expected to reach \$1 trillion/yr. by 2030. such direct transformation of CO₂ gas to solidified added-value carbonates represents an industrially effective route to utilisation, generating stable, inert, non-hazardous, ready-to-use profitable materials. Magnesite (mgco₃) is an ideal carbonate used in cement and agriculture. Promisingly, vast amounts of raw magnesium (mg) silicate minerals and mg-rich industrial wastes exist worldwide that may be carbonated, reducing reliance on mined mgco₃ imported from Russia and china. The principal challenge for speeding up CO₂ utilisation via mineralization as a cost-effective ccus technology, is the slow rate of mineral precipitation from solution; magnesite in particular. Driven by this challenge, as- faced by Cambridge carbon capture ltd (our industrial partner) and related industries working on co₂ mineralization, funmin is an industry-driven project focusing on discovering & optimizing conditions for speeding up mgco₃ formation.

The aim of funmin is to optimise the process of CO₂ mineralisation into mgco₃, actioned from the most evolved simulations & empirical determinations worldwide of the molecular events surrounding mgco₃ formation from inert solution. funmin is an uk-led industrial-academic collaboration between cambridge carbon capture ltd, which is developing technologies to mineralize CO₂ gas into solid mgco₃, and leading academics with a record of accomplishment in the investigation of the fundamental aspects of crystal growth & nucleation using simulation & experimental techniques: atomistic methods (qmul, uk), geochemical modelling (uu, nl), neutron scattering (qmul, uk), spectroscopy (uga, fr), imaging (ugr, es), and structural analysis (uo, es).

IP	University of London, Reino Unido
Socios	Francia, España (Universidad de Oviedo y Universidad de Granada), Países Bajos
Presupuesto total	8.900.000 €
Concedido ES	90.170 € + 87.720 €

PROYECTO 12 SENSE. Asegurar la integridad de los lugares de almacenamiento de CO₂ a través de la monitorizacion de la superficie del suelo

Integrity of CO₂ storage sites is dependent upon the intrinsic properties of the geological formations involved as well as operating parameters such as injection pressure, injection rate, and temperature and injection strategy. Although in-situ characteristics of geological formations can be assessed prior to injection through inter alia well logs, well tests and laboratory experiments, their actual response may still differ from the predicted behavior. To date, ccs demonstration sites illustrate the importance of continuous monitoring during operation in order to update geological models as understanding of the dynamic behavior of the site improves with the availability of new data. Therefore, monitoring the actual response of storage sites will be necessary to assess

storage containment and avoid undesired events such as leakage, fracture/fault reactivation and large-amplitude microseismic events that could engender understandable public concerns. The primary objective of sense is to demonstrate reliable and cost efficient CO₂ storage monitoring based on ground surface deformation detection combined with geomechanical models to provide information on pressure distribution and hydraulic behavior of the storage complex.

IP	Norwegian Geotechnical Institute, Noruega
Socios	Alemania, Francia, España (Instituto Geologico y Minero de España (IGME) Y Fundacion Ciudad de la Energia), Estados Unidos
Presupuesto total	2.700.000€
Concedido ES	106.000 € + 80.000 €

GEOTHERMICA ERA-NET Co-fund Action

GEOTHERMICA es una ERA-Net Cofund cuyo objetivo es acelerar el despliegue de la energía geotérmica en Europa mediante la agrupación de fondos nacionales y comunitarios para investigación e innovación, el enfoque en mejorar los análisis de rentabilidad para la energía geotérmica y el establecimiento de una colaboración estratégica duradera entre los responsables de los programas de investigación e innovación geotérmica nacionales y los responsables del consorcio GEOTHERMICA.

GEOTHERMICA tiene como objetivo el uso directo y la generación de energía a partir de recursos geotérmicos de una manera optimizada, lo cual incluye sistemas integrados y combinados (por ejemplo, bombas de calor, otras formas de energía renovable y uso del subsuelo como lugar de almacenaje de energía para calefacción y refrigeración). Hasta ahora, el desarrollo de la energía geotérmica se ha basado principalmente en la financiación nacional para I+D+i y medidas de apoyo al mercado, con pocas excepciones de acuerdos bilaterales y cooperativos país-país. Ahora es el momento de emprender el siguiente paso: combinar fuerzas a nivel europeo y realizar grandes desarrollos a gran escala a través de una plataforma de proyectos europeos de I + D financiados conjuntamente. La perspectiva europea agrupa los esfuerzos de financiación nacional y brinda la oportunidad de unir el conocimiento geotérmico de todos los países participantes.

Socios: Coordinador: Islandia (National Energy Authority of Iceland (NEA)); Bélgica (Flanders Region (Department of Economy, Science and Innovation / Flanders Innovation & Entrepreneurship) (EWI / VLAIO), Flemish Energy Agency (VEA); Dinamarca (Danish Energy Authority (DEA/ENS), Energy Technology Development and Demonstration Program (EUDP); Francia (Agency for Environment and Energy Management (ADEME), Ministry of Ecology, Development and Sustainable Development duplicate to 996384874, Ministry of the Environment, Energy and the Sea (MEEM); Alemania (Research Centre Juelich (PTJ/FZJ); Islandia (Icelandic Centre for Research (RANNIS); Irlanda (Department of Communications, Energy and Natural resources (DCENR); Italia (Ministry of Education, University and Research (MIUR); Países Bajos (Ministry of Economic Affairs (MinEZ/MinEA), Netherlands Enterprise Agency (RVO); Portugal (Directorate General for Energy and Geology (DGEG), Regional Fund for Science and Technology (FRCT); Rumanía (Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI); Eslovenia (Ministry of Infrastructure (MZI); España (Centro para el Desarrollo Tecnológico Industrial (CDTI), Agencia Estatal de Investigación (AEI); Suiza (Federal Department of the Environment, Transport, Energy and Communications (DETEC); Turquía (The Scientific and Technological Research Council of Turkey (TUBITAK).

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales 2: 2017 y 2019

Participación de MINECO-AEI en convocatorias conjuntas: 1 (2017)

CONVOCATORIA CONJUNTA INTERNACIONAL 2017

Países participantes	Alemania, Países Bajos, Suiza, Islandia, Irlanda, Italia, Francia, Bélgica, Dinamarca, Eslovenia, España, Portugal, Rumanía, Turquía
Temáticas	Heat storage, managing induced seismicity, EGS drilling and completion, production operations, composite casing and integrated applications of geothermal heat
Presupuesto total	50.000.000 €
Concedido ES	386.000 €
Proyectos aprobados	8
Proyectos con financiación AEI	3

Nº	Acrónimo y título del proyecto	Países participantes
1	CAGE.	Países Bajos , Alemania, Bélgica, Dinamarca
2	COSEISMIQ.	Suiza , Islandia, Alemania
3	GeConnect. Tight Geothermal Casing Connections for Axial Stress Mitigation	Islandia , Alemania, Países Bajos
4	GEOFOOD.	Islandia , Países Bajos, Eslovenia
5	GEO-URBAN. Identification and Assessment of Deep Geothermal Heat Resources in Challenging Urban Environments	Irlanda , España, Dinamarca,
6	HEATSTORE. Underground Thermal Energy Storage facilitates the low-carbon transition of the heating and cooling sector	Países Bajos , Bélgica, Dinamarca, Francia, Alemania, Islandia, Portugal, España, Suiza
7	PERFORM.	Países Bajos , Dinamarca, Alemania
8	ZoDrEx. A European endeavour for optimising Zonal Isolation, Drilling and Exploitation of EGS projects	Suiza , Alemania, Francia, España, Dinamarca

CONVOCATORIA NACIONAL APCIN 2018

PROYECTO 5 GEO-URBAN. Identification and Assessment of Deep Geothermal Heat Resources in Challenging Urban Environments

The ability to use geothermal resources to generate heat in urban areas where the demand is greatest has the potential to significantly reduce our reliance on fossil fuels, and to support sustainable energy policies. Potential deep geothermal resources in challenging, lower-enthalpy EU settings remain poorly understood and largely untapped. The GEO-URBAN project aims to explore the potential for low enthalpy geothermal in urban environments. The project will focus on two target locations – Dublin, Ireland and Vallès, Spain – and will provide a feasibility analysis

for the commercial development of deep geothermal resources in these regions. The overall objective of GEO-URBAN is to identify the geothermal resources available in two challenging urban locations and to demonstrate a commercialisation strategy that has the potential to be adapted in other similar locations.

IP	Gavin and Doherty Geosolutions Ltd, Irlanda
Socios	Irlanda (Dublin City Council, University College Dublin - Irish Centre for Research in Applied Geosciences, Dublin Institute for Advances Studies, Geothermal Association of Ireland), España (Universitat de Barcelona, Barcelona Supercomputing Center, Spanish Geothermal Technology Platform, Institut Cartogràfic i Geologic de Catalunya), Dinamarca (Geotermisk Operatørselskab)
Presupuesto total	737.233 €
Concedido ES	117.000 € + 69.000 € = 186.000 €

PROYECTO 6 HEATSTORE. High Temperature Underground Thermal Energy Storage

Thermal energy storage technologies need to be developed and become an integral component in the future energy system infrastructure to meet variations in both the availability and demand of energy. The main objectives of this project are to lower the cost, reducing the risks and to optimize performance of high temperature (~25 to ~90°C) underground thermal energy storage technologies by demonstrating 6 distinct configurations of heat sources, heat storage, and heat utilization. Technical, economic, environmental, regulatory and policy aspects will be addressed that are necessary to support efficient and cost-effective deployment in Europe. The project will stimulate fast-track market uptake in Europe promoting development from demonstration phase to commercial deployment within 2 to 5 years on the European market and provide an outlook towards utilization of full potential in 2050.

IP	Jori Koornneef, TNO - Nederlandse organisatie voor toegepast natuurwetenschappelijk onderzoek, Países Bajos
Socios	Bélgica (VITO, SPIE Belgium, Kempens Warmtebedrijf), Dinamarca (GEUS, PlanEnergi), Francia (BRGM, Storengy), Alemania (Bochum University of Applied Sciences / International Geothermal Centre, delta-h Engineering GmbH, Noda GmbH), Islandia (Reykjavik Energy), Países Bajos (IF Technology, KWR Watercycle Research Institute, ECW Geomanagement BV, Netherlands Institute of Ecology), Portugal (University of the Azores), España (Universitat Politècnica de Catalunya), Suiza (Energie Wasser Bern, SIG, University of Geneva, Eidgenössische Technische Hochschule Zurich, University of Neuchatel, University of Bern)
Presupuesto total	16.265.971 €
Concedido ES	100.000 €

PROYECTO 8 ZoDrEx. A European endeavour for optimising Zonal Isolation, Drilling and Exploitation of EGS projects

ZoDrEx aims at demonstrating drilling, completion and production technologies increasing technical and economic successes of geothermal projects. ZoDrEx will demonstrate that: I. Percussion drilling can perform at high deviation in crystalline rock, and lead to substantial cost reduction; II. Zonal isolation is key to EGS stimulation and efficient technology selection is possible. ZoDrEx will contribute to developing robust zonal isolation products; III. Through automation, better corrosion protection, and monitoring, EGS plant's operation can be optimized while ensuring the safety of the workers and environment.

10 partners from DK, F, DE, E and CH, including 5 industry leaders, 3 engineering organizations, and 2 academic research organisations are gathered within ZoDrEx to deliver the required low risk engineering and innovative solutions to access deep geothermal resources.

IP	Geo-Energie Suisse AG, Suiza
Socios	Suiza (ETH Zurich), Alemania (RWTH Aachen, H. ANGER'S SÖHNE Bohr- und Brunnenbauges. mbH, SIRIUS-ES, GZB - International Geothermal Centre), Francia (ES-Géothermie, CETIM-CERMAT), España (Agencia Estatal Consejo Superior de Investigaciones Científicas CSIC) , Dinamarca (Welltec)
Presupuesto total	4.890.706 €
Concedido ES	100.000 €

ERA-NET Cofund Urban Transformation Capacities (ENUTC)

Esta convocatoria acoge una amplia gama de proyectos de investigación e innovación que permitan el desarrollo de capacidades para las transformaciones urbanas. Los proyectos claramente deben basarse en experiencias previas de creación de capacidad en la práctica y aprovechar el conocimiento existente sobre las capacidades de transformación hacia la sostenibilidad, la resiliencia y la habitabilidad urbanas. Los

transformadoras para aumentar el conocimiento y la comprensión de dichos procesos y permitir desarrollar aún más este conocimiento. Se alienta a los proyectos a utilizar nuevas tecnologías y herramientas para la implementación de la investigación y la innovación y para garantizar posibilidades de ampliación.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales: 2 (2021, 2022)

Participación de AEI en convocatorias conjuntas: 2 (2021, 2022)

CONVOCATORIA CONJUNTA INTERNACIONAL 2021

Países participantes	Austria, Bélgica, Bulgaria, Estonia, Francia, Letonia, Lituania, Países Bajos, Noruega, Polonia, Portugal, Rumania, España, Suecia
Temáticas	1. Urban circular economies 2. Community-based developments and urban innovation ecosystems 3. Robust and resilient urban infrastructure and built environment
Presupuesto total	16.892.263 €
Concedido ES	1.234.382,96
Proyectos aprobados	16
Proyectos financiados por AEI	6 (2 coordinados)

Nº	Acrónimo y título del proyecto	Países participantes
1	CARIN-PT. Capacities for Resilient and Inclusive Urban Public Transport Infrastructure and Built Environment	Estonia , Suecia, Bélgica, Noruega
2	CircularCityChallenge. Creating a Next Generation Participatory Contest for Young People to integrate Circularity in School Curricula	Austria , Rumania, Países Bajos
3	City&Co. Older Adults Co-Creating a Sustainable Age-friendly City	Países Bajos , Polonia, Rumania
4	CO-HOPE. Collaborative Housing in a Pandemic Era Collaborative Housing in a Pandemic Era: cross-country inter- and transdisciplinary evaluation, innovative approaches, human rights-based policy recommendations and capacity building	Suecia , España, Francia, Austria

5	CoNECT. Collective Networks for Everyday Community Resilience and Ecological Transition	Rumanía, Países Bajos, España, Noruega, Francia, Suecia
6	CONTRA. CONflict in TRAnsformations	Países Bajos, Bélgica, Noruega, Polonia
7	COOLSCHOOL. Realizing potentials of nature-based climate shelters in school environments for urban transformation	España, Bélgica, Países Bajos, Francia
8	CREATE. Embedding advanced urban material stock methods within governance processes to enable circular economy and cities resilience	Suecia, Austria, Francia, Países Bajos, Rumania
9	CREST. Climate resilient coastal urban infrastructures through digital twinning	Noruega, Polonia, Francia,
10	EmbedderLabs. Better Embedded Labs for More Synergistic Sustainable Urban Transformation Planning	Países Bajos, Suecia, Polonia
11	ILIT. Infrastructuring Libraries in Transformation. Infrastructuring the Social: Public Libraries and their Transformative Capacity in Austerity Urbanism	Países Bajos, Suecia, Austria
12	MUNEX. Municipalist Neighborhood Experiments: Building capacity from the bottom up	Países Bajos, Austria, España
13	OPUSH. Open Urban Sustainability Hubs	Austria, Estonia, Países Bajos, España
14	TANGO-W. Transformative cApacity in eNerGy fOod and Water	Austria, Suecia, Noruega, Lituania
15	TRUSTMAKING. Young creators and responsibilities for the new green transition	Austria, Lituania, Noruega, Países Bajos
16	U-GARDEN. Promoting capacity building and knowledge for the extension of urban gardens in European cities.	España, Polonia, Suecia, Rumania

CONVOCATORIA NACIONAL PCI 2022

PROYECTO 4 CO-HOPE. Housing in a Pandemic Era: cross-country inter- and transdisciplinary evaluation, innovative approaches, human rights-based policy recommendations and capacity building

The (human) right to the city includes the right to live somewhere in security, peace and dignity. Globally, the prevailing market-oriented policies focusing on housing as a commodity have failed to enable adequate housing for all. The COVID-19 pandemic has exposed this failure – also in Europe. CO-HOPE is a response to this health, housing and social crisis. Through theoretically informed applied research on collaborative housing, this project aims at generating potential-oriented recommendations for policymakers, and implementing an international capacity building programme on collaborative housing that tackles the affordability- integration-health nexus. The results are expected to contribute to a shift in housing politics and provision towards community-led projects that foster sustainable and just transformative urban developments.

IP	Lund University, Department of Human Geography. Suecia
Socios	Technische Universität Wien future.lab Research Center [E285.1], Fakultät für Architektur und Raumplanung (Austria), Universidad de Sevilla (US) (España), University of Lyon, Lyon School of Urban Anthropocene Studies (Francia), UrbaMonde-France (Francia), Robert Temel (Austria)
Presupuesto total	1.132.842 €
Concedido ES	161.404 €

PROYECTO 5 CoNECT. Collective Networks for Everyday Community Resilience and Ecological Transition

The COVID-19 crisis has brought into sharper focus the fragility of our lives and ways of living but has also prompted solidarity approaches to support vulnerable groups, while highlighting the importance of pre-existing civic practices for social resilience and individual recovery. Against this backdrop, CoNECT will catalyze existing networks for collective action in six EU countries, aiming to boost community organizing capacity by recognizing, mapping, connecting, and strengthening everyday practices of community resilience toward ecological transition. The project will foster collaboration between citizens, thinkers, doers, planners from the partner countries, who will co-design and conduct parallel synergistic Labs implementing joint tools and methodologies with the following goals: 1) map existing spaces and practices of community resilience across different EU contexts; 2) analyze comparatively and conduct transnational co-produced research on resources, partnership models, and stakeholder networks; 3) co-create experimental frameworks for setting up or enhancing places and initiatives of social resilience through collaborations between professionals, researchers and community; 4) set up a digital platform to connect local networks and enhance transformational agency of civic resilience through knowledge sharing; 5) establish indicators, and a monitoring and evaluation framework for community resilience, scalable beyond the participating countries.

IP	ATU-Association for Urban Transition. Rumania
Socios	AAA - Atelier d'Architecture Autogeree (Francia), Again X (Again AS) (Francia) Eindhoven University of Technology (Países Bajos), KTH School of Architecture, Royal Institute of Technology (Suecia), UPO - Pablo de Olavide University - Seville Department of Geography, History and Philosophy, Global Change Research Lab (GCRL) (España), École nationale supérieure d'architecture de Paris-La Villette - Chaire EFF&T / ENSAPLV (Francia)
Presupuesto total	1.600.000 €
Concedido ES	174.598 €

PROYECTO 7 COOLSCHOOL. Realizing potentials of nature-based climate shelters in school environments for urban transformation

COOLSCHOOLS is a transdisciplinary applied urban research project that examines the transformative potential of nature-based solutions (NBS) to support the creation of climate shelters in European school environments. We assess how nature-based climate shelters can drive social-ecological transformations towards urban sustainability, climate resilience, social justice, and quality education at multiple urban scales (from schools to metropolitan region) and translate them

into practical building capacity for school communities and beyond. Building on pioneering pilot NBS projects of school transformation in Barcelona, Brussels, Paris, and Rotterdam, COOLSCHOOLS unravels the specificities of each context and finds common patterns related to climate shelters transformation capacities, focusing on marginalized groups. Through participatory and co-creation methodologies, we propose an interdisciplinary approach that combines natural, bio-medical, social, and education sciences. To further promote a holistic approach to school climate shelters transformation capacities, we will actively disseminate the pilots' best practice and key learnings among city governments, urban planners, companies, school communities and other relevant stakeholders. The consortium's cross-sectoral composition ensures active multi-stakeholder involvement through an urban living lab and other co-engagement actions, that are planned to boost reflection and learning, and the wider use of COOLSCHOOLS outputs.

IP	Fundació per a la Universitat Oberta de Catalunya (España)
Socios	Brussels Environment (Bélgica), EUN Partnership AISBL (European Schoolnet / EUN) (Bélgica), Hasselt University (Bélgica), National Center for Scientific Research (CNRS) (Francia), University of Antwerp (Bélgica), University of Twente (Países Bajos), Vrije Universiteit Brussel (VUB) (Bélgica)
Presupuesto total	1.598.646 €
Concedido ES	233.714 €

PROYECTO 12 MUNEX. Municipalist Neighborhood Experiments (MUNEX): Building capacity from the bottom up

How to address growing inequality, cynicism, distrust, and alienation? An ascendant municipalist movement argues that we should look for answers at the local level. Municipalism seeks to reinvent and reinvigorate local urban democracy by pushing back against overbearing bureaucracies and overpowering market forces. While the commitment to municipalism is strong and the momentum palpable, a key question is whether and how municipalist initiatives – from digital democracy platforms to public-communitarian partnerships – work in practice. To answer this question, the Municipalist Neighborhood Experiments (MUNEX) project examines municipalist policy experiments in neighborhoods in three cities: Amsterdam, Barcelona, and Vienna. MUNEX' overarching goal is to work with municipalities, citizens and transnational municipalist networks to build capacity by delivering strategic insights on the success factors of municipalist initiatives, testing out new approaches to governance and urban justice, and strengthening networks for transnational policy learning. MUNEX will further co-create with its partners a prototype municipalist innovation to be shared between neighborhoods in Amsterdam, Barcelona and Vienna in an ambitious transnational exchange. Building on existing research and relations with urban stakeholders, the research will provide profound and actionable insights into the creation of neighborhoods which are liveable, just, inclusive and attractive to all.

IP	Universiteit van Amsterdam. Países Bajos
Socios	La Hidra Cooperativa, SCCL (España), University of Vienna (Austria)
Presupuesto total	673.712 €
Concedido ES	174.029,48 €

PROYECTO 13 OPUSH. Open Urban Sustainability Hubs 3

An essential prerequisite for sustainable development is that it unfolds from within and is supported by local communities. The OPUSH project aims to make knowledge on sustainable development and transformative action more visible and traceable and empower the local community by granting access to and interaction with open knowledge ecosystems. Thereby, OPUSH enhances the role and capacity of libraries within Open Science and through Citizen Science as a driver of sustainable development and transformative action more visible and traceable and empower the local community by granting access to and interaction with open knowledge ecosystems. Thereby, OPUSH enhances the role and capacity of libraries within Open Science and through Citizen Science as a driver of sustainable development. The project focuses on the most heterogeneous groups of civil society, particularly the empowerment of marginalized groups, the equal inclusion of all genders, and the inclusion of people regardless of their cultural or social backgrounds and people with different needs to support the development of cities and urban areas. Thus, the project pursues the following approaches:

- Identifying challenges in establishing sustainability-oriented learning settings.
- Developing, testing and evaluating new combined analogue and digital approaches to unfold knowledge co-production on sustainable development.

The project is strategically engaged for the 2030 Agenda based on UN SDGs by empowering people through education and learning and strengthening transformative action in all agendas, programs, and activities of the urban network shaping new urban innovation ecosystems and providing environmental and social justice for all.

IP	future.lab Research Center. Austria
Socios	TalTech - Tallinn University of Technology, Academy of Architecture and Urban Studies (Estonia), TU Delft Library (Países Bajos), TU Wien Bibliothek, Technische Universität Wien (Austria), Universitat de Barcelona, OpenSystemsUB (España), Wunderbyte (Austria)
Presupuesto total	1.095.770 €
Concedido ES	200.886 €

PROYECTO 16 U-GARDEN: Promoting capacity building and knowledge for the extension of urban gardens in European cities

Urban gardens are a key component of the traditional urban and peri-urban landscapes of the main European cities. Beyond food production and consumption, urban gardens provide a wide range of ecosystem and social services, with a positive impact on the urban and socio-residential environment. Thus, the main aim of this project is to promote the implementation of urban gardens and agroforestry experiences as key components of the strategic framework for sustainable urban development in European cities, from an interdisciplinary approach. To this end, the project will try to achieve several objectives: 1) to identify needs, problems and opportunities concerning urban garden and agroforestry experiences; 2) to promote, through Urban Living Labs, the stakeholders' capacity building in terms of green governance for food production and consumption in cities; 3) to drive citizens' capacity building for the involvement in sustainable urban

development experiences; 4) to foster innovative business models around sustainable and local food production; 5) to evaluate the impact of the implementation of agroforestry/urban garden experiences in their social, cultural and environmental dimensions; and 6) to set up a multi-criteria framework to support decision-making in the location of urban gardens and agroforestry plots.

IP	University of Valencia. Polibienestar Research Institute. España
Socios	Polytechnic University of Valencia (UPV) (España), Warsaw University of Technology (WUT) (Polonia), Warsaw University of Life Sciences (WULS) (Polonia), University of Gothenburg (Suecia), City of Gothenburg (Suecia), Region Västra Götaland (Suecia), BEIA Consult International SRL (BEIA) (Rumania), Urban Cultor Srl (Rumania), Brasov Metropolitan Agency for Sustainable Development (BMA) (Rumania), Valencia City Council (España), “CONSELL DE L’HORTA DE VALÈNCIA” CONSORTIUM (España), City Hall of Warsaw. Air Protection and Climate Policy Department (Polonia), Commons Lab Foundation (Polonia), SAM Rozkwit Association (Polonia), One Muranów Foundation (Polonia)
Presupuesto total	
Concedido ES	299.750 € (Universidad Politécnica de Valencia 100.050 €), (Universidad de Valencia 199.700 €)

CETP. The Clean Energy Transition Partnership

CETPartnership es una asociación multilateral y estratégica de programas nacionales y regionales de investigación, desarrollo e innovación (I+D) en los Estados miembros europeos y países asociados, cuyo objetivo es impulsar y acelerar la transición energética y apoyar la implementación del Plan Estratégico Europeo de Tecnología Energética (Plan EETE). La CETPartnership tiene como objetivo potenciar la transición a una energía limpia y contribuir al objetivo de la UE de convertirse en el primer continente climáticamente neutro para 2050, reuniendo financiación nacional y regional de RDTI para una amplia variedad de tecnologías y soluciones de sistemas necesarias para realizar la transición.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales: 1 (2022)

Participación de AEI en convocatorias conjuntas: 1 (2022)

CONVOCATORIA CONJUNTA INTERNACIONAL 2022

Países participantes	Austria, Bélgica, Canadá, Chipre, República Checa, Dinamarca, Estonia, Finlandia, Francia, Alemania, Grecia, Hungría, Islandia, Irlanda, Italia, Letonia, Lituania, Malta, Países Bajos, Noruega, Polonia, Portugal, Rumania, España, Suecia, Suiza, Turquía, Reino Unido, Estados Unidos.
Temáticas	• Integrated Net-zero-emissions Energy System • Enhanced zero emission Power Technologies • Enabling Climate Neutrality with Storage Technologies, Renewable Fuels and CCU/CCS • Efficient zero emission Heating and Cooling Solutions • Integrated Regional Energy Systems • Integrated Industrial Energy Systems • Integration in the Built Environment • Solutions to energy transition in the built environment
Presupuesto total	88.323.153 €
Concedido ES	3.075.820 €
Proyectos aprobados	46
Proyectos financiados por AEI	15 (1 coordinado)

N.º	Acrónimo y título del proyecto	Países participantes
1	ACLOUD Advancing chemical-looping combustion of domestic fuels	Suecia, Finlandia, Alemania
2	ACT-FAST Sustainable Antimony Chalcogenide Thin-Film Tandem Solar Technology	Estonia, España, Italia, Reino Unido
3	AMbCS Advanced Membrane-based solutions for CCUS in Shipping	Noruega, Suecia, Bélgica

4	BUCK\$\$\$ Brine Utilisation for CO2 to be 'Koncretely' Sequestered, Solidified and Stored	Italia , Dinamarca, Grecia, Israel, Reino Unido, Canadá, Países Bajos
5	CO2RR Carbon Rhine Route	Suiza , Francia, Noruega
6	CoPRESS Cooperative Platform for Renewable Energy Storage Systems	Suiza , Francia, España
7	CTS CO2 Transport and Storage directly from a ship: flexible and cost-effective solutions for European offshore storage.	Noruega , Dinamarca, Portugal, Estonia, Rumanía
8	DETECTIVE Development of a novEl Tube - bundlE-CaviTy lInear receiVeR for CSP applications	Italia , España y Suecia
9	DRIVE Deep Removal of CO2 and InnoVative Electrification concepts	Países Bajos , Francia, Alemania, Reino Unido, República Checa, Portugal
10	EcoM4Future FIWARE Driven Energy Communities for the Future	Alemania , Austria, Suecia, Rumanía
11	EpoBoc Easy to fabricate, both sides poly-Si passivating contact bottom cell for Perovskite/Silicon tandem devices	Alemania , Países Bajos, Francia
12	GreenSmith Gas Processing for Climate Neutral Steelmaking	Países Bajos , Suecia, Italia
13	HOOPLA Identification of the effect of hydrogen as a function of structural condition in pipeline distribution infrastructure and storage tanks	República Checa , Italia, Alemania
14	HYBRID WIND Hybrid wind turbine condition monitoring system for different weather conditions	Polonia , Bélgica, Alemania, Dinamarca
15	HyCoMM Clean Hydrogen Construction and Mining Machines	Alemania , Austria, Suiza
16	HydROTEC Hydrogen production with the use of Solar Assisted Ocean Thermal Energy Conversion in the Mediterranean Sea	Chipre , Reino Unido, España
17	HyLife Microbial risks associated to hydrogen underground storage in Europe	Noruega , Reino Unido, República Checa, Francia, Alemania
18	ISSDEMO Industrial process Steam Supply – DEMONstration of a ultra-dynamic thermal energy storage	Alemania , España, Polonia
19	LEGACY Field studies for de-risking existing wells and CCS site geology	Noruega , Francia, Estados Unidos
20	LEG-DHC Large-scale climate neutral Energy Geostructures in District Heating & Cooling systems/networks	Francia , Irlanda, Dinamarca, Italia, Estonia, Noruega
21	LoCoMoSa Low-Cost Molten Salt Thermal Energy Storage for Industrial Processes	Dinamarca , Alemania, Italia

Man0EUvRE	Noruega, España, Alemania,
22 Energy System Modelling for Transition to a net-Zero 2050 for EU via REPowerEU	Francia, Reino Unido, Portugal, Suecia, Bélgica, Finlandia, Turquía
MORE	Suecia, Dinamarca, Italia,
23 Next Generation Marine Materials for Resilient Offshore Renewable Energy Devices	Noruega
NewHeatIntegrated	Alemania, República Checa,
24 Highly flexible and modular PCM based thermal energy storage system for efficient heating applications in the built environment	Finlandia
NextGen	Suecia, Dinamarca, Alemania
25 Demonstrating the NextGeneration of Direct Drive Generators for Wind Energy	
NORD STORM	Alemania, Países Bajos
26 Novel paths towards next generation heterojunction solar cell and module	Noruega
Oxy-Kraft RB	Finlandia, España, Suecia,
27 Oxy-Kraft recovery boiler - Towards novel integrated green energy parks	Estados Unidos
28 ProSeCO Probabilistic Sector coupling Optimizer	Alemania, Austria, Portugal
29 PVT4EU Photovoltaic Thermal for Europe	Suecia, Portugal, Dinamarca
QuantumIRES	Alemania, España, Suiza,
30 Increasing Control and Efficiency In Regional Energy Systems Using Quantum Sensors And Machine Learning	Rumania
31 RamonCO Risk-based framework for assessing CO2 storage monitoring	Noruega, Estados Unidos, Países Bajos, Alemania, Rumanía, Reino Unido
32 REFORM Power Generation from Perovskite Architectural Elements	España, Finlandia, Turquía
RESILIENT	Alemania, Francia, Finlandia,
33 Resilient Energy System Infrastructure Layouts for Industry, E-Fuels and Network Transitions	Italia, Suecia
SEASNAKE+	Suecia, España, Italia,
34 Industrial upscale of surface protection system & fibre optic-based condition monitoring for the SEASNAKE MVC (Medium Voltage Cables)	Francia, Irlanda
SENSATION	Noruega, Francia, Alemania,
35 Sorbent Assisted Carbon Capture Tailored for Low CO2 Concentrations from Air and Low Industrial CO2 Emissions	Países Bajos
SMART-LEM	Rumania, España, Portugal,
36 A Business Model-Oriented Platform with Applications for Developing Local Electricity Markets and Accelerating Clean Energy Transition	Austria, Irlanda
SMARTMOORING	Suecia, España, Francia
37 Smart mooring for safe and efficient ocean energy production	
SPOT-IT	Italia, España, Finlandia
38 Stable printed perovskite/organic tandem solar cells and modules for indoor & IoT	Dinamarca

STRAWBERRIES		
39	Solar Thermal Agriculture with Bifacial Collectors for Farming Synergies	Alemania, Finlandia, Portugal
SUNFLOWER		
40	Sustainable Near-net-shape Fabrication of Low Environmental impact Receiver materials	Alemania, España, Dinamarca, Polonia
TRAINING		
41	Thermal energy storing and digitalization in district heating to enable transition to renewable and resource efficient energy systems	Noruega, Suecia, Alemania
TRANSMIT		
42	Semi-transparent micro-stripped thin-film photovoltaics for energy-harvesting windows	Portugal, Italia, Hungría, Chipre, Turquía
UNICORM		
43	Unlocking the Full Potential of Electrolysis with Next-Generation Proton Exchange Membrane Stacks	Noruega, Francia, Suecia, Canadá
WaMTec		
44	From Wafer to Module: Cost-Effective High-Efficiency Silicon Technologies	Alemania, Noruega, Irlanda, Turquía
WECHULL+		
45	Sustainable Concrete Material Leading to Improved Substructures for Offshore Renewable Energy Technologies	Suecia, España, Polonia, Países Bajos, Irlanda
WIND-DIGIPOWER		
46	Large-scale wind integration for the future digital power grid using innovative power electronics control and communication-based estimations	Suecia, España, Italia, Islandia

CONVOCATORIA NACIONAL PCI 2023

PROYECTO 1 ACT-FAST Sustainable Antimony Chalcogenide Thin-Film Tandem Solar Technology

The Sustainable Antimony Chalcogenide Thin-Film Tandem Solar Technology (ACT-FAST) project, receiving funding from the European Commission, in the frame of the Clean Energy Transition Partnership, (CETPartnership) is targeting to provide scalable and impactful thin film tandem photovoltaic (PV) solutions with the highest potential of rapid transferability and mass adoption by the society. ACT-FAST project capitalises on European wide thin-film (TF) PV expertise to deliver a new type of solar technology capable of producing high power densities, with a wider application range than traditional Si based modules. ACT-FAST aims to develop high efficiency TF tandem solar cells, based on emerging earth abundant antimony chalcogenides, using novel and low-cost techniques, low environmental impact materials, high versatility, and scalable depositions processes. This will yield a technology compatible with a future upscaling for mass deployment and transferable solutions which are adopted by society.

IP	Tallinn University of Technology. Estonia
Socios	España, Italia
Presupuesto total	931.361,88 €
Concedido ES	249.260 € (Universitat Politècnica de Catalunya 128.260 €) y (Fundació Institut de Recerca de Energia de Catalunya 121.000 €)

PROYECTO 6 COPRESS Cooperative Platform for Renewable Energy Storage Systems

The European power system is on the verge of an accelerating transformation through decentralisation, decarbonisation and digitalisation. In that context, CoPRESS aims at empowering electricity consumers to become actors with the freedom to choose how their distributed energy resources (DER) interact with the grid. CoPRESS project will address on how to relax the current trade-off between the customisation of solutions to individual circumstances and their scalability. The central tenet of CoPRESS is cooperation at the three levels of technology, market and people. The project is based on the concept of “energy cells”, which facilitate the cooperation between network operators and new electricity actors e.g., industrial prosumers and citizen energy communities. It will use “data spaces” to foster collaboration on data exploitation and increase the predictive power of AI algorithms for diagnostics and forecasting. At the technology level, CoPRESS focuses on enhanced power management systems and interoperable microservices to increase the cooperation between heterogeneous energy resources. At the market level, the combination and hybridisation of storage technologies will enable the delivery of multiple services which will benefit both energy cells and network operators. Thanks to the interoperability of the microservices, different exploitation partners will be able to mix and match them on top of the data space to create custom platforms for their own use cases.

IP	Csem Centre Suisse D'electronique Et De Microtechnique Sa - Recherche Et Developpement. Suiza
Socios	Francia, España
Presupuesto total	2.962.203 €
Concedido ES	193.600 €

PROYECTO 8 DETECTIVE. Development Of a Novel Tube - Bundle-Cavity Linear Receiver For Csp Applications

The DETECTIVE project will be carried out based on a rational development pathway, including modeling, manufacturing and testing of prototypes, and economic analysis for a fast go-to-market strategy. A set of alternative designs will be first studied to choose the best for the manufacturing of prototypes on a commercial scale. Then in-field tests will be carried out to evaluate the performance of the absorber in a real-scale facility. In parallel, a cost model will be developed to analyze the benefits of the new absorber for power / process heat production, considering financial analysis at the installation, operation, and maintenance stages. The environmental effects and sustainability of the new receiver will be assessed using LCA models. Finally, in collaboration with the industrial partner, a set of go-to-market strategies will be identified to complete the technology development to commercialization.

IP	Politécnico di Torino. Italia
Socios	España, Suecia
Presupuesto total	1.029.747 €
Concedido ES	199.650 €

PROYECTO 18 ISSDEMO. Industrial Process Steam Supply Demonstration Of A Ultra-Dynamic Thermal Energy Storage

The mission of ISSDEMO is to enable energy transition in industrial applications with focus on process steam. ISSDEMO project aims at TRI 6 Integrated industrial energy systems. To increase the share of renewable energies in industrial process steam applications, energy storage devices are needed, that are flexible, efficient, and highly dynamic. Our goal is to demonstrate these characteristics with a high-temperature latent heat storage based on molten metal. We will demonstrate the efficiency and functionality for high temperature applications (250°C – 500°C) and the production of process steam. Our storage device will reach TRL 7 starting from TRL 5. We will implement and demonstrate the technology in an industrial process steam application with a capacity of about 1 MWh. We will operate the unit for at least 300 cycles and 1,000 operational hours.

IP	Fraunhofer Institute for Environmental, Safety and Energy Technology UMSICHT. Alemania
Socios	España, Polonia
Presupuesto total	3.243.705,23 €
Concedido ES	199.650 €

PROYECTO 22 MAN0EUVREE. Energy System Modelling for Transition To A Net-Zero 2050 For Eu Via Repowereu

Man0EUvRE will improve energy system modelling across Europe and provide open research-based answers with ambitions to: 1. Develop robust pathways for the European energy system that meet climate targets towards net-zero GHG emissions and consider current policies 2. Provide feedback and advice to the National Energy and Climate Plans (NECPs) of the individual EU countries. 3.Improve a set of models for conducting energy transition studies at European and national level, which can support NECP generation, evaluation and future updates. 4.Publish consistent energy system modelling datasets and scenario projections at European and national level. 5.Strengthen coordination between national energy plans and EU-wide transition goals.

IP	Sintef Energi As. Noruega
Socios	Francia, España, Portugal, Alemania, Grecia, Suecia, Turquía
Presupuesto total	3.777.945,94 €
Concedido ES	197.230 €

PROYECTO 27 OXY-KRAFT RB.Oxy-Kraft Recovery Boiler – Towards Novel Integrated Green Energy Parks

Kraft recovery boilers, i.e., boilers burning pulping industry spent liquor (black liquor) and recovering pulping chemicals, generate both electricity and heat. Black liquor is the most important biomass-based energy source in Finland and worldwide. The objective of the project is to enable the operation of Kraft recovery boilers in oxy-fuel mode. This would open opportunities for several integrated green technologies, such as bioenergy with carbon capture and storage or use. About 220 Mtonnes black liquor are produced worldwide, with USA as the largest with around 60 Mtonnes/year. The project contributes to the TRI6 challenges by enabling i) the removal of

carbon emissions from the carbon cycle-negative CO2 emissions, ii) the integration of energy and resource-efficient industrial energy systems iii) carbon capture for product use.

IP	Abo Akademi. Finlandia
Socios	España, Suecia
Presupuesto total	2.171.439,67€
Concedido ES	199.650 €

PROYECTO 30 QUANTUMIRES. Increasing Control And Efficiency In Regional Energy Systems Using Quantum Sensors And Machine Learning

A major challenge connected to the integration of renewable energy sources into power grids is to control the energy distribution on a local system level taking into consideration individual power sources. The identification of anomalies and the implementation of countermeasures to increase control and flexibility in power systems requires a precise current measurement within the connected devices and the local power system. Novel quantum sensors based on NV-centers in diamond can be used to measure magnetic fields, currents and temperature effectively. These sensors work in harsh environments and are most suitable to be used in medium-voltage applications (up to 30 kV). This will provide vital information about the performance of a medium voltage transmission line unavailable so far by conventional current sensing schemes. At the same time it would be possible to use the sensors on a microscopic scale to measure current within power semiconductors in power converters for grid connected batteries, PV and wind power plants. The sensor nodes in PV systems will be complemented by weather sensors. The data obtained by this novel de-centralized sensors will be analysed by machine learning techniques. The machine-learning based identification of patterns in power grids and weather conditions increases the flexibility of the power system by an improved prediction of energy demand and production as well as storage capacity at the city district level.

IP	Münster University of Applied Sciences. Alemania
Socios	España, Suecia, Rumanía
Presupuesto total	1.935.660 €
Concedido ES	199.650 €

PROYECTO 32 REFORM. Power Generation from Perovskite Architectural Elements

The project REFORM pretends to exploit this opportunity with widespread deployment of perovskite BIPVs, combining the use of scalable processes, device integration and aesthetics, to deliver new architectural solutions for power generation. As we will only employ scalable methods for device fabrication, our scientific achievements will also have a technological impact. The project has strategic importance, as the results will foster Europe's independence in energy and material supply. Commercially, we envisioned the full scheme going from research and development, to upscaling, validation and verification, aiming at technological transfer and exploitation. The objective is particularly relevant for the Module 7.1 of the Transition Initiative

(TRI) 7 “Integration in the built environment - R&I in clean energy integration in the built environment”. REFORM will provide solutions for a number of the proposed challenges, among others: PV integration in buildings, structural and functional integration, aesthetics solutions, decommissioning and disposal; Seamless integration of renewable energy technologies in the urban environment; Create climate-neutral buildings or building environment blocks.

IP	Universitat de Valencia. España
Socios	Finlandia, Turquía
Presupuesto total	1.878.653 €
Concedido ES	298.870 €

PROYECTO 34 SEASNAKE+. Industrial Upscale of Surface protection system and fibre optic-based condition monitoring for the seasnake mvc (medium voltage cables)

The main objective of SEASNAKE+ is to scale-up and demonstrate (TRL6-7) the dynamic medium voltage cable (dMVC) with improved lifetime by easy clean paint; in-line in-situ paint application chamber; in-situ cleaning robot; giving to the cable new and scalable protection system and monitoring system. The SEASNAKE+ dMVC will be validated first at small scale in nearshore condition in two different sites (Swedish west coast and Mediterranean Sea) and once the full-scale prototypes will be ready, in real ocean environment in Mediterranean Sea. SEASNAKE+ objectives and activities are based upon the learnings and proof-of-concept (TRL4) of a new lightweight (no armoring) and flexible cable carried out within the previous SEASNAKE (OCEANERANET COFUND).

IP	Rise Research Institutes Of Sweden Ab. Suecia
Socios	España, Italia, Francia, Irlanda
Presupuesto total	3.275.336 €
Concedido ES	199.650 €

PROYECTO 36 SMART-LEM. A Business Model-Oriented Platform With Applications For Developing Local Electricity Markets And Accelerating Clean Energy Transition

The project aim to develop and validate a business model-oriented platform with applications (SMART-LEM) for developing Local Electricity Markets (LEM) and accelerating clean energy transition. It will be a digital solution that will consist of business models to address the practical necessities of end-users: 1) prosumers 3) aggregators; 3) market participants of LEM. Therefore, we will create business models that will support prosumers, aggregators and LEM by providing applications to increase the efficient operation of energy assets. We will propose market-based trading mechanisms, auctions and settlement procedures, calculating key performance indicators to show the benefits of aggregation and local trading. Strategically, this platform will activate prosumer and other communities' members to trade the surplus and flexibility, extend the usage of the Renewable Energy Sources (RES) and increase the revenue. Our mission focuses on relevant local need-owners (grid operators, SME, municipalities, aggregators) that have a central role in

the problem definition, solution identification and practical implementation of the project. This proposal is relevant to CET call as it will provide a platform with applications, that will contribute to solving real challenges related to aggregators and LEM. This solution is scalable and can be replicated to ensure digitalization and extension from local to the integrated regional energy market with wider participation, allowing high shares of RES.

IP	Academia de Studii Economice din Bucuresti. Rumanía
Socios	España, Portugal, Austria, Irlanda
Presupuesto total	1.035.625 €
Concedido ES	199.650 €

PROYECTO 37 SMARTMOORING. Smart Mooring for Safe and Efficient Ocean Energy Production

The SMARTMOORING project focuses on the development and validation of moored marine energy systems that will enable data-driven design optimizations, predictive maintenance procedures, and in-operation optimization of energy yield. The smart mooring systems will contribute to ocean energy units with higher reliability, significantly better power conversion efficiency and lower LCOE. The technologies that will be developed and validated have relevance to a broader set of applications, including floating wind/solar, as well as in applications outside the energy sector.

IP	Rise Research Institutes Of Sweden Ab. Suecia
Socios	España, Finlandia
Presupuesto total	1.517.250 €
Concedido ES	169.400 €

PROYECTO 38 SPOT-IT. Stable Printed perovskite/Organic Tandem Solar Cells and Modules for Indoor and lot

The SPOT-IT project aims at addressing this challenge by developing stable, efficient, and sustainable perovskite/organic solar cells and modules optimized for indoor IoT applications. The tandem concept will guarantee to optimization of the light harvesting along the whole emission spectra of common ambient lighting (i.e.white LED).Our innovative modeling approach combining ‘Design of Experiment’ (DoE) and ‘Life Cycle Assessment’ (LCA) will allow selecting the best performing materials (organic and perovskite-inspired materials) and printing techniques to optimize devices performance with cost-effective and an improved sustainability respect to the currently available commercial solutions.

IP	Universita Degli Studi Di Roma Tor Vergata. Italia
Socios	Finlandia, Dinamarca, España
Presupuesto total	2.538.108,16 €
Concedido ES	199.650 €

PROYECTO 40 SUNFLOWER. Sustainable Near-Net-Shape Fabrication Of Low Environmental Impact Receiver Materials.

The general objective of the proposed project SUNFLOWER is the development of highly efficient absorber structures for open volumetric receivers (OVR) for Concentrated Solar Power (CSP) plants with low environmental impact. The project aims to improve the powder raw material processing (CO₂-footprint), to optimize the absorber design, to improve the material composition for Aluminium-alloy and Silicon Carbide and the fabrication technique for the developed absorbers. In addition, it aims the testing and overall assessment of the improved structures. Combining the expertise on the materials, the fabrication process, the modelling, and operation, as well as commercialization, absorber structures allowing highest solar-to-electric conversion efficiency (up to 40%) and lowest environmental impact will be developed. Improving the high-temperature stable materials and the design of the absorbers for OVR CSP, the project focusses directly on the call module objectives to increase the technology performance and lifetime by use of new materials. Within the optimization process an innovative new absorber design will be developed, ensuring higher efficiency (active moving absorber concept). Moreover, the proposed project contributes to the objective to reduce the environmental impact by optimized fabrication process (sustainable raw material preparation and consumption, recycling approach, increase of durability), the use of air as heat transfer fluid and an optimized CSP plant size.

IP	Fraunhofer Gesellschaft Zur Forderung Der Angewandten Forschung Ev. Alemania
Socios	Dinamarca, España
Presupuesto total	1.437.670,59 €
Concedido ES	199.650 €

PROYECTO 45 WECHULL+. Sustainable Concrete Material Leading To Improved Substructures For Offshore Renewable Energy Technologies

The main objective of WECHULL+ is to demonstrate (TRL4-6) a new, sustainable, circular and reliable concrete material suitable for floating substructures in the offshore renewable energy sector. WECHULL+ objectives and activities are based upon the learnings and proof-of-concept (TRL4) of a new sustainable concrete mix with high-performance in marine environment. WECHULL+ takes these efforts to a European level (TRL6), where experts are brought together to validate and verify WECHULL+ concrete material and its real application through samples and prototypes in lab and ocean. Traditionally used steel is expensive and prone to corrosion in the harsh marine environment. Composites price is even higher, it is fossil-fuel based, its manufacturing is characterized with high environmental impacts and still lacks data on long-term performance in sea water. Therefore, the blue energy sector is looking into concrete as an inexpensive (approx. 100 EUR/ton – 30 times lower than steel and 50 times lower than carbon fibre reinforced composites), durable in marine environment and easy and fast on-site manufacturing alternative to traditional manufacturing. Concrete is also a material with the most mature value chain and enables using local production at almost every location in the world. This is a particular advantage for ORE installations, often planned in specific sites due to favourable ocean conditions or being close to islands without connections to the continental energy network.

IP	RISE Research Institutes of Sweden. Suecia
Socios	España, Polonia, Países Bajos, Irlanda
Presupuesto total	2.983.449,41€
Concedido ES	170.610 €

PROYECTO 46 WIND-DIGIPOWER. Large-Scale Wind Integration For The Future Digital Power Grid Using Innovative Power Electronics Control And Communication-Based Estimations

The aim of this project is to develop innovative solutions for the power system architecture and transmission for offshore wind power plants (OWPP), by exploiting the most advanced communication, power electronics and control technologies to ensure breakthrough improvements of the power system operation under different system scenarios and operating conditions. The project has a great potential to make a considerable impact both for a large pool of industries involved in the design, component fabrication and deployment of OWPP and for the wide-spread diffusion of offshore wind power technologies. Indeed, the technical solutions and knowledge generated in this project will make an important step towards a more effective and secure integration of offshore wind power generation. The relevance to the call, and more specifically to module 2.2, is extremely high, as the project is targeting the development and integration of innovative technologies for the future development of offshore wind power plants. Moreover, the proposed team includes a synergic collaboration of complementary expertise between universities and the partner companies enriching the international collaboration the CETPartnership is also aiming at.

IP	Chalmers Tekniska Hogskola Ab. Suecia
Socios	España, Italia, Islandia
Presupuesto total	1.351.601 €
Concedido ES	199.650 €

DUT. Driving Urban Transitions to a sustainable future.

La Asociación DUT intensifica el juego para abordar los desafíos urbanos. A través de la investigación, la innovación y el desarrollo de capacidades, permitimos que las autoridades y municipios locales, los proveedores de servicios e infraestructura y los ciudadanos traduzcan estrategias globales en acciones locales. Desarrollamos las habilidades y herramientas para hacer realidad el cambio urbano e impulsar las transformaciones urbanas que se necesitan con urgencia hacia un futuro sostenible con una mejor calidad de vida en las ciudades.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales: 1 (2022)

Participación de AEI en convocatorias conjuntas: 1 (2022)

CONVOCATORIA CONJUNTA INTERNACIONAL 2022

Países participantes	Austria, Bélgica, Bulgaria, Chipre, República Checa, Dinamarca, Estonia, Finlandia, Francia, Alemania, Grecia, Hungría, Islandia, Italia, Letonia, Lituania, Países Bajos, Noruega, Polonia, Portugal, Rumania, Eslovenia, España, Suecia, Suiza, Turquía, Reino Unido.
Temáticas	- Positive Energy Districts (PED) Transition Pathway 15-minute City (15mC) - Transition Pathway Circular Urban Economies for a regenerative urbanism (CUE) Transition Pathway.
Presupuesto total	19.023.964,79 €
Concedido ES	2.180.420 €
Proyectos aprobados	48
Proyectos financiados por AEI	11 (2 coordinados)

N.º	Acrónimo y título del proyecto	Países participantes
Positive Energy Districts (PED) Transition Pathway		
1	CO2PED Collective Agency and Co-evolution towards Inclusive Energy Transitions	Bélgica , Estonia, Países Bajos, Portugal
2	COPPER Creating, Optimising, and Planning Positive EneRgy Districts: Connecting Citizens' Energy at Different Geographical Levels	Países Bajos , Dinamarca, Noruega, Portugal
3	ENERGY4ALL Energy as a Common Pool Resource	Austria , Hungría, Italia, Noruega
4	HeatCOOP Residents-Owned Heat Cooperatives to Push Urban Decarbonisation	Austria , República Checa, Eslovenia
5	Making PEDs Decision-Making Digital Twins for Climate Neutral PEDs	España , Austria, Italia, Noruega

6	OPEN4CEC Service-Oriented Open Platform for Citizen Energy Communities (CEC) – A Collaborative Platform	Rumania, Italia, Noruega, España
7	PERSIST Positive ENERgy diStrIctS driven by ciTizens	Suiza, Letonia, Noruega, Rumania, España
8	V2G-QUESTS Vehicle to Grid for Equitable Zero-Emission Transitions in Positive Energy Districts	Países Bajos, Austria, Bélgica, Estonia, Portugal, España, Reino Unido
9	DigiTwins4PEDs Utilisation of Urban Digital Twins to Co-create Flexible Positive Energy Systems for Districts	Alemania, Austria, Países Bajos, Polonia
10	FLEdge A Novel Hierarchical Edge-Based Flexibility Management Ecosystem at Both Building and City Level	Grecia, Bulgaria, Estonia, Rumania, Suecia
11	JUST PEPP Just Positive Energy Planning Processes in Disadvantaged Urban Areas	Suecia, Alemania, Países Bajos, Noruega
12	PED StepWise Participatory Step-by-Step Implementation Process for Zero Carbon District Concepts in Existing Neighbourhoods	Austria, Países Bajos, Suecia
12	POSEIDON POSitive Energy Initiatives in Districts for Neutral mediterranean cities	España, Francia, Italia, Austria, Portugal, Turquía
15-minute City (15mC) Transition Pathway		
1	ENHANCE Enhancing Sustainable Travel in Small Cities and Outer Metropolitan Areas	Países Bajos, Portugal, Reino Unido
2	InPUT Engaging Places and Communities for Inclusive Peri-Urban Transitions	Países Bajos, Austria, Bélgica, Portugal
3	JiM Social and Environmental Justice in 15 Minutes – Toolkit Development for Transition to Urban Sustainable Neighbourhoods	Suecia, Francia, Noruega, España, Polonia, Turquía
4	AccessCity4All Adapting the 15-Minute City Concept to Support Active Mobility in Neighbourhoods with Different Levels of Accessibility	Austria, Alemania, Países Bajos, Portugal, Turquía
5	Car-goNE-City Cargo Bikes and Neighbourhood Engagement in the 15-Minute City: Resident-Based Participatory Approaches to Implementing Effective Shared Bike Mobility for Increasing Accessibility and Reducing Car Use	Suecia, Alemania, Noruega, Hungría
6	CITWIN A Generic Digital Twin Framework to Foster Sustainable Mobility in the 15mC	Bélgica, Austria, Dinamarca, Suecia
7	COMMON_ACCESS COMMONing ACCESSibility in Urban Outskirts and Beyond	Reino Unido, Bélgica, Alemania, Italia, Países Bajos
8	DREAMS Driving Equitable and Accessible 15 Minute Neighbourhood Transformations	Países Bajos, Austria, Bélgica, Francia, Alemania, Hungría

9	ERGODIC Combined Passenger and Goods Transportation in Suburb Traffic	Suecia , Austria, Italia, Reino Unido
10	Fair Mobility Fair Mobility and Access to Public Life	Alemania , Austria, Francia, Rumanía
11	FORTHCOMING FOsteRing THE City Of proximity through Maas INteGration	España , Bélgica, Alemania, Hungría, Italia, Portugal, Turquía
12	FRESH The Freight-Shopping Nexus in Urban Outskirts and Beyond	Alemania , Bélgica, Francia, Noruega
14	SPECIFIC Specifying Practices Enabled by Cycling in Fifteen-minute Cities	Reino Unido , Austria, Países Bajos, Suiza, Polonia
15	SuCoLo Fostering Sustainable Consumer Behaviour with Inclusive Bicycle Logistics Infrastructure in Urban Outskirts	Austria , Alemania, Italia, Suecia
16	SUMODO Sustainable Urban MObility Development in Outskirts	España , Polonia, Hungría
17	15minESTATES Co-creating Spatial Strategies for Just and Sustainable Mobility in Large-Scale Housing Estates	Letonia , Bulgaria, Alemania, Hungría, Países Bajos, Suiza
18	CONFLICTEDSTREETS Navigating Conflicts Over Streets and Urban Space in the Transition to the 15mC	Suecia , Austria, Alemania, Países bajos, Noruega, Polonia, Rumanía, Eslovenia, Turquía
19	emc2 The Evolutive Meshed Compact City: A Pragmatic Transition Pathway to the 15-minute City for European Metropolitan Peripheries	Francia , Austria, Italia, Suecia
20	ENACT 15mC Envisioning Neighbourhoods and Co-Creating Thriving Communities in the 15mC	Noruega , Polonia, España, Reino Unido
21	InclusiveCity Critical Placemaking for Inclusive Cities	Austria , Hungría, Italia, Países Bajos, Noruega
22	LISTEN Collective Listening to Communities and Spaces as a Core Capability in Planning Towards 15-minute Suburban Cities	Bélgica , Austria, Suecia
23	MBD15 Mobility Benefit Districts: Travel and Liveability Impacts, Acceptability, and Governance of New Tools for Accelerating Transitions in the 15-minute City	Suecia , Alemania, Austria
24	MULTIGATION Multiplicative Imagination of Citizens and Stakeholders towards the 15-minutes City	Suiza , Bélgica, Finlandia, Italia, España, Turquía, Reino Unido
Circular Urban Economies for a regenerative urbanism (CUE) Transition Pathway.		
1	CDCUL Consumer Demand for Circular Urban Living: Insights from Sweden, Slovenia, and The Netherlands	Suecia , Eslovenia, Países Bajos
2	Circular Grassroots Circular Grassroots Innovations for Sustainable and Inclusive Urban Transitions	Suecia , Bélgica, Francia, Países Bajos, España

3	ECLECTIC Enabling Circular Economy aCTIon plans for small and medium-sized Cities	Italia , Lituania, Portugal, Suecia
4	FOCUSE Food Production and Provisioning through Circular Urban Sytems in European Cities	Suecia , Italia, Polonia, España
5	Phyigital Cooperation in Retrofitting Public Space Phyigital Models of Cooperation in the Retrofitting of Public Space: Community Reclaiming of the City Through the Lens of Participation and Circularity (Co.R.Pu.S.)	Italia , Grecia, Países Bajos
6	TransScale Scale-Up and Scale-Out Sharing Capacity for Sustainable Urban Transformation	Letonia , Dinamarca, Países Bajos, Noruega, Polonia
7	GREEN-INC Growing Effective & Equitable Nature-based Solutions through Inclusive Climate Actions	Países Bajos , Bélgica, Rumanía, Italia, Suecia
8	GreenStorm Design and Deployment of Stormwater Nature-Based Solutions (NBSsw) for a Resilient and Livable City	Francia , Dinamarca, Grecia, Italia, Suecia
9	IntegrateNbS Fulfilling the Transformative Potential of Nature-Based Solutions: From Fragmentation to Integration	Noruega , Polonia, España, Suecia
10	Naturo Engagement of Marginalised Groups in NBS Planning and Management via Long-Term Mosaic Governance	Suecia , Eslovenia, Países Bajos
11	FEED4FOOD Vulnerable Communities Driving Innovation and Governance for Sustainable Food Systems in European Cities	Países Bajos , Grecia, Italia, Polonia, Rumanía, España
12	SURFIT Scaling Urban Regenerative Food Systems In Transition	Países Bajos , Italia, Polonia, Suecia

CONVOCATORIA NACIONAL PCI 2023

POSITIVE ENERGY DISTRICTS (PED) PROJECTS

PROYECTO 5 Making PEDs. Decision-Making Digital Twins for Climate Neutral Peds

The aim of the Making PEDs project is not only to **research and plan Climate Neutral PEDs** but also to **facilitate the transition into practice** providing Digital Twins to support decision-making and participatory urban transformation processes.

IP	Fundacio Institut De Recerca De L'energia De Catalunya. España
Socios	Austria, Italia, Noruega
Presupuesto total	2.029.182,60 €
Concedido ES	278.300 €

PROYECTO 6 OPEN4CEC. Service-Oriented Open Platform For Citizen Energy Communities (Cec) A Collaborative Platform

The main objective of the project is to develop an open and collaborative platform (OPEN4CEC) based on microservices to support Citizen Energy Communities (CEC) and its members.

IP	Aarhus University (AU). Dinamarca
Socios	Italia, Noruega, Rumanía, España
Presupuesto total	1.259.413 €
Concedido ES	181.500 €

PROYECTO 7 PERSIT. Positive Energy Districts Driven By Citizens

PERSIST aims to achieve a better understanding of how socio-economic, socio-cultural, and socio-political factors shape positive energy districts (PEDs) and their interrelations with technological, regulatory, and investment aspects across different geographical, cultural, and economic contexts.

IP	Fachhochschule Zentralschweiz – Hochschule Luzern. Suiza
Socios	Letonia, Noruega, Portugal, Rumanía, España
Presupuesto total	2.348.683,58 €
Concedido ES	181.500 €

PROYECTO 8 V2G-QUESTS. Vehicle To Grid for Equitable Zero-Emission Transitions In Positive Energy Districts

V2g-quests will contribute to the creation of energy positive districts (ped) by empowering, emancipating and reinforcing the energy balance capacity of private and shared electric vehicles (ve) in hitherto poor env areas. These vehicles can be used as a large battery to address the intermittency of energy production and consumption in urban areas through the vehicle-to-grid (v2g) concept, which is being evaluated in several pilot projects. However, for v2g to positively affect the electrical grid, it will have to be adopted in different geographies and socioeconomic strata. Energy production and consumption are everywhere, not just in the places where people with higher incomes live who can afford it. Therefore, at v2g-quests we will work in a multidisciplinary team to bring electric mobility and the concept of v2g to disadvantaged and typically excluded communities, thus contributing to both mobility and energy transitions in the peds. The project aims to produce specific guidelines for creating mobility-enabled peds that are demonstrated through three specific, yet diverse, European case studies that align citizen behavior, business models, technology, energy optimization, regulation and governance, and impacts in a co-creation context in typically excluded districts. Each country that is part of v2g-quests brings the specific experience necessary to maximize the impact of v2g on a local and regional scale. The main objective is to design holistic v2g solutions that are equitable (used and accessible to all) and therefore produce a greater impact on the supply of ped in European cities.

IP	Technische Universiteit Delft. Países Bajos.
Socios	Austria, Bélgica, Estonia, Portugal, España, Reino Unido
Presupuesto total	1.226.513,91 €
Concedido ES	145.200 €

PROYECTO 12 POSEIDON. Positive Energy Initiatives in Districts for Neutral Mediterranean Cities

This project aims to develop a methodology that fosters the transition from existing districts into positive energy districts (PEDs) in Mediterranean cities. By doing so, the objective is also to demonstrate the opportunity that PEDs represent for the energy transition and climate-neutrality and to promote their integration in planning strategies of Mediterranean cities.

IP	Universidad Politécnica de Madrid. España
Socios	Austria, Francia, Italia, Portugal, Turquía
Presupuesto total	1.852.901 €
Concedido ES	290.400 €

15-MINUTE CITY (15MC) PROJECTS

PROYECTO 3 JIM. Social And Environmental Justice In 15 Minutes - Toolkit Development for Transition To Urban Sustainable Neighbourhoods: Jim

This project aims to develop tools, guidelines, and policy instruments for urban planners, incorporating social and environmental justice considerations in the planning of 15-minute cities (15mC). The JiM project focuses on mapping sustainable transport accessibility for diverse social groups. It also involves local decision-making regarding the placement of services and amenities, analysing inhabitants' movements, and integrating environmental data for just 15mC contexts.

IP	Malmo Universitet. Suecia
Socios	Francia, Noruega, Polonia, España, Turquía
Presupuesto total	1.675.308 €
Concedido ES	166.980 €

PROYECTO 11 FORTHCOMING. Fostering The City of Proximity Through Maas Integration

FORTHCOMING aims to develop and test data-driven and user-centric 15- minute city models for suburban areas, applying Mobility as a Service (MaaS) and Logistics as a Service (Laas) strategies.

IP	Universidad Politécnica de Madrid. España
Socios	Bélgica, Alemania, Hungría, Italia, Portugal, Turquía
Presupuesto total	1.325.922 €
Concedido ES	219.010 €

PROYECTO 20 ENATC 15MC. Envisioning Neighbourhoods and Co-Creating Thriving Communities In The 15mc

Enact 15mc will help make European streets and cities more walkable, circular and pleasant to spend time in. Incorporating residents of diverse origins and abilities, entrepreneurs and municipal officials in urban "living-labs" will jointly address the urban co-creation of streets and neighborhoods. The urban living labs will address spatial and functional issues that currently challenge accessibility in Trondheim, Gdansk, Valencia and Oxford. Each of these cases has different cultural, climatic and geographical contexts that require a response through critical thinking (design thinking). Iterative design processes through urban living labs will be supported by virtual and augmented reality technologies. Although these tools are not uncommon, their use by the enact 15mc consortium will address a functional approach (rather than being design-oriented), resolving interactions from urban use that create barriers to engaging people who are not familiar with them, or that may not otherwise be accessible to certain groups. Visualization technologies will be available to the public, in the urban context, interacting in public spaces and through co-creation workshops. Our goal is to break down barriers with a guided approach and compare the use of these tools with others, including tactical urbanism, mapping and physical modeling. Comparisons will lead to new insights into co-creation processes. While transforming areas currently dominated by cars to make them more walkable and attractive makes sense to many people, this is not universally accepted. some will suffer losses, either because driving becomes less attractive or because private domains become more public. Enact 15mc must involve people with all views on street design, including those often left out of participatory processes, to ensure that all needs are understood and taken into account in co-creating change. Working with our industry partners, students and local municipalities, we will engage with existing informal networks in the four living lab contexts alongside more formal recruitment strategies. enact15mc takes a human-centered approach to urban design. Enact 15mc will develop, contextualize and test methods to (re)distribute street space in favor of sustainable mobility options and the social dimension of streets and places. This will lead to new insights into attractive and walkable places in European contexts. Specific knowledge of each of the four cities in the consortium will be made available to policymakers, property owners and the public. Guidelines based on the experiences of the four urban living labs will be presented as guidelines on design for "walkability" and active transportation, urban co-creation processes, and the use of technologies and other tools in public participation.

IP	Norges Teknisk-Naturvitenskapelige Universitet Ntnu. Noruega
Socios	Polonia, España, Reino Unido
Presupuesto total	1.885.791,43 €
Concedido ES	121.000 €

CIRCULAR URBAN ECONOMIES (CUE) PROJECTS

PROYECTO 2 CIRCULAR GRASSROOTS. Circular Grassroots Innovations for Sustainable And Inclusive Urban Transitions

The project aims at examining the challenges and opportunities that urban circular grassroots innovations encounter to create, maintain and scale their solutions for sustainable and inclusive transitions from below. Cities are spaces of overconsumption, waste-intensive production, and high environmental footprints, but also hubs for creativity and innovation. Citizens experiment with a wealth of innovations to address the challenge of a steady consumption growth and overuse of resources. Despite their contributions further research is necessary to investigate the challenges and opportunities to diffuse these practices in terms of: a) space (in central/periurban city districts), b) collaborative and democratic arenas among local government, urban planners and grassroots organizations, c) inclusivity and scalability of the grassroots initiatives (challenges to meet their ambitions, grow, replicate and expand their sharing/circularity practices).

IP	Goteborgs Universitet. Suecia
Socios	Bélgica, Francia, Países Bajos, Suecia
Presupuesto total	1.474.744,35 €
Concedido ES	229.900 € (Universidad de Barcelona 114.950 €) y (Fundacio Universitaria Balmes de Vic 114.950 €)

PROYECTO 4 FOCUSE Food Production and Provisioning Through Circular Urban Systems In European Cities

Urban farming systems have emerged to enable a more resilient food supply. Moving production to urban environments offers promising solutions for securing more sustainable food production. However, many current and future urban farming systems are highly dependent on material and energy inputs from outside the urban area and have little or no integration into the surrounding urban infrastructure, material and energy flows. Thus, there is potential for further integration by promoting more circular approaches to food production through industrial and urban symbiosis. However, there is a lack of research and knowledge in this area. Therefore, the project FOCUSE (Food production and provisioning through Circular Urban Systems in European Cities) was launched with the overall aim of exploring, developing and analyzing methods to promote more circular food production in cities. The project integrates research and work with private actors and municipalities. It does this by 1. Focusing on understanding the current supply and production of food in urban areas. 2 Imagining future circular food production methods in urban areas to realize their potential. 3 Use experimental tests of new methods to produce food from residual materials and review their feasibility, sustainability and viability. 4. Study opportunities and barriers for further implementation and scaling up in Europe.

IP	IvI Svenska Miljoeinstitutet Ab. Suecia
Socios	Italia, Polonia, España
Presupuesto total	968.456 €

Concedido ES 182.710 €

PROYECTO 9 INTEGRATENBS Fulfilling the Transformative Potential Of Nature-Based Solutions: From Fragmentation To Integration

Nature-based Solutions (NbS) are being hailed as solutions that contribute to solving many of today's most pressing social-environmental challenges in urban areas, in ways that are environmentally sound, economically viable and socially just. But implementation of NbS is slow and outcomes vary, hampered by inflexible and siloed forms of governance, conflicts over land use and costs, and social exclusion. To address these challenges, this project proposes an integrative approach to the development and implementation of NbS that accounts for 1) multiple and interlinked social-environmental challenges, 2) multiple kinds of governing entities and societal stakeholders, and 3) multiple social dimensions of change. The core of the project is the development of an “integrative lab” methodology that will be developed and implemented through a set of cases in Norway, Poland, Spain and Sweden, in collaboration with local authority and civil society partners. Through the development of the methodology as well as a facilitation module to “train the trainers” and a set of measurable indicators for “successful” NbS development and implementation, the project will contribute to the ability of all urban and rural spaces to become spaces of ecological and human thriving, marked by resource efficiency and livability.

IP	Stiftinga Vestlandsforskning. Noruega
Socios	Polonia, España, Suecia
Presupuesto total	2.250.736,05 €
Concedido ES	183.920 €

EJP SOIL. Towards climate-smart sustainable management of agricultural soils

El principal objetivo de EJP SOIL es crear un entorno propicio para mejorar la contribución de los suelos agrícolas a desafíos sociales clave, como la adaptación y mitigación del cambio climático, la producción agrícola sostenible, la prestación de servicios ecosistémicos y la prevención y restauración de la degradación de la tierra y el suelo. EJP SOIL construirá una comunidad europea de investigación integrada y sostenible sobre suelos agrícolas y desarrollará e implementará una hoja de ruta sobre la gestión sostenible de suelos agrícolas climáticamente inteligente. La hoja de ruta de EJP SOIL se basa en un marco de conocimiento con 4 componentes que interactúan. El desarrollo del conocimiento se establece en convocatorias de proyectos con socios internos y externos. El intercambio y la transferencia de conocimientos se enmarcan en el desarrollo de capacidades para científicos jóvenes, mejorando la conciencia pública en general y fomentando la comprensión y apreciación social de la gestión de suelos agrícolas y su contribución a la sociedad. La armonización, el almacenamiento y la organización del conocimiento respaldan un suelo armonizado prácticas de información y presentación de informes. La aplicación del conocimiento se ocupa de formas de superar las barreras para la adopción de prácticas novedosas en un contexto europeo, desarrollando conjuntamente herramientas adecuadas y proporcionando recomendaciones basadas en evidencia para las políticas de la UE. Las actividades de EJP SOIL en interacción con las partes interesadas, los Estados miembros y la DG AGRI perseguirán el objetivo a largo plazo de promover a los agricultores como administradores de los recursos de la tierra y el suelo y apoyar el desarrollo y la implementación de políticas, en particular la PAC y las políticas climáticas. EJP SOIL aborda seis impactos esperados con actividades específicas en respuesta a desafíos sociales, científicos, políticos y operativos. Como parte de la propuesta se proporciona un primer plan de trabajo anual basado en la hoja de ruta.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales: 1 (2022)

Participación de AEI en convocatorias conjuntas: 1 (2022)

CONVOCATORIA CONJUNTA INTERNACIONAL 2022

Países participantes	Argentina, Brasil, Canadá, Estonia, Finlandia, Francia, Hungría, Irlanda, Italia, Lituania, Nueva Zelanda, Noruega, Polonia, Sudáfrica, España, Suiza, Uruguay
Temáticas	• Sustainable soil management & Agricultural production • Climate Change mitigation & Soil carbon sequestration • Climate Change adaptation • Soil Data and monitoring mapping and modelling
Presupuesto total	9M
Concedido ES	624.360 €
Proyectos aprobados	8
Proyectos financiados por AEI	3 (1 coordinado)

N.º	Acrónimo y título del proyecto	Países participantes
	AGROCOMPOSIT	
1	Biochar-compost composites for supporting site-specific soil agro-ecosystem functions and climate change mitigation	Hungría , Noruega, Suecia,
	C-arouNd	
2	Refining Soil Conservation and Regenerative Practices to Enhance Carbon Sequestration and Reduce Greenhouse Gas Emissions	Brasil , Canadá, Uruguay, Sudáfrica, República de Namibia, Gana, Estonia, Hungría, Francia, Noruega, Nueva Zelanda, Alemania
	CarboGrass	
3	Impact Of Grassland Management on Soil Carbon Storage	Colombia , Kenia, Reino Unido, Argentina, España, Nueva Zelanda, Alemania, Suiza
	FAMOSOS	
4	Climate Smart Management for Resilient European Cropping Systems	Irlanda , Suiza, Austria, Reino Unido, Francia, España, Noruega, Alemania
	FAMOSOS	
5	Farm MONitoring via Real-time SOil Sensing	Alemania , Portugal, Polonia, Finlandia, Francia, Irlanda
	SANCHOSTHIRST	
6	Cover cropS (CC AND soil health and climAte CHaNge adaptatiOn in Semiarid woody crops. THE RemOte SensIng and furTher scenaRiOs projecTions	España , Francia, Italia, Polonia
	SOIL-ES	
7	Soil ecosystem services under sustainable intensification of agriculture: looking for innovative mapping and monitoring at multiple scales-ES	Brasil , Uruguay, Argentina, Colombia, Francia
	TilSoilC	
8	The effects of tillage practice on soil carbon sequestration mechanisms	Camerún , Italia, Suiza

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PROYECTO 3 CARBOGRASS. Impact of grassland management on soil carbon storage.

The objectives of CarboGrass are: to assess the potential of improved grassland management on soil C, nitrogen (N) cycling and soil health across the globe; to analyze how changes in environmental conditions and management affect CS in grasslands; to provide standardized, high quality datasets on grassland soil C/N cycling and management and environmental induced soil C stock changes, allowing to benchmarking ecosystem models and the tailored application of such assessment tools to various grassland systems in different regions; to develop a framework of methods (incl. models) allowing to identify the potential of different grassland management options to enhance restoration of soil C stocks while improving grassland productivity and livelihoods.

IP	Centre for Research on Sustainable Agriculture. Colombia
Socios	Kenya, Reino Unido, Argentina, España, Nueva Zelanda, Alemania, Suiza
Presupuesto total	1.870.000 €
Concedido ES	169.400 €

PROYECTO 3 CLIMATECROPPING. Climate Smart Management for Resilient European Cropping Systems

ClimateCropping aims to provide scientific evidence, mainly based on long-term experiments (LTes), on how management of agricultural soils can contribute to climate change adaptation and mitigation, better cycling of N, P nutrients and other associated co-benefits in European (EU) cropping systems and pedo-climatic conditions. Furthermore, the project will contribute to the parametrisation and evaluation of soil C decision support models.

IP	University College Dublin1. Irlanda
Socios	Suiza, Austria, Reino Unido, Francia, España, Noruega, Alemania
Presupuesto total	1.559.000 €
Concedido ES	183.920 €

PROYECTO 6 SANCHOSTHIRST. Cover cropS (CC) ANd soil health and climAte CHaNge adaptatiOn in Semiarid woody crops. THE RemOte SensIng and furTHer scenaRIoS projecTions.

Traditional tillage (TT) in woody crops in the Mediterranean environment is a paradigmatic example of the effect of unsustainable management on soil degradation due to erosion and the loss of organic carbon (SOC), nutrients, and biodiversity. The use of cover crops (CC) increases the SOC and produces a cascade of benefits in soil structure, water storage, or biodiversity. However, in semi-arid areas, farmers are reluctant to use CC. To involve them, research must clearly highlight the current state of degradation of soils in woody crops and the feasibility, with pros and cons, of CC as a sustainable management practice.

IP	Universidad Autónoma de Madrid. España
Socios	Francia, Italia, Polonia
Presupuesto total	1.250.000 €
Concedido ES	271.040 € (Instituto Madrileño De Invest. y Desarrollo Rural, Agrario Y Alimentario 116.160 €) y (Universidad Autónoma de Madrid 154.880 €)



RETO 5

**Acción sobre el clima, eficiencia
recursos y materias primas**



RETO 5: ACCIÓN SOBRE EL CLIMA, EFICIENCIA RECURSOS Y MATERIAS PRIMAS

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BiodivScen - Promoting and implementing joint programming at the international level to reinforce research on the development of scenarios of biodiversity and ecosystem services

BiodivScen tiene como objetivo promover y apoyar la investigación internacional coordinada sobre escenarios de biodiversidad y servicios ecosistémicos. Reforzará la investigación y la coordinación de los programas de investigación con el objetivo final de proporcionar a los responsables de la formulación de políticas y otros interesados información, herramientas y soluciones prácticas adecuadas para mejorar la conservación y el uso sostenible de la biodiversidad y los ecosistemas. Los objetivos de BiodivScen son coordinar las agendas de investigación de los principales financiadores de investigación europeos e internacionales para acordar las prioridades de investigación compartidas relacionadas con los escenarios de biodiversidad y ESS; y diseñar e implementar una convocatoria conjunta ambiciosa para propuestas de investigación centradas en el desarrollo de escenarios de biodiversidad Y ESS.

Socios: Coordinador: Francia (Foundation for Biodiversity Research (FRB)); Argentina (Ministry of Science, Technology and Productive Innovation (MINTYT); Austria (Austrian Science Fund (FWF); Bélgica (Belgian Federal Science Policy Office (BELSPO), National Fund for Scientific Research (FNRS); Brasil (São Paulo Research Foundation (FAPESP); Bulgaria (National Science Fund of Bulgaria (BNSF); Côte d'Ivoire, (Strategic Support Program for Scientific Research (PASRES); Estonia (Estonian Science Foundation (ETAG); Finlandia (Academy of Finland (AKA); Francia (National Research Agency (ANR); Alemania (German Aerospace Center (DLR), German Research Foundation (DFG); Hungría (Ministry Rural Development (VIDEKFEJLESZTESI MINISZTERIUM); Irlanda (Environmental Protection Agency Ireland (EPA); Lituania (Research Council of Lithuania (LSC/LMT/RCL); Países Bajos (Netherlands Organisation for Scientific Research (NWO); Noruega (Research Council of Norway (RCN); Polonia (National Science Centre (NCN); Rumanía (Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI); Eslovaquia (Slovak Academy of Science (SAS/SAV); **España (Agencia Estatal de Investigación-AEI);** Suecia (Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (FORMAS); Suiza (Swiss National Science Foundation (SNSF/SNF); Turquía (The Scientific and Technological Research Council of Turkey (TUBITAK).

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas: 1 (2017) y BIODIVCLIM (2019)

Participación de MINECO-AEI en convocatorias conjuntas: 2 (2017, 2019)

CONVOCATORIA CONJUNTA INTERNACIONAL 2017

Países participantes	Argentina, Austria, Bélgica, Brasil, Bulgaria, Canadá, Côte d'Ivoire, Estonia, Eslovaquia, Finlandia, Francia, Alemania, Irlanda, Países Bajos, Lituania, Noruega, Polonia, España, Rumanía, Suecia, Suiza, Turquía, Estados Unidos
Temáticas	Development and application of scenarios of biodiversity and ecosystem services across spatial scales of relevance to multiple types of decisions

	Consideration of multiple dimensions of biodiversity and ecosystem services in biodiversity scenarios
Presupuesto total	28.000.000 €
Concedido ES	1.221.000 €
Proyectos aprobados	21
Proyectos financiados por AEI	7 (2 coordinados)

Nº	Acronimo y título del proyecto	Países participantes
ACCES.		
1	De-icing of Arctic Coasts: Critical or new opportunities for marine biodiversity and Ecosystem Services?	Noruega, Canadá, Dinamarca, Polonia, Estados Unidos
AlienScenarios.		
2	Developing and applying scenarios of biological invasions for the 21st century	Austria, Canadá, Alemania, España, Francia
ARCTIC-BIODIVER.		
3	Scenarios of freshwater biodiversity and ecosystem services in a changing Arctic	Suecia, Canadá, Dinamarca, Noruega, Estados Unidos
BIOESSHEALTH.		
4	Scenarios for biodiversity and ecosystem services acknowledging health	Suecia, Austria, Alemania, Finlandia, Noruega
BONDS.		
5	Balancing biOdiversity conservatioN with Development in Amazon wetlandS	Francia, Brasil, Alemania, Noruega, Reino Unido, Estados Unidos
ENVISION.		
6	An inclusive approach to assessing integrative scenarios and visions for protected area management	Suecia, Alemania, España, Países Bajos, Estados Unidos
FARMS 4		
7	Biodiversity. Farmer-led Agroecological Research in Malawi using Scenarios for Biodiversity	Estados Unidos, Canadá, Alemania, Noruega
FATE.		
8	Future ArcTic Ecosystems (FATE): drivers of diversity and future scenarios from ethno-ecology, contemporary ecology and ancient DNA	Alemania, Canadá, Finlandia, Francia, Noruega, Suecia, Estados Unidos
FutureWeb.		
9	Climate and land use change threat to the vertebrate European food web structure and functioning	Francia, Suiza, Alemania, Finlandia, Italia, Países Bajos, Estados Unidos
InvasiBES.		
10	Understanding and managing the Impacts of INVASive alien species on Biodiversity and Ecosystem Services	España, Suiza, Alemania, Francia, Estados Unidos
Land2Sea.		
11	Land to Sea: Integrated modelling of consequences of terrestrial activities and climate change for freshwater and coastal marine biodiversity and ecosystem services	Irlanda, Canadá, Alemania, Suecia, Estados Unidos
LimnoScenES.		
12	Developing improved social-ecological scenarios for biodiversity and ecosystem service changes in north temperate freshwater ecosystems over the next half century	Suecia, Canadá, Alemania

13	REEF-FUTURES. The futures of reef services in the Anthropocene	Francia, Australia, Canadá, Suiza, Alemania, Países Bajos, Noruega, Suecia, Reino Unido, Estados Unidos
14	SALBES. Scenarios for Agricultural Landscapes' Biodiversity and Ecosystem Services	Alemania, Austria, Suiza, Estonia
15	SECBIT. Scenarios for providing multiple ecosystem services and biodiversity in viticultural landscapes	Austria, Alemania, España, Francia, Países Bajos, Rumanía, Estados Unidos
16	SOMBEE. Scenarios of Marine Biodiversity and Evolution under Exploitation and climate change	Francia, Canadá, China, Alemania, España, Tr
17	WILDHEALTH. How does environmental biodiversity affect wildlife health?	Finlandia, Suecia, Estados Unidos
18	BioDiv-support. Scenario-based decision support for policy planning and adaptation to future changes in biodiversity and ecosystem services	Suecia, Alemania, España, Finlandia, Francia
19	Future BirdScenarios. Conservation policy in a changing world: integrating citizen science data from national monitoring schemes to model impacts of global change scenarios	Noruega, Finlandia, Suecia, Estados Unidos
20	GloBAM. Towards monitoring, understanding and forecasting global biomass flows of aerial migrants	Suiza, Bélgica, Finlandia, Países Bajos, Estados Unidos
21	OBSEv. Open Library of Pollinator Biodiversity and Ecosystem Services Scenarios	España, Argentina, Países Bajos, Estados Unidos

CONVOCATORIA NACIONAL APCIN 2018

PROYECTO 2 AlienScenarios. Developing and applying scenarios of biological invasions for the 21st century

In AlienScenarios, we will evaluate for the first time the range of plausible futures of biological invasions for the 21st century. We will use complementary data and approaches, and different measures of impacts of biological invasions. AlienScenarios consists of seven highly integrated complementary subprojects: In Work Package I (WP I) we develop the qualitative narratives for plausible futures of global alien species spread in the 21st century – the Alien Species Narratives (ASNs). The ASN further serve as overarching concept to parameterize quantitative models of global, continental and regional futures of biological invasions. In WP II, we will establish the first global mechanistic invasion model considering all relevant processes of biological invasions such as source pools, driver dynamics, and establishment rates. In WP III, we will assess the impacts of invasive alien species in terms of economic costs according to the different Alien Species Narratives developed in WP I. In WP IV, we will assess the consequences of different levels of implementation of the European Union Regulation on invasive alien species. In WP V, we will analyse changes of the functional composition of communities in mountain regions under different scenario storylines. In WP VI, we will extend the analyses to the Global South using Panama as a country-level case study. Finally, in WP VII the results of the other WPs will be synthesized, and

the approach and results of AlienScenarios will be discussed with and communicated to stakeholders and the wider community.

IP	University of Vienna, Austria
Socios	Canadá (McGill University), Alemania (Senckenberg Biodiversity and Climate Research, Helmholtz Centre for Environmental Research – UFZ, IGB & FU Berlin), España (Universitat de Girona), Francia (University of Paris Saclay)
Presupuesto total	1.337.362 €
Concedido ES	150.000 €

PROYECTO 6 ENVISION. An inclusive approach to assessing integrative scenarios and visions for protected area management

ENVISION is a transdisciplinary research project that develops, tests, and validates a novel, inclusive scenario approach for engaging multiple stakeholders in PA management and biodiversity decision-making at multiple scales. We move beyond the state-of-the art by developing a coherent set of tools and processes for systematically identifying, assessing, and comparing PA management visions based on past drivers of change and the consequences of modelled scenarios on multiple aspects of biodiversity, ecosystem services, and human well-being. Scenarios used to derive the associated visions will include land-use change, invasive species, climate change, tourism, forestry, mining, indigenous use of natural resources, and water resources planning and governance. ENVISION addresses the research questions of: 1) to what extent is balancing diverse visions possible and, 2) how can strategies based on collectively defined visions be translated into PA management at multiple scales?

IP	Swedish University of Agricultural Sciences, SLU, Suecia
Socios	Suecia (Stockholm University, SRC), Alemania (University of Göttingen, UGOE), España (Fundacio per a la Universitat Oberta de Catalunya, UOC), Países Bajos (Vrije Universiteit Amsterdam (VU), Estados Unidos (University of Illinois)
Presupuesto total	1.553.290 €
Concedido ES	150.000 €

PROYECTO 10 InvasiBES. Understanding and managing the Impacts of INVASive alien species on Biodiversity and Ecosystem Services

Invasive Alien Species (IAS) are among the most significant drivers of species extinction and ecosystem degradation, causing negative impacts on ecosystem services and human well-being. Using data and models across scales, habitats and species, the overall objective of InvasiBES is to understand and anticipate the multi-faceted impacts of IAS and to provide tools for their management. This will be achieved through five inter-related work-packages. WP 1 will design three future intervention scenarios focused on prevention, control and eradication of IAS in Europe and the US, through a participatory process bringing together the expertise of scientists and stakeholders. WP 2 will adapt current impact assessment protocols (EICAT and SEICAT) to consider both the detrimental and beneficial impacts of IAS on biodiversity and ecosystem

services. WP 3 will combine this information with maps of the potential distribution of 100 of the worst IAS in Europe under current and future climate change scenarios. WP 4 will replicate activities in WP 3 for 100 range-shifting invasive plants in the US. Models and maps in WP 3 and 4 will serve to evaluate the costs and benefits in terms of ecosystem services of alternative IAS intervention scenarios developed in WP 1. Focusing on three local scale studies that cover a range of habitats (freshwater, terrestrial and marine), invasive species (plants and animals) and ecosystem services (supporting, provisioning, regulating and cultural), WP5 will use empirical field and experimental data to quantify the real-world impacts of IAS on biodiversity and ecosystem services and explore the recovery of ecosystems after the invader is removed. Spatial planning tools (INVEST) will be used to evaluate the costs and benefits of intervention scenarios at the local scale. The multi-disciplinary combination of methods and approaches proposed in InvasiBES provides unique opportunities to develop scenarios and models of biodiversity and ecosystem services that are relevant to underpin management of IAS at multiple scales.

IP	Estación Biológica de Doñana-Agencia Estatal Consejo Superior de Investigaciones Científicas (EBD-CSIC), España
Socios	España (Instituto Pirenaico de Ecología-Agencia Estatal Consejo Superior de Investigaciones Científicas (IPE-CSIC), Suiza (University of Fribourg), Alemania (Leibniz-Institute of Freshwater Ecology and Inland Fisheries (IGB) & Freie Universität Berlin Königin-Luise-Str.), Francia (Laboratoire d'Ecologie Alpine (LECA), Estados Unidos (University of California, University of Massachusetts)
Presupuesto total	973.312 €
Concedido ES	108.000 € + 116.000 € = 224.000 €

PROYECTO 15 SECBIT. Scenarios for providing multiple ecosystem services and biodiversity in viticultural landscapes

SECBIT will use transdisciplinary stakeholder-driven scenario workshops to identify the most relevant direct and indirect drivers modifying the decisions for adopting land-use decisions at the vineyard and landscape scale. SECBIT will employ agent-based models (ABMs) to explore the effects of policies onto winegrowers' decision-making, as it is recognised that an advanced understanding of how humans think and take decisions - thus moving beyond the rational actor paradigm - is crucial for designing appropriate policies (World Bank 2015). Instead of the rational actor, theories on human decision-making such as imitation and satisfying (Schlüter et al., 2017) will provide the basis for the ABMs and enhance the transfer of scientific insights into real land use practices. ABMs are a suitable tool for investigating individual decision-making in a virtual laboratory, especially for studying the effects in coupled socio-ecological systems. Most applications on land use focus on agriculture (Groeneveld et al., 2017), whereas very few ABMs exist that explicitly address viticulture (e.g. Elsayah et al., 2015), and none focuses on the interactive effects of in- and off-crop management on multiple ecosystem services. By explicitly linking wine growers responses to different policies, it will be possible to understand their impact on a broad range of ES and biodiversity. The outcomes of the ABM will be used to develop an integrated decision-support tool integrating available risk prognosis tools with new modules consisting of habitat variables like proportion of semi-natural elements in the vicinity of vineyards which could support pest control services. SECBIT will advance the current research on biodiversity and ES in viticultural landscapes.

IP	University of Natural Resources and Life Sciences (BOKU), Austria
Socios	Alemania (Julius Kühn-Institut, Institute for Environmental Sciences, University of Göttingen), España (Estación Experimental del Zaidín-Agencia Consejo Superior de Investigaciones Científicas (EEZ-CSIC), Francia (INRA), Países Bajos (University of Twente), Rumanía (University of Agricultural Sciences and Veterinary Medicine), Estados Unidos (University of California, Davis)
Presupuesto total	1.505.580 €
Concedido ES	150.000 €

PROYECTO 16 SOMBEE. Scenarios of Marine Biodiversity and Evolution under Exploitation and climate change

SOMBEE addresses the role of eco-evolutionary dynamics and their consequences for the sustainable exploitation of fish resources in the future. To this end, we will build and test scenarios of the combined pressure of fishing and climate change on both intra- and inter-specific marine biodiversity, by explicitly modelling the phenotypic plasticity of fish life-history traits, their selection and adaptive evolution, and their genetic drift for multiple interacting species. The objectives are to: i) develop a cutting edge evolutionary ecosystem model with primary focus on fish; ii) apply it to a set of 6 contrasting ecosystems to better understand the selective pressures exerted by fishing and climate change; iii) project future changes in intra- and inter-specific biodiversity and related fishing production and economic profit under combined climate and fishing scenarios and iv) quantify the synergistic and antagonistic ecological, evolutionary and economic impacts of these drivers. SOMBEE will advance knowledge on the capacity of fish communities to adapt to global change and our ability to forecast their persistence and the future sustainability of fisheries and food production.

IP	Institut de Recherche pour le Développement, Francia
Socios	Francia (IFREMER), Canadá (University of British Columbia), China (Ocean University of China), Alemania (University of Hamburg), España (Fundación AZTI), Turquía (Middle East Technical University), Alemania (University of Kiel)
Presupuesto total	1.310.010 €
Concedido ES	122.000 €

PROYECTO 18 BioDiv-support. Scenario-based decision support for policy planning and adaptation to future changes in biodiversity and ecosystem services

The aim of this project is to develop future scenarios for decision-makers and end users of ecosystem services to enable enlightened decisions for adaptation and policy on local and regional scales. The scenarios will represent possible developments until the 2050s. The project has three overarching goals: 1. To improve the scientific knowledge on expected vegetation change and ecosystem service impacts, connecting the local, regional and global scales with a main focus on high-altitude mountainous areas; 2. To produce a planning tool for evaluating vegetation change in mountainous areas for a range of likely future scenarios covering climate change and air quality including deposition; socio-economic and policy development; and management practices; 3. To estimate and disseminate uncertainties associated with the scenarios.

IP	Swedish Meteorological and Hydrological Institute, SMHI, Suecia
Socios	Suecia (Lund University, Stockholm University, University of Gothenburg), Alemania (Senckenberggesellschaft für Naturforschung), España (Centro de Investigación Energética Medioambiental y Tecnológica (CIEMAT)) , Finlandia (FMI), Francia (NERIS)
Presupuesto total	1.339.627 €
Concedido ES	150.000 €

PROYECTO 21 OBServ. Open Library of Pollinator Biodiversity and Ecosystem Services Scenarios

Here we propose to use the open-source environment k.LAB to develop a user-friendly open library of modeled scenarios in collaboration with stakeholders. We will focus on pollinators and the pollination service they provide given their key contributions to biodiversity maintenance and food security and their threatened status globally. Our approach will take into account different dimensions of biodiversity by capturing the responses of plant-pollinator interactions, scaling up pollinator responses to the community level and testing the transferability of umbrella species responses. Models will be validated against empirical data using baseline data collected by our group and by other researchers, as well as re-sampling of representative locations. By using a participatory approach with relevant stakeholders from four different countries we will assess the real utility of the developed models and biodiversity scenarios for the end users, including performance across scales and proper communication of uncertainty. The best models will be used to map pollination services under different environmental scenarios ranging from global trends extracted from IPCC and land use cover predictions to local potential implementations of better management practices.

IP	Consejo Superior de Investigaciones Científicas - Estación Biológica de Doñana (EBD-CSIC), España
Socios	España (Basque Centre for Climate Change (BC3), Argentina (Sede Andina, Universidad Nacional de Río Negro (IRNAD-UNRN), Países Bajos (Wageningen University), Estados Unidos (Rutgers University)
Presupuesto total	769.449 €
Concedido ES	150.000 € + 125.000 € = 275.000 €

BIODIVCLIM - European Joint Programme for the Integration of Radiation Protection Research

BiodivClim tiene como objetivo promover la investigación internacional coordinada sobre la biodiversidad y el cambio climático en todos los entornos, incluíd zonas agrícolas. Fortalece la coordinación de la investigación y los programas de investigación con el objetivo final de proporcionar a los encargados de la formulación de políticas y otras partes interesadas el conocimiento, las herramientas y las soluciones prácticas adecuadas para mejorar la conservación y el uso sostenible de la biodiversidad y los ecosistemas en un clima cambiante. Los objetivos concretos de BiodivClim son:

- Coordinar las agendas de investigación de los principales financiadores de investigación europeos e internacionales para acordar prioridades de investigación compartidas relacionadas con la biodiversidad y el cambio climático.
- Reforzar la colaboración con otras iniciativas relevantes en el campo para aumentar las sinergias y evitar la fragmentación.
- Diseñar e implementar dos convocatorias conjuntas de propuestas de investigación en este campo (incluida una cofinanciada).
- Promover la colaboración en la investigación a través de las fronteras y disciplinas nacionales a fin de crear capacidad, intercambiar mejores prácticas y tener un efecto duradero en la comunidad internacional de investigación y el paisaje.
- Apoyar el diálogo y la colaboración entre la academia y las partes interesadas, y la participación de las partes interesadas en los proyectos de investigación para aumentar el impacto de la investigación en las políticas y la práctica.
- Facilitar la captación rápida y eficiente de los resultados de investigación financiados por el IPBES y el IPCC para sus evaluaciones futuras, y por otras iniciativas relevantes.
- Reforzar el acceso abierto a datos.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número de convocatorias conjunta internacionales: 1 (2019)

Participación de AEI en convocatorias conjuntas: 1 (2019)

CONVOCATORIA CONJUNTA INTERNACIONAL 2019

Países participantes	Bélgica, Bulgaria, Brazil, República Checa, Dinamarca, Estonia, Finlandia, Francia, Alemania, Grecia, Irlanda, Israel, Letonia, Lituania, Noruega, Polonia, Portugal, Rumania, Eslovaquia, Sudafrica, España, Suecia, Suiza, Túnez. Y Turquía
Temáticas	Consequences of climate change on biodiversity and nature's contributions to people Climate-biodiversity feedback processes Potential of nature-based solutions for mitigating and adapting to climate change

	Synergies and trade-offs between policies on biodiversity, climate and other relevant sectors, and the role of agents of change.
Presupuesto total	25.000.000 €
Concedido ES	748.000€ €
Proyectos aprobados	21
Proyectos financiados por AEI	5

Nº	Acronimo y título del proyecto	Países participantes
	ACORN.	
1	Identifying seed sources for highly adaptable oak forests in a changing climate.	Austria , Suiza, Alemania, Grecia, Turkia
	ASICS.	
2	ASsessing and mitigating the effects of climate change and biological Invasions on the spatial redistribution of biodiversity in Cold. environments	Francia , Austria, Bélgica, República Checa, España, Dinamarca, Noruega, Sudáfrica
	BaltVib.	
3	Pathogenic Vibrio bacteria in the current and future Baltic Sea waters: mitigating the problem.	Alemania , Estonia, Dinamarca, Finlandia, Lituania, Polonia, Suecia
	BIOFAIR.	
4	BIOdiversity of soils and FArming Innovations for improved Resilience in European wheat agrosystems.	Bélgica , Suiza, Alemania, España, Francia
	CLAMBIO.	
5	Assessing the effects of past and future climate change on Amazonian biodiversity.	Finlandia , Brazil, Alemania, Reino Unido
	EASMO.	
6	EAStern Tropical Pacific reef fish on the MOve: biodiversity reorganisation and societal consequences.	Alemania , Australia, Colombia, Costa Rica, Noruega, Portugal, Suecia, Reino Unido, US
	EPICC.	
7	Environmental Policy Instruments across Commodity Chains: Comparing multi-level governance for Biodiversity Protection and Climate Action in Brazil, Colombia, and Indonesia.	Bélgica , Alemania, Brazil, ID, Noruega, Suecia
	FeedBaCks.	
8	Feedbacks between Biodiversity and Climate.	Suiza , República Checa, Alemania, Francia, Suecia
	FUNPOTENTIAL.	
9	Potential of functional diversity for increasing the disturbance resiliency of forests and forest-based socio-ecological systems.	Finlandia , Alemania, Francia
	FutureArcticLives.	
10	Future Arctic livelihoods and biodiversity in a changing climate.	Dinamarca , Noruega, Suecia
	GenClim.	
11	Biodiversity on the run: evolutionary and socio-economic consequences of shifting distribution ranges in commercially exploited marine fishes.	Dinamarca , Alemania, Portugal, SA

12	GRADCATCH. Using natural environmental GRADients to decipher the adaptation of soil microbial Communities to climATe CHange.	Dinamarca, Sudáfrica, España, Estados Unidos
13	MICROSERVICES. Predicting climate change impacts on the crop microbiome and cascading effects on ecosystem services delivery in agroecosystems.	Suiza, Bélgica, España, Francia, Alemania, Grecia
14	MixForChange - Mixed Forest plantations for climate Change mitigation and adaptation.	Francia, Austria, Bélgica, Brazil, Canadá, Alemania, Italia, Suecia
15	NAPERDIV. Nature-based perennial grain cropping as a model to safeguard functional biodiversity towards future-proof agriculture.	Alemania, Austria, Bélgica, Francia, Polonia, Rumanía, Suecia
16	NordSalt. Climate Change Impacts and Biodiversity Interactions in Nordic Salt Marshes.	Dinamarca, Alemania, Finlandia, Suecia, Noruega
17	PlantCline. Adapting Plant Genetic Diversity to climate change along a continental latitudinal gradient.	Suecia, Bélgica, España, Finlandia
18	PRINCESS. Peatland Rewetting In Nitrogen-Contaminated Environments: Synergies and trade-offs between biodiversity, climate, water quality and Society.	Alemania, Austria, Bélgica, Finlandia, Polonia, Noruega
19	RangeX. Mechanisms underlying the success and impacts on biodiversity and ecosystem functioning of range-expanding species under climate change.	Suiza, Chile, Alemania, Dinamarca, Francia, Noruega, SA, Suecia
20	RESTORE. Innovative biotechnological strategies to improve tree drought tolerance and microbial diversity for forest restoration purposes: the application of plant associative microorganisms and nature-based materials.	Brazil, Alemania, Francia
21	SUSTAIN-COCOA. Sustainable sourcing policies for biodiversity protection, climate mitigation, and improved livelihoods in the cocoa sector.	Suiza, Australia, Bélgica, Colombia, Suecia

CONVOCATORIA NACIONAL APCIN 2020-2

PROYECTO 2 ASICS - ASsessing and mitigating the effects of climate change and biological Invasions on the spatial redistribution of biodiversity in Cold environments

ASICS aims to significantly improve understanding of the effects of climate change on the distributions of both non-indigenous and native species in cold environments. To achieve this, a broad array of experimental approaches, notably on species reactions to climate change, cutting-edge modelling techniques, and decade-long time series of species occurrence and climatic data will be used.

Ultimately, ASICS aims to achieve accurate and reliable forecasting of future species redistributions that will allow us to anticipate their impact and cost in cold regions. In a world

where environmental changes have become virtually unstoppable, being able to anticipate responses and consequences gives valuable knowledge to pre-emptively prevent, mitigate and/or be prepared for the negative effects of biological invasion processes.

IP	EcoBio-University of Rennes, Francia
Socios	Austria, Bélgica, República Checa, España (Universidad Rey Juan Carlos), Dinamarca, Noruega, SA
Presupuesto	2.108.217 €
Concedido ES	149.000 €

PROYECTO 4 BIOFAIR - BIOdiversity of soils and FArming Innovations for improved Resilience in European wheat agrosystems

BIOFAIR's main goal is to assess the impacts of climate change and innovative farming practices on plant productivity, nutritional quality and fitness. A strong focus will be given on the study of soil functioning and the related soil microbiome as well as micro- and meso-fauna biodiversity. This will allow a better understanding of the reported changes in productivity, quality value of the cereal grains and the suppressiveness capacity of such soils against (a)biotic stresses.

IP	Liège University, Bélgica
Socios	Francia, Alemania, España (Agencia Estatal Consejo Superior de Investigaciones Científicas (Csic)), Suiza
Presupuesto	1.483.360 €
Concedido ES	149.942 €

PROYECTO 12 GRADCATCH - Using natural environmental GRADients to decipher the adaptation of soil microbial Communities to climATe Change

Climate change has large effects on most biomes on Earth. This includes effects on soil microorganisms and their activity, which in turn may affect the release of greenhouse gases and the turnover of nutrients important to plants. Despite their importance, these effects are poorly understood by the scientific community.

The overall aim of GRADCATCH is to unravel the effects of climate change at regional and global scales on soil microorganisms and their feedbacks on climate.

To accomplish this, GRADCATCH will study trans-continental natural gradients in aridity, latitude and altitude.

GRADCATCH aims to:

- Understand short- and long-term adaptation and susceptibility of soil microbial diversity and functions to climate change, such as variations in soil water availability and temperature.
- Identify phylogenetic and functional soil microbial indicators of climate change.

- Generate robust data for modelling of climate-soil biodiversity feedback processes, mainly production and consumption of the greenhouse gases CO₂, CH₄ and N₂O.

IP	University of Copenhagen, Dinamarca.
Socios	Dinamarca, Sudáfrica, España, Estados Unidos
Presupuesto	932.089 €
Concedido ES	150.000 €

PROYECTO 13 MICROSERVICES - Predicting climate change impacts on the crop microbiome and cascading effects on ecosystem services delivery in agroecosystems

Climate change is affecting Earth's biodiversity and the multitude of ecosystems services it provides. This is particularly problematic for agroecosystems, where climate change combined with unsustainable management threatens global food production. However, political actions that aim at quantifying and mitigating the impact of climate change and unsustainable management on biodiversity are not on track to be achieved in the near future. Soil microbial diversity is central

to agricultural systems. Soil microorganisms interact with crops and carry out processes that promote plant growth, improve nutrient utilization, reduce greenhouse gas production, and increase resistance to diseases and abiotic stressors. There is great potential to harness these microbial functions while progressively decreasing the amount of chemical inputs in order to develop a sustainable and climate-resilient agriculture. However, the extent to which climate

change affects microbial diversity is unclear and remains underrepresented in ongoing debates about climate change, global biodiversity loss and conservation policy.

MICROSERVICES will use a multi-domain approach to assess the impact of climate change on the crop-soil-microbiome nexus under various agricultural management regimes, with the aim to increase our capacity to predict and mitigate future climate change impacts on soil biodiversity and its cascading effects on agroecosystem functioning.

IP	Institute of Agricultural Sciences – ETH Zürich, Suiza
Socios	Bélgica, España (Acondicionamiento Tarrasense – LEITAT), Francia, Alemania, Grecia
Presupuesto	1.192.380 €
Concedido ES	150.000 €

PROYECTO 17 PlantCline - Adapting Plant Genetic Diversity to climate change along a continental

Climate factors such as temperature and precipitation vary tremendously over continental scales, strongly structuring biomes along latitudinal gradients. Many species, however, have continental distributions and are assumed to be adapted to cope with their local climate, either genetically or plastically. While such adaptive capacities are central to their resilience to climatic changes, few studies have explored the underlying mechanisms in terms of genetics and ecological traits.

PlantCline aims to generate and share knowledge on how climate change affects the evolution of plant traits and trait diversity, as well as interactions between the plant and pest organisms, via changes in abiotic as well as biotic conditions such as novel insect communities due to climate-induced range shifts. Overall, the project aims to obtain a mechanistic understanding of the interrelationships among selection of genes, expression of phenotypic traits, and real-life fitness.

Woodland strawberry (*Fragaria vesca*) will be used as model species as it has a cross-continental distribution, is fully genome sequenced, and is an important wild genetic resource for garden strawberry breeding.

IP	Swedish University of Agricultural Sciences, Suecia
Socios	Bélgica, España (Universidad de Málaga), Finlandia
Presupuesto	1.201.274 €
Concedido ES	149.000 €

Biodivrestore. Promoting & implementing joint programming to reinforce transnational research for the conservation and restoration of degraded ecosystems and their biodiversity, including a focus on aquatic systems

BiodivRestore consiste en una convocatoria conjunta de proyectos de investigación internacionales, cofinanciados por la Comisión Europea, y un conjunto de otras actividades dirigidas a investigadores, partes interesadas no académicas y programadores de investigación en este ámbito. Estas actividades incluyen eventos de creación de redes y desarrollo de capacidades para investigadores, así como apoyo y eventos específicos para la participación de las partes interesadas y para la aceptación de los resultados de la investigación, incluso en ámbitos no académicos. Sobre la base de proyectos anteriores financiados por Biodiversa y Water JPI y de las contribuciones de BiodivRestore, también se realizará un trabajo de prospectiva científica, con el objetivo de identificar nuevas fronteras de investigación, brechas y prioridades para la conservación y restauración de ecosistemas degradados y su biodiversidad. Muchos de los ecosistemas europeos y mundiales sufren una degradación de los ecosistemas terrestres, acuáticos y de transición con impactos negativos. BiodivRestore promueve e implementa programación conjunta para reforzar la investigación transnacional para la conservación y restauración de ecosistemas degradados y su biodiversidad, incluido un enfoque en los sistemas acuáticos.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número de convocatorias conjunta internacionales: 1 (2020)

Participación de AEI en convocatorias conjuntas: 1 (2020)

CONVOCATORIA CONJUNTA INTERNACIONAL 2020

Países participantes	Francia, Austria, Bélgica, Brasil, Bulgaria, República Checa, Dinamarca, Estonia, Finlandia, Alemania, Irlanda, Letonia, Lituania, Moldavia, Marruecos, Países Bajos, Noruega, Polonia, Portugal, Rumania, Eslovaquia, Sudáfrica, España, Suecia, Suiza, Taiwán, Túnez, Turquía
Temáticas	- Studying the biological and biophysical processes at stake for conservation/restoration, and their interactions - Assessing trade-offs and synergies between targets, benefits and policies for conservation and restoration - Knowledge for improving the effectiveness and upscaling of conservation and restoration action.
Presupuesto total	21.212.492 €
Concedido ES	2.422.857,10 €
Proyectos aprobados	22
Proyectos financiados por AEI	14

Nº	Acrónimo y título del proyecto	Países participantes
1	BINATUR. Bringing nature back – biodiversity friendly nature-based solutions in cities	Finlandia , Bélgica, Alemania, Polonia, Portugal
2	BIOCONSENT. Decision-making Support for Forest Biodiversity Conservation and Restoration Policy and Management in Europe: Trade-offs and Synergies at the Forest-Biodiversity-Climate-Water Nexus	Alemania , Austria, Bulgaria, España, Finlandia, Suecia
3	BIORESET. Biodiversity restoration and conservation of inland water ecosystems for environmental and human well-being	Portugal , España, Noruega
4	BIO-TRADE. Protecting Biodiversity through Regulating Trade and Business Relations	Finlandia , Suiza, Dinamarca, Suecia
5	COAST. Conservation of marine ecosystems around Santo Antão, Cabo Verde: implications for policy and society	Portugal , Alemania, Francia, España, Portugal-Azores
6	COSAR. Context-dependence of the societal and ecological outcomes from river ecosystem restoration	Francia , Alemania, Países Bajos, Suiza
7	DEEP REST. Conservation & restoration of deep-sea ecosystems in the context of deep-sea mining	Francia , Bélgica, Alemania, España, Irlanda, Países Bajos, Noruega, Portugal, Portugal-Azores, Suecia
8	EMYS-R. A socio-ecological evaluation of wetlands restoration and reintroduction programs in favor of the emblematic European pond turtle and associated biodiversity: a pan-European approach	Francia , Alemania, Polonia, Letonia
9	FISHME. Social and ecological effects of Fish removal in Mountain Ecosystems	Francia , Austria, Suiza, España, Rumania
10	FORESTFISHER. Priority areas for conservation and restoration of Amazonian forest-frugivorous fish interactions and associated fisheries	Francia , Brasil, Alemania, Portugal, Estados Unidos
11	FRESHH. Farmer acceptable REstoration of Semi-natural Habitat to limit Herbicides	Francia , Austria, República Checa, Países Bajos, Suecia
12	FRESHRESTORE. Holistic evaluation and restoration measures of human impacts on freshwater ecosystems across biogeographical gradients	Noruega , Dinamarca, España, Finlandia, Suecia
13	INTERREST. Interactive effects of local and landscape scale restoration of semi-natural grasslands and agricultural fields on species interactions and ecosystem functions in different social-ecological systems	Alemania , Bélgica, Estonia, España, Países Bajos, Suecia

14	MPA4SUSTAINABILITY. Enhancing the role of MPAs in restoring biodiversity while maintaining access to ecosystem services	Dinamarca, España, Francia, Portugal, Suecia
15	NARROW. Narratives on restored water	Suecia, Suiza, Finlandia
16	NICHES. Nature's Integration in Cities' Hydrologies, Ecologies and Societies	Alemania, Bulgaria, España, Países Bajos, Reino Unido, Estados Unidos
17	REMOVE-DISEASE. Conservation and restoration of degraded insular biodiversity: impacts of the removal of introduced mammals on the dynamics of infectious diseases in seabirds across islands of the Southern Ocean	Francia, Portugal, Reino Unido, Sudáfrica
18	RESPOND. Restoring and Managing Biodiversity and Ecosystem Services of Temporary Pond Landscapes	Bélgica, Marruecos, Polonia, España
19	RESTOLINK. Quantifying restoration success across biomes by linking biodiversity, multifunctionality and hydromorphological heterogeneity	Alemania, Brasil, España, Suecia
20	RESTORESEAS. Marine Forests of animals, plants and algae: nature-based tools to protect and restore biodiversity	Portugal, Austria, Bélgica, Brasil, República Checa, Alemania, Marruecos, Países Bajos, Noruega, España, Portugal-Azores, Suecia
21	REVERSAL. Restoring peatlands of the nemoral zone under conditions of varying water supply and quality	Alemania, Países Bajos, Austria, Polonia
22	TRANSLOC. Translocations of flora and fauna for conservation and restoration: ecological, evolutionary, and socio-economic impacts at multiple scales	Francia, Bélgica, Marruecos, Portugal, España, Suecia, Suiza

CONVOCATORIA NACIONAL PCI 2022

PROYECTO 2 BIOCONSENT. Decision-making Support for Forest Biodiversity Conservation and Restoration Policy and Management in Europe: Trade-offs and Synergies at the Forest-Biodiversity-Climate-Water Nexus

Despite ambitious global and EU policy targets, biodiversity is under increasing threat. Biodiversity decline and degradation of ecosystems continue at an alarming rate, especially in forests that harbor 80 percent of terrestrial biodiversity worldwide. Only 0,7 percent of forests in Europe are in a primary condition; many primary and old growth forests lack effective protection and the majority of forest habitat and species in protected (Natura 2000) as well as managed forests are in a non-favorable conservation status. Enhanced conservation and restoration of forest habitats, species and functions are essential for biodiversity and provision of ecosystem services. Ambitious policy targets are important, but they are not enough to reverse the biodiversity crisis. While strong positive and negative interdependencies exist between biodiversity, forestry, climate change and

water management, effective biodiversity goal achievement presupposes cross-sectoral policy coherence and implementation across EU, national and local levels. Effective implementation also depends on supportive behavioral responses by forest owners and conservation managers who have to respond to multiple policy and socio-economic drivers forcing them to make tradeoffs under complexity, uncertainty and climate change. Previous research suggests that cross-sectoral goal conflicts and failures to understand behavioral responses constitute major barriers to achieving desired forest biodiversity outcomes.

IP	University of Freiburg, Alemania
Socios	Alemania, Suecia, Finlandia, Bulgaria, España, Austria
Presupuesto	1.487.518 €
Concedido ES	161.000 €

PROYECTO 3 BIORESET. Biodiversity restoration and conservation of inland water ecosystems for environmental and human well-being

Pollution is threatening the biodiversity of inland waters that are vital to society and the future of the Earth. A major source of this pollution are effluent discharges from wastewater treatment plants. The treatment processes used in these plants do not efficiently remove emerging contaminants, such as pharmaceuticals and microplastics, which lead to health hazards to non-target species, including humans. This polluting source limits the conservation and restoration of freshwater systems. At the same time, there is a need for strategies to up-scale restoration solutions and for rapid and simple to use methodologies to assess conservation and restoration progress; i.e. assessment strategies anticipating the success of conservation/remediation measures in suitable timescales, ensuring reliable data comparison over time and space, and guiding intervention measures. BioReset will promote ecosystem recovery and conservation through a combined approach including: cutting-edge advances in existing wastewater treatment processes and developing methodologies to assess ecosystem conservation and restoration provided by these treatments based on investigating diatom communities, laying the foundation for a global quality index for ecological status and ecosystem assessment.

IP	Instituto Superior de Engenharia do Porto. Instituto Politécnico do Porto. Portugal
Socios	España, Noruega, Portugal
Presupuesto	1.180.580 €
Concedido ES	220.282,46 € (Universidad de Vigo 112.469,98 €), (Universidad de Oviedo 107.812,48 €)

PROYECTO 5 COAST. Conservation of marine ecosystems around Santo Antão, Cabo Verde: implications for policy and society

The Republic of Cabo Verde is an African archipelago, which depends largely on marine resources. Their coastal areas ensure human wellbeing through resources availability (e.g. food) and jobs. However, coastal regions in Cabo Verde are highly exposed to natural hazards and to multiple pressures associated with anthropogenic activities, including reclamation of wetlands for

agriculture, water contamination and plastic pollution. They are, thus, in an enormous need for sustainable development of activity sectors linked to the sea, i.e. Blue Growth. Cabo Verde is a country where Blue Growth can help to contribute with solutions for current issues, such as high poverty rates, while building on the long tradition of local economical use of the marine environment. However, no valuable baseline knowledge on the environmental status of their marine ecosystems is available, hampering the development of measures ensuring their sustainable use, management, conservation and restoration. Information on marine habitats for this archipelago is scarce, and there is no integrated evaluation of marine resources to support knowledge-based regulations and guidelines for their sustainable use, in line with the national development trends. Santo Antão has the highest poverty rate of the Archipelago, and income inequalities, and is highly vulnerable to extreme natural phenomena (e.g. droughts, tropical cyclones). COAST will evaluate the vulnerability of the studied marine communities and create pilot conservation and restoration actions for selected degraded ecosystems, to increase their resilience. The project will provide multidisciplinary understanding about the biodiversity and ecosystem functioning, as well as suitable indicators of recovery, which is the crucial basis to establish sound conservation or restoration measures. These are the pillars upon which conservation and restoration are to be built, allowing for implementation of integrated environmental management actions based on the best scientific knowledge.

IP	University of Aveiro. Portugal
Socios	Portugal, España, Francia, Alemania
Presupuesto	2.459.390 €
Concedido ES	258.173,90 € (Universidad de Barcelona 128.983,94 €), (Agencia Estatal Consejo de Investigaciones Científicas 129.189,96 €)

PROYECTO 7 DEEP REST. Conservation & restoration of deep-sea ecosystems in the context of deep-sea mining

The deep sea, defined as water and seafloor below 200 meters, is the largest biome on Earth accounting for 92% of the global ocean. This species-rich biome harbours numerous ecosystems including vast abyssal plains, mountain chains and canyons as well as cold-water corals, sponge grounds, hot vents and cold seeps. However, the so far relatively “pristine” deep sea is at potential risk of biodiversity and ecosystem function loss due to anthropogenic activities, including deep-sea mining. Although mineral exploitation of deep-sea resources has not yet started, the International Seabed Authority as part of its mandate defined in the UN Convention of the Law of the Sea is drafting the mining code that shall regulate exploitation in the ocean floor and subsoil thereof, beyond the limits of national jurisdiction. The ISA mandate includes the effective protection of the marine environment from harmful effects that may arise from deep-seabed related activities. DEEP REST aims at developing a novel approach to improve our capacities for science-based spatial planning and management in two ecosystems threatened by deep-sea mining. This project is extremely timely, as it directly addresses the concerns of policy-makers in a moment when seabed mining and its associated regulations are rapidly evolving from exploration to exploitation.

IP	Biology and Deep-sea Ecosystems (BEEP), IFREMER. France
Socios	Bélgica, Francia, Alemania, Irlanda, Países Bajos, Noruega, Portugal, España, Suecia
Presupuesto	3.326.185 €
Concedido ES	80.499,98 €

PROYECTO 9 FISHME. Social and ecological effects of Fish removal in Mountain Ecosystems

Threats to mountain aquatic ecosystems are multiple. Yet, besides climate change, fish stocking of naturally fishless lakes has been identified as particularly detrimental to water quality and biodiversity. Due to the magnitude of the ecological impact and to the global extent of fish introductions into mountain lakes, introduced fish are perhaps the most important threat to mountain lake biodiversity, ecosystem functioning, and water quality. This threat is particularly important as fish introductions co-occur with a number of other anthropogenic activities such as human population growth, changing economic activities, land-use change, urbanisation, pollution, loss and degradation of aquatic habitats, overexploitation, flow modifications and alien species invasions. Together and in interaction with climate change, these factors accelerate and exacerbate the environmental and ecological degradation of mountain aquatic ecosystems and the loss of unique species and life forms. Yet, despite strong concerns over the long-term health and functioning of aquatic ecosystems, experimental and restoration studies that link fish stocking to pollution, aquatic disease ecology, and ecosystem health, are still scarce.

IP	Functional ecology and environment (ECOLAB), National School of Agronomy of Toulouse (INP ENSANT). Francia
Socios	Austria, Italia, Rumania, Suiza, España
Presupuesto	1.707.560 €
Concedido ES	235.798,26€ (Agencia Estatal Consejo de Investigaciones Científicas-CSIC 120.798,26 €), (Centro de investigación ecología y aplicaciones forestales-CCT 115.000 €)

PROYECTO 12 FRESHRESTORE. Holistic evaluation and restoration measures of human impacts on freshwater ecosystems across biogeographical gradients

Freshwater ecosystems are under tremendous anthropogenic stress both at global (e.g. from climate change) and at catchment scales (e.g. from land and water use). A direct result is that freshwater ecosystems in general hold alarmingly many threatened species. This is not only problematic for biodiversity, but also for human prosperity as functional freshwater ecosystems provide a range of ecosystem services. These typically include recreation and tourism, water supply, water quality control, erosion prevention and food supply, among many. A key challenge of the 21st century is therefore to understand and predict how freshwater ecosystems respond to the suite of stressors, and concurrently how we can sustain and restore these systems at a large scale. FreshRestore aims to meet this challenge by integrating the understanding of multilevel changes in freshwater ecosystems and their surrounding landscapes with a socio-economic framework. This will allow coherent evaluation and mitigation of negative human impacts on lakes

(e.g. via best practice solutions for land use), in order to support the ecosystem services provides to us people (e.g. recreational and commercial fisheries).

IP	Norwegian institute for nature research. Noruega
Socios	Dinamarca, Finlandia, España, Suecia
Presupuesto	1.436.549 €
Concedido ES	170.499,98 €

PROYECTO 13 INTERREST. Interactive effects of local and landscape scale restoration of semi-natural grasslands and agricultural fields on species interactions and ecosystem functions in different social-ecological systems

Calcareous grasslands were created by traditional land use in European cultural landscapes and are one of the most species-rich habitat types. They harbour many rare and highly endangered species but are nowadays often threatened, mainly by abandonment and eutrophication. Hence, restoration measures are urgently needed. However, transnational restoration approaches are missing and evaluations within regional restoration schemes focus usually only on indicator species or species richness and ignore their biotic interactions, ecosystem functions and the landscape context. Especially species interactions are important indicators of restoration success as they are often more sensitive to environmental changes and determine vital functions that are necessary to stabilize ecosystems. InterRest will analyse and link multiple interaction networks representing different ecosystem functions (e.g. decomposition, pollination, predation) and social-ecological interactions.

IP	University of Göttingen. Alemania
Socios	Bélgica, Estonia, Países Bajos, España, Suecia.
Presupuesto	1.522.657 €
Concedido ES	258.591,38 € (Universidad Autónoma de Madrid 74.380,98 €), (Consorti Centre de Ciència y Tecnologia Forestal de Catalunya 184.210, 40 €)

PROYECTO 14 MPA4SUSTAINABILITY. Enhancing the role of MPAs in restoring biodiversity while maintaining access to ecosystem services

Currently, there are more than 17,000 marine protected areas (MPAs) around the world covering close to 9% of the oceans. Yet, only 23% of them have a clear management plan and only about 1% of them have had management effectiveness evaluations. Such management plans are crucial for the success of MPAs, but the development and implementation of those plans often meet financial and infrastructure obstacles. Even if guidelines exist, they do not systematically explain how to measure, monitor, and manage trade-offs between biodiversity targets and socio-economic impacts of MPAs. Particularly, there are currently no guidelines for developing adaptive plans to ensure the transformative change that MPAs are to bring for ecosystem restoration and conservation, biodiversity improvement, and to meet UN SDG targets. This is the key gap mpa4sustainability will address by conceptualising MPAs as interventions on complex socio-ecological systems and trying to appraise how they affect their journeys towards sustainability.

IP	Aquatic Resources, Technical University of Denmark. Dinamarca
Socios	Francia, Portugal, España, Suecia
Presupuesto	1.337.370 €
Concedido ES	215.337,44 € (Consorci Centre de Recerca de Matemàtica 107.668,72 €), (Agencia Estatal Consejo de Investigaciones Científicas-CSIC 107.668,72 €)

PROYECTO 16 NICHES. Nature's Integration in Cities' Hydrologies, Ecologies and Societies

Combined drainage systems transport wastewater, stormwater and urban runoff together to a sewage treatment plant. Heavy rainfall can flood these systems and exceed capacities, resulting in the discharge of excess wastewater and contaminated runoff directly into rivers, streams or other nearby water bodies. High resultant water pollution poses a serious threat to aquatic biodiversity, especially in urban areas where impervious surfaces prevent rainwater infiltration and increase the likelihood of such overflow events. Surfaces prevent rainwater infiltration and increase the likelihood of such overflow events. There is thus an urgent need to identify new solutions for reducing this burden both on sewage systems and aquatic ecosystems. Nature-Based solutions (NBS) are proposed as an alternative to the cost-intensive renewal of wastewater systems and as a supplementary element to existing stormwater management systems, having the potential to alleviate pressure during high rainfall events while also providing wider societal and environmental benefits. Societal uptake remains limited due in part to lacking evidence, approaches and targeted guidance that take the wider social-ecological-technological system (SETS) into account. NICHES aims to fill this gap by defining a holistic SETS framework for understanding restorative NBS for urban runoff mitigation and the resultant reduction of impacts on aquatic systems.

IP	Biology and Nature based Solutions. Ecology Institute. Alemania
Socios	Bulgaria, Países Bajos, España, Reino Unido, Estados Unidos
Presupuesto	922.097 €
Concedido ES	201.202,82 €

PROYECTO 18 RESPOND. Restoring and Managing Biodiversity and Ecosystem Services of Temporary Pond Landscapes

Temporary ponds (i.e. ponds that seasonally dry) are a ubiquitous component of global biomes found from the equatorial forests to the arctic tundra. However, with the intensification of agriculture and hydrological modification of landscapes, these systems have largely disappeared in Europe and are often strongly degraded. Despite their unique biodiversity, most temporary ponds lack any formal protection. They also have a poor reputation. For instance, they are often overlooked or considered sources of mosquitoes. However, there are also strong indications that they fulfil important roles in landscapes but the full scope of ecosystem services they provide has not been quantified. Their biodiversity includes a threatened group of crustaceans: the large branchiopods. These have survived in temporary ponds since the Devonian period more than 350 million years ago and they are likely to have a disproportionately large effect on the proper functioning of these ecosystems as keystone species and ecosystem engineers. But this remains to be investigated. In this context, five major issues will be tackled in ResPond: the unprotected

status of most temporary ponds in Europe (i), the degraded status of most of these ponds (ii), the variable success of temporary pond restoration and creation projects (iii), the poor understanding of temporary pond ecosystem services which may be due to the absence of keystone species (iv) and the poor knowledge/ bad reputation of temporary pond with regards to ecosystem disservices (e.g. as a source of mosquitoes).

IP	Vrije Universiteit Brussel. Bélgica
Socios	Bélgica, Marruecos, Polonia, España
Presupuesto	642.183 €
Concedido ES	196.512,98 €

PROYECTO 19 RESTOLINK. Quantifying restoration success across biomes by linking biodiversity, multifunctionality and hydromorphological heterogeneity

Restoration approaches to improve the hydromorphology of streams are increasing worldwide but often fail to recover good ecological status and biodiversity. Yet, the evidence for the dominant effects of hydromorphology on biodiversity and ecosystem functioning suggests that the strong potential for hydromorphological restoration is not fully explored in stream rehabilitation. It is argued that restoration often fails because it does not consider the spatial scales of stream hydromorphology that are most relevant to biodiversity and ecosystem functioning. Moreover, traditional indicators of restoration success based on the composition of biological communities may not show the same recovery trajectory as key ecosystem functions, such as organic matter decomposition and nutrient retention. RESTOLINK proposes a novel framework for evaluating restoration success by mechanistically linking hydromorphological heterogeneity at relevant scales, multi-group biodiversity, and the multifunctionality of stream ecosystems. We will apply this framework to streams across a broad latitudinal gradient from boreal to tropical biomes and will thus test how biome-specific factors such as climate, vegetation, and hydrology set the boundaries for local restoration responses.

IP	River Ecology, Helmholtz Centre for Environmental Research. Alemania
Socios	Brasil, Alemania, España, Suecia
Presupuesto	1.233.473 €
Concedido ES	167.707, 98 €

PROYECTO 20 RESTORESEAS. Marine Forests of animals, plants and algae: nature-based tools to protect and restore biodiversity

The losses of marine forests are catastrophic tipping points accelerating the degradation of ecosystem services that are essential for humanity and all species. These services include nursery, shelter and feeding grounds for many species including providers of human food security, coastal protection, and counteracting climate change by carbon sequestration, for which seagrasses are one of the most efficient ecosystems on Earth. Yet, with these habitats being out of sight and challenging to reach, below the ocean surface, marine forest restoration is both rare and difficult to monitor. RESTORESEAS studies the biological and biophysical processes at stake of the key

species involved in these hypotheses in the Atlantic Ocean, and their interactions to help determine the effectiveness of restoration and conservation action. The project aims to further the scientific understanding of the role played by specific, genetic and functional diversity in marine forest ecosystems of the Atlantic Ocean, with a focus on seaweed, seagrass and corals. Building upon novel hypotheses, experimentation on propagation, indicators and global models will permit the assessment of the conditions for large scale conservation and restoration approaches.

IP	Biogeographical Ecology and Evolution, Centre of Marine Sciences (CCMAR). Portugal
Socios	Austria, Bélgica, Brasil, República Checa, Alemania, Marruecos, Países Bajos, Noruega, Portugal Azores, España, Suecia
Presupuesto	2.793.260 €
Concedido ES	201.249,96 €

PROYECTO 22 TRANSLOC. Translocations of flora and fauna for conservation and restoration: ecological, evolutionary, and socio-economic impacts at multiple scales

Numerous stakeholders with different values and expectations conduct reintroductions, reinforcements, or assisted colonisations of wild populations in a wide range of ecosystems. While biodiversity conservation and restoration are generally implemented within a human time frame, they might constitute major transitions at the scale of evolution. Current research on conservation translocations aims to improve translocation success to ensure that they contribute to species or ecosystem recovery in the long term and that their potential impacts on social ecosystems are managed to avoid retroactively undermining their performance. However, few studies have considered a strategic approach in the assessment and optimisation of the allocation of translocation efforts at larger scales. Indeed, in the context of global changes including climate change, land use intensification and biological invasions, the extent to which an accumulation of locally implemented translocations can contribute to biodiversity conservation on regional, continental or global scales remains unclear. Since conservation translocations raise debates regarding their economic and human costs, as well as ethical and environmental issues, it is important to provide evidence-based arguments to describe where, when and how they can contribute to biodiversity conservation and ecological restoration/rewilding in their evolutionary, functional and social dimensions at larger spatial, temporal and organisational scales. This is the main purpose of Transloc.

IP	Ecology and Conservation Sciences (CESCO), CNRS/MNHN/Sorbonne University. Francia
Socios	Bélgica, Francia, Marruecos, Portugal, España, Suecia, Suiza
Presupuesto	1.304,071 €
Concedido ES	55.999,96 €

Biodiversa +. Supporting the protection of biodiversity and ecosystems across land and sea

Biodiversa+ es la Asociación Europea para la Biodiversidad que apoya una investigación excelente sobre la biodiversidad con un impacto para la sociedad y las políticas. Fue desarrollado conjuntamente por BiodivERsA –el predecesor de Biodiversa+ de 2005 a 2021– y la Comisión Europea como parte de la Estrategia de Biodiversidad de la UE 2030, y contribuirá a la ambición de que “para 2030, la naturaleza en Europa haya vuelto a la senda de la recuperación”, y que en 2050 las personas vivan en armonía con la Naturaleza”. Esta convocatoria tiene como objetivo apoyar proyectos de investigación transnacionales (de 3 años de duración) que aborden uno o más de los tres temas (no exclusivos) siguientes:

- TEMA 1 – Conocimiento para identificar áreas de conservación prioritarias, establecer redes ecológicas efectivas y resilientes, mejorar las especies protección y preservación de la diversidad genética.
- TEMA 2 – Múltiples beneficios y costos de la biodiversidad y la protección de los ecosistemas: sinergias y compensaciones.
- TEMA 3 – Gestión eficaz y gobernanza equitativa para lograr resultados de conservación audaces.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número de convocatorias conjunta internacionales: 1 (2021)

Participación de AEI en convocatorias conjuntas: 1 (2021)

CONVOCATORIA CONJUNTA INTERNACIONAL 2021 (BIODIVPROTEC)

Países participantes	Albania, Austria, Bélgica, Bulgaria, Croacia, Chipre, República Checa, Dinamarca, Estonia, Finlandia, Islas Faroe, Francia, Georgia, Alemania, Grecia, Hungría, Islandia, Irlanda, Israel, Italia, Kosovo, Letonia, Lituania, Luxemburgo, Moldavia, Montenegro, Marruecos, Países Bajos, Noruega, Portugal, Rumania, Eslovaquia, Sudáfrica, España, Suecia, Suiza, Túnez, Turquía
Temáticas	• Topical Theme 1: Better knowledge on Biodiversity protection and restoration • Topical Theme 2: Actionable knowledge for Transformative change • Topical Theme 3: Better knowledge to support EU's global Action
Presupuesto total	44.100.000 €
Concedido ES	3.724.686 €
Proyectos aprobados	36
Proyectos financiados por AEI	17 (2 coordinados)

Nº	Acrónimo y título del proyecto	Países participantes
1	ALPMEMA. ALPine Mountain Hay MEadows Management: Best practices to maintain their Favorable Conservation Status against underuse under different property right regimes inside and outside protected areas	Suecia , Armenia, Austria, Dinamarca, Alemania
2	ARTIC FOX EUROPE. Identifying effective management strategies for enhancing transnational metapopulation protection of the Arctic Fox in Europe	Noruega , Finlandia, Suecia
3	BECOME. Biospheres as Effective Conservation Measures	Noruega , Canadá, Chile, Francia, Portugal, Sudáfrica, Suecia
4	BIO-JUST. BIOdiversity and ecosystem protection driven by Environmental JUSTice	Alemania , Brasil, Francia, Portugal, España, Países Bajos
5	BridgingVALUES. “Just” conservation? Bridging values for equitable biodiversity governance	España , Brasil, Alemania, Sudáfrica, Suecia, Suiza
6	CLIMATE INVASIVES. Minimizing the negative effects of climate change-induced spread of invasive alien species to marine protected areas	Suecia , Dinamarca, Noruega
7	ConserVES. Living-lab approach to floral enrichment as a tool to conserve biodiversity and maximizing ecosystem services in European agricultural landscapes	Francia , Bélgica, República Checa, Alemania
8	DarCo. The vertical dimension of conservation: A cost-effective plan to incorporate subterranean ecosystems in post-2020 biodiversity and climate change agendas	Italia , Bélgica, Austria, Francia, Finlandia, Alemania, Italia, Portugal, Rumania, Eslovenia, España, Suiza
9	Detoc2Protec. New approaches in determining the impacts of chemical pollution to protect the biodiversity of the Baltic Sea	Finlandia , Estonia, Italia, Letonia, Lituania, Polonia, Suecia
10	DiviN-P. Plant diversity via stoichiometric nutrient networks across Europe	Países Bajos , Bélgica, Italia, España
11	EUROPAM. European Spatial-Temporal Large-Scale Sea Noise Management & Passive Acoustic Monitoring of Marine Megafauna	Francia , Italia, Noruega, Portugal
12	EUROSYNG. Promoting action on broad ocean challenges by delving into the past, present and future of European syngnathids	Portugal , Francia, Alemania, Grecia, Italia, España, Suecia, Portugal-Azores, Portugal
13	eWHALE. Combining environmental DNA sampling, whale watching and citizen science for stakeholder-driven marine biodiversity protection in the North-East Atlantic and the Mediterranean	Austria , Francia, Islandia, Italia, Irlanda, Noruega, Portugal

14	FORESCUE. Innovative approaches FORRESCUE and management of algal forests in the Mediterranean Sea	Italia, Bélgica, Francia, Grecia, Portugal, España
15	FUNACTION. Aquatic FUNgal biodiversity: developing knowledge and strAtegies to inform ConservaTION priorities and measures	Suecia, Estonia, Alemania, Italia, Portugal, Suiza, Estados Unidos
16	FuncNet. Improving the Functional Connectivity of Grassland Networks for Plant-Pollinator Interactions	Estonia, Bélgica, República Checa, Alemania, Suecia
17	G4B. Grasslands for biodiversity: supporting the protection of the biodiversity-rich grasslands and related management practices in the Alps and Carpathians	Suiza, Alemania, Italia, Rumania, Eslovaquia, Ucrania, Polonia
18	GaP. Guiding expansion of protection under the EU Biodiversity Strategy: Threatened species and novel methods for Key Biodiversity Area identification	Grecia, Dinamarca, Alemania, Italia, España, Reino Unido
19	GreeNet. Grassland conservation across European landscapes protecting biodiversity and ecosystem services with ecological networks	Austria, Alemania, Estonia, Irlanda, Noruega, Suiza
20	INSPIRE. INTEgrated Spatial PlannIng across REalms for biodiversity conservation and human development in a context of change	España, Austria, Grecia, Italia, Portugal, Suiza, Reino Unido
21	INTEGRADIV. Efficient conservation of Mediterranean forests: an integrative assessment of the drivers and vulnerability of multi-taxa, multi-facet and multi-scale biodiversity patterns	Francia, Dinamarca, Grecia, Italia, España, Países Bajos
22	MicroEco. Microbial Diversity, Ecosystem Services of the Soil Microbiome and Ecosystem Conservation	Finlandia, Brasil, Francia, Estonia, Serbia, Italia, España
23	MOVE. Movescapes, connectivity hotspots and eco-evolutionary dynamics: protecting the functional role of predatory coastal fishes	Noruega, Francia, Portugal, España
24	MUrFor. Managing sustainable sea urchin fishery and marine forest conservation	Italia, Francia, Alemania, España
25	PAREUS. Providing Adaptive knowledge for Ratcheting up the EU Biodiversity strategy for Sustainable landscapes and protected areas	Noruega, Francia, Eslovaquia
26	PETRI-MED. Plankton biodivErsity Through Remote sensing and omlcs in the MEDiterranean Sea	España, Francia, Italia, Israel, Eslovenia
27	Prioritlce. Vanishing habitats: conservation priorities for glacier-related biodiversity threatened by climate change	Italia, Francia, Polonia, Suiza

28	ProParts. Developing strategies for the protection of taxa consisting of interconnected sexual and parthenogenetic reproducing strains	Alemania, Austria, Italia, España
29	RECONNECT. Reconciling fragmented and contested landscapes	Suecia, Bélgica, Francia, Finlandia, Alemania, Sudáfrica
30	RecoSal. Recovering diversity in salmon populations and cultures of fishing: the subarctic River Teno basin as a confluence and a Living Lab	Finlandia, Noruega, Suecia
31	RIPARIANET. Prioritising riparian ecotones to sustain and connect multiple biodiversity and functional components in river networks	Alemania, Italia, Portugal, España, Suecia
32	SPEAR. Scenarios for Protecting European Avian Redistributions	Noruega, Bélgica, Dinamarca, Finlandia, Alemania, España, Suecia, Suiza, Países Bajos, Reino Unido
33	SponBIOVID. Marine sponge biodiversity, from genes to ecosystems: delivering knowledge and tools for sustainable management and conservation	Portugal, Francia, Brasil, Grecia, Noruega, Sudáfrica, España, Suecia
34	TRASNATURE. TRANSboundary governance models of biodiversity protection: case studies for an enhanced protection of NATURAL resources in Europe	Italia, Bélgica, Finlandia, España
35	TransWILD. Transformative wildlife management to enhance biodiversity protection and ecosystem services provision in shared and protected multi-use landscapes across Europe	Alemania, Bulgaria, Italia, Noruega, España
36	WOLFNESS. Preserving the natural heritage of wolves: a multidisciplinary approach towards effective and socially acceptable management of wolf-dog hybridization across Europe	Italia, Alemania, Portugal, Eslovenia, España, Suecia, Turquía

CONVOCATORIA NACIONAL PCI 2022

PROYECTO 4 BIO-JUST. BIOdiversity and ecosystem protection driven by Environmental JUSTice

Nature-based Solutions (NbS) have gained a reputation as win-win solutions, capable of achieving societal as well as environmental benefits simultaneously. Therefore, they are increasingly included in the design and implementation of water-secure, resilient cities in the context of growing urbanization, biodiversity loss, and accelerated climate change. However, the effectiveness of NbS in delivering ecosystem services related to water provisioning and in promoting biodiversity conservation in a manner that is socially just remains contested. Critics have shown that NbS can, instead, generate adverse effects by creating or exacerbating existing social inequalities. These negative impacts can limit the societal acceptance of NbS and affect their implementation, long-term sustainability, and upscaling potential. To understand under which conditions NbS can fulfil their promise to promote environmental and social-economic outcomes simultaneously, it is essential to know how (in)justices are created in the design,

implementation, and evaluation phases of NbS. Doing so requires a calculation of net benefits, an assessment of how social-economic and social-environmental benefits and costs are allocated across social groups, how decisions on NbS are made and by whom, and how these factors influence environmental conflicts.

IP	Environmental Governance and Transformation to Sustainability, German Institute of Development and Sustainability, Bonn. Alemania
Socios	Brasil, Francia, Portugal, España, Países Bajos
Presupuesto	1.610.613 €
Concedido ES	204.795 €

PROYECTO 5 BridgingVALUES. “Just” conservation? Bridging values for equitable biodiversity governance

The European Union (EU) has adopted policy frameworks to meet its ambitious goals to protect nature and reverse biodiversity decline. The long-established Natura 2000 network of protected areas (PAs) is an integral part of the EU’s Biodiversity strategy for 2030, also in support of the European Green Deal. There is now an increased level of awareness about the EU’s responsibility towards safeguarding biodiversity overseas, e.g., via ‘deforest proof’ EU development cooperation. While these biodiversity conservation goals and policies are produced at supranational (e.g. EU, UN) levels, it is not always clear how they ultimately manifest on the ground, where conservation actually takes place. This is likely because conservation policies and interventions generate material (finance and technical expertise) and immaterial flows (e.g. discourses and knowledge), which support specific conservation approaches that interact in complex ways with local contexts in which they arrive.

IP	Agr-AsocBC3 Basque Centre For Climate Change, Leioa. España
Socios	Brasil, Alemania, Sudáfrica, Suecia, Suiza
Presupuesto	1.760.164 €
Concedido ES	320.784 €

PROYECTO 8 DarCo. The vertical dimension of conservation: A cost-effective plan to incorporate subterranean ecosystems in post-2020 biodiversity and climate change agendas

Subterranean ecosystems (such as caves, groundwaters, and fractured rocks) host a broad diversity of specialized and endemic organisms that account for a unique fraction of the global taxonomic, phylogenetic, and functional diversity. Furthermore, they deliver crucial ecosystem services, especially the provisioning of potable water to more than half of the world’s population. Yet, these out-of-sight ecosystems are systematically overlooked in post-2020 biodiversity and climate change targets. Only 6.9% of known subterranean ecosystems overlap with the global network of protected areas, with just a few of these areas designed to account for their vertical dimension. DarCo aims to advance knowledge about subterranean biodiversity in Europe and inform its management. The overarching goal is to develop a concrete plan to incorporate subterranean ecosystems in the European Union (EU) Biodiversity Strategy for 2030.

IP	Water Research Institute, National Research Council, Verbania Pallanza. Italia
Socios	Austria, Bélgica, Francia, Finlandia, Alemania, Italia, Portugal, Rumania, Eslovenia, España, Suiza.
Presupuesto	2.881.524 €
Concedido ES	128.289 €

PROYECTO 10 DiviN-P. Protecting plant diversity via stoichiometric nutrient networks across Europe

The long-term use of fertilizers in the European Union and the resulting enrichment of nitrogen (N) and phosphorus (P) has contributed to biodiversity loss and disruption of natural ecosystems. Atmospheric N-deposition is widespread, nitrate leaches from agricultural fields into nature areas and most European regions have too much phosphate in their soils. Moreover, nutrient enrichment makes plant communities more vulnerable to invasive species.

However, it remains unclear how local changes in nutrient availability and balances between the major nutrients N, P and K (potassium) affect the distribution of plant species on a European scale, and how this affects the competition between species and the conservation status of threatened plant species in current protected nature networks. The main objective of DiviN-P is to determine which grassland species are most vulnerable and how this relates to nutrient-limitation and -enrichment. From this, recommendations for management and planning are made to European conservationists, environmental policy makers and politicians.

IP	Sustainable Development – Faculty of Geosciences, Utrecht University, Utrecht. Países Bajos
Socios	Bélgica, Italia, España
Presupuesto	917.937 €
Concedido ES	209.100 €

PROYECTO 14 FORESCUE. Innovative approaches FOrRESCUE and management of algal forests in the Mediterranean Sea

Forests formed by brown algae of the genera *Cystoseira*, *Ericaria* and *Gongolaria* (*Cystoseira* forests) create unique seascapes at shallow depths of Southern European seas, particularly the Mediterranean. The great ecological, economic and social significance of these ecosystems and the services that they provide are widely recognised. Their relevance is acknowledged by several international conventions and directives (Bern Convention, Barcelona Convention, EU Habitats Directive). The need for their surveillance and conservation are recognized by the International Union for the Conservation of Nature (IUCN), the Mediterranean network of Marine Protected Areas and the European Union (within the Marine Strategy Framework Directive). In the last decades, however, *Cystoseira* forests have undergone a major decline in the whole Mediterranean basin, due to the high sensitivity of these algae to some anthropogenic stressors acting at local/regional scales but widespread throughout the basin. There is general consensus that the impact of these stressors will be further exacerbated by the effects of climate change (mainly in the form of heat waves, and extreme episodic events). The development of effective strategies for the conservation of the residual *Cystoseira* forests based on new tools for their monitoring is

now of fundamental importance. The present project has been designed to provide these tools and assist environmental policy makers in the management of Cystoseira forests.

IP	Department of Life and Environmental Sciences, Polytechnic University of the Marches, Ancona. Italia
Socios	Bélgica, Francia, Grecia, Portugal, España
Presupuesto	1.762.467 €
Concedido ES	266.541 € (Universidad de Girona 53.505 €), (Agencia Estatal Consejo Superior de Investigaciones Científicas-CSIC 213.036 €)

PROYECTO 18 GaP. Guiding expansion of protection under the EU Biodiversity Strategy: Threatened species and novel methods for Key Biodiversity Area identification

The Convention on Biological Diversity Post-2020 Global Biodiversity Framework, together with the EU Biodiversity Strategy for 2030, is calling for an expansion of protection to at least 30% of the land and sea. Yet it is critically important that additions to protected areas or other effective area-based conservation measures (OECM) are placed where they maximise the ability to conserve biodiversity and prevent extinctions. Key Biodiversity Area (KBA) criteria allow for identifying areas of global importance for biodiversity. KBAs represent the largest global network of systematically identified sites important for biodiversity. Although it is not required for KBAs to be under any particular management scheme (e.g. protected areas), they constitute an important tool to inform the protection of biodiversity and reduce its loss.

The GaP project has two main goals: A) to strengthen the protected area network in the EU by identifying priority areas for safeguarding global and EU biodiversity, and B) to influence Conservation Policy in the EU by building capacity for KBA identification in EU countries and providing guidance for the expansion of the protected area network under the EU Biodiversity Strategy for 2030. The GaP project has two main goals: A) to strengthen the protected area network in the EU by identifying priority areas for safeguarding global and EU biodiversity, and B) to influence Conservation Policy in the EU by building capacity for KBA identification in EU countries and providing guidance for the expansion of the protected area network under the EU Biodiversity Strategy for 2030. The objectives of GaP are to: 1) Identify threatened and restricted range species that are not covered by the protected area network in the EU; 2) Develop and test the application of the genetic distinctiveness assessment parameter to identify KBAs; 3) Apply KBA Criterion E (on complementarity for underrepresented biodiversity elements) for the first time to identify irreplaceable sites; 4) Scope KBAs across the EU countries; 5) Develop a KBA isolation assessment tool to guide where best to invest in conservation; 6) Establish KBA National Coordination Groups in the countries of the consortium and identify and propose new KBAs; 7) Provide guidance for the protected area network expansion in the EU.

IP	Department of Ecology and Taxonomy – Faculty of Biology, National and Kapodistrian University of Athens, Grecia
Socios	Dinamarca, Alemania, España, Italia, Reino Unido
Presupuesto	1.144.623 €
Concedido ES	212.667 €

PROYECTO 20 INSPIRE. Integrated Spatial Planning across REalms for biodiversity conservation and human development in a context of change

The EU has created substantial legislation, policies and strategies for biodiversity conservation over the last decades. However, the efforts implemented by its Member States have proven insufficient for halting biodiversity loss at a continental scale, as only a small proportion of species and habitats listed in the Birds and Habitats Directives are under no foreseeable risk of extinction. The EU Biodiversity Strategy for 2030 aims at addressing issues of insufficient advance towards halting biodiversity loss, such as the lack of planning at adequate scales when designing the network of protected areas or the poor integration of conservation across diverse sectoral policies. INSPIRE aims to develop a novel decision-support framework for prioritising management efforts across terrestrial, freshwater and marine realms while accounting for trade-offs in multifunctional land- and sea-scape use and changing environmental conditions. INSPIRE further aims to integrate biodiversity conservation into key socioeconomic activities, to reconcile conservation and the sustainable use of biodiversity and ecosystem services, accounting for synergies and potential trade-offs among the multiplicity of objectives pursued. In this way, INSPIRE aims to contribute towards defining coherent and well-connected networks of areas for biodiversity management, seeking for biodiversity conservation opportunities also beyond protected areas. Finally, INSPIRE aims to address biodiversity conservation under dynamic conditions, exploring proactive planning strategies towards a more resilient biodiversity conservation practice.

IP	Department of Plant Biology and Ecology, University of Sevilla. España
Socios	Austria, Grecia, Italia, Portugal, Suiza, Reino Unido
Presupuesto	1.837.204 €
Concedido ES	320.661 €

PROYECTO 21 INTEGRADIV. Efficient conservation of Mediterranean forests: an integrative assessment of the drivers and vulnerability of multi-taxa, multi-facet and multi-scale biodiversity patterns

Assessing current and future biodiversity patterns, and their underlying drivers is of crucial importance to develop relevant conservation programs, and to promote sustainable development and human well-being. While biodiversity conservation research and actions have mostly focused on taxonomic diversity, considering the diversity of organismal traits (functional) and evolutionary lineages (phylogenetic) offers promise for effective conservation and the maintenance of resilient ecosystems. The still fragmented knowledge about multifaceted biodiversity greatly limits our ability to anticipate current and future conservation needs. This is particularly true in the Euro-Mediterranean biome which offers a unique diversity of habitats, particularly threatened, and should experience drastic biodiversity changes by 2100 owing to its sensitivity to land use (due to ongoing increased population) and climate changes.

INTEGRADIV aims to achieve a better knowledge of forest ecosystems within the Mediterranean biome in Europe and to propose effective protection actions, which presents an extremely important societal challenge in the face of global change in this area. The main objective of INTEGRADIV is to develop an integrative approach to provide guidelines on how taxonomic, functional and phylogenetic facets of biodiversity should be encapsulated in realistic conservation plans.

IP	Mediterranean Institute of Marine and Terrestrial Biodiversity and Ecology, Aix Marseille University, Marseille. Francia
Socios	Dinamarca, Grecia, Italia, España, Países Bajos
Presupuesto	2.230.933 €
Concedido ES	184.992 €

PROYECTO 22 MicroEco. Microbial Diversity, Ecosystem Services of the Soil Microbiome and Ecosystem Conservation

The project provides stakeholders with an evaluation of the importance of the soil microbiome in a conservation ecology setting. This involves the evaluation mapping of rare and endangered species from soil DNA, the estimation of different other ecosystem services provided by the soil biome as carbon sequestration, protection against soil erosion and nutrient cycling. Furthermore, we will explore if the soil microbiome predicts the yields of commercially important fungi as well as the growth of trees. We will use tools from molecular biology and biogeochemistry to analyse the soil microbial community and its function. Tools include tools to understand the phylogenetic diversity of the soil community and tools to measure functional genes. The phylogenetic and structural analyses are then used to determine the role of the soil microbiome in the provisioning of critical ecosystem services. These were soil carbon sequestration, conservation value, soil aggregate stability and yield of commercially valuable fungi. The project uses novel methods to measure the abundance of a broad array of functional genes; it tries to match long term field data with soil microbiome data to detect red-listed species from soil DNA. Also, the work on soil aggregate stability and the microbiome is genuinely innovative. After the project, stakeholders in the case study regions will have information on the role of the soil microbiome for conservation. In addition, they will understand how different soil-based ecosystem services interact. As a result, they will be able to exploit tradeoffs and synergies between the ecosystem services. The project involves active engagement with local stakeholder groups and will actively disseminate its results via social media networks.

IP	Department of Environmental and Biological Sciences, University of Eastern Finland, Joensuu. Finlandia
Socios	Brasil, Francia, Estonia, Italia, Serbia, España
Presupuesto	1.526.697 €
Concedido ES	213.897 €

PROYECTO 23 MOVE. Movescapes, connectivity hotspots and eco-evolutionary dynamics: protecting the functional role of predatory coastal fishes

Larger predatory fish play key functional roles in marine ecosystems and are of important socioeconomic value. Being close to the top of the food web, these species can have strong influences on ecosystem functioning via trophic cascades. Capable of travelling long distances, predatory fish can also play a major role in connecting ecosystems, acting as vectors for nutrient flow and carbon sequestration. In addition, specialised behavioural tactics including differences in habitat use and foraging are likely to shape their functional roles in the ecosystem. From an evolutionary perspective, such individual variation represents the raw material for natural

selection. The scales at which these behaviours occur, however, poses important challenges for science and conservation. The current system of European marine protected areas (MPAs) consists mainly of small separate units covering a few km², at least when considering areas that are protected from fisheries. Small MPAs, being unable to protect the fitness of mobile phenotypes, may therefore change the course of contemporary evolution with potential feedback on ecological processes and resource availability for fisheries. MOVE will assess the movescapes of coastal predatory fish, that is, their full range of movement signatures and food web links against the needs for truly effective MPA networks. The main objective of MOVE is to improve the conservation and sustainability of fisheries of coastal predatory fishes in Europe, to increase the resilience of coastal social-ecological systems.

IP	Flødevigen Marine Research Station, Institute of Marine Research, His. Noruega
Socios	Francia, Portugal, España
Presupuesto	1.267.502 €
Concedido ES	213.651 €

PROYECTO 24 MURFor. Managing sustainable sea urchin fishery and marine forest conservation

Global anthropogenic changes are rapidly disassembling the structure of natural ecosystems, leading to detrimental consequences for their functioning and services to human society (e.g., food production). In the Mediterranean Sea, fishing can reduce the abundance of coastal fish which feed on sea urchins, allowing these to increase uncontrolled, and overgraze marine macrophyte forests. These are a biodiversity hotspot, supporting multiple species of marine organisms and the ecosystem services they provide. Guaranteeing food security from natural resources while maintaining healthy marine forest ecosystems and conserving biodiversity remains a complex challenge for managers. To accomplish this purpose, it is necessary to deeply understand the processes regulating the ecological and socio-economic systems including the sea urchin *Paracentrotus lividus* that plays a key role, both as one of the main Mediterranean herbivores controlled by fish (mainly the commercial species of Sparids), and for its value as a highly prized delicacy. The effective coupling and integration of the socio-ecological systems around marine forest habitats will permit the identification of optimal trade-off scenarios between long-term conservation of coastal benthic ecosystems and the viability of small-scale fisheries of both sea urchins and their predatory fish.

IP	Department of Integrative Marine Ecology – Genoa Marine Centre, Zoological Station Anton Dohrn, Genoa. Italia
Socios	Francia, Alemania, España
Presupuesto	1.294.102 €
Concedido ES	262.728 € (Universidad de Barcelona 90.159 €), (Agencia Estatal Consejo Superior de Investigaciones Científicas- CSIC 172.569 €)

PROYECTO 28 ProParts. Developing strategies for the protection of taxa consisting of interconnected sexual and parthenogenetic reproducing strains

Parthenogenetic reproducing species, lacking at least part of the recombination mechanisms, are far more susceptible to loss of genetic diversity than sexual reproducing ones. Investigating the role of sexual ancestor populations for maintaining genetic diversity and, consequently, the acclimation potential of parthenogenetic populations, will enable for optimised conservation strategies of such species. In this project, the knowledge required for designing transnational conservation strategies will be gathered and, basing on this, a network securing sustainable protection of a species consisting of extremely rare bisexual and frequent parthenogenetic populations will be established. Development of the first transnational protection plan for parthenogens, consisting of recommendations for the management of sites as well as for exchange of information between the network partners by gathering and analysing site-specific and regional information about status, legal aspects and management options as well as the population genetic knowledge required.

IP	Institute for Biosciences – Chair Aquatic Ecology, University of Rostock, Rostock. Alemania
Socios	Austria, Italia, España
Presupuesto	1.045.858 €
Concedido ES	148.953 € (Universidad de Sevilla 18.696 €), (Universidad de Valencia 130.257 €)

PROYECTO 31 RIPARIANET. Prioritising riparian ecotones to sustain and connect multiple biodiversity and functional components in river networks

Europe has committed to upscale ecosystems protection to include 30% of land and sea. However, due to historical overexploitation of natural assets the available area for biodiversity protection is severely limited. Riparian zones are natural ecotones between aquatic and terrestrial ecosystems, contributing disproportionately to regional biodiversity, and providing multiple ecosystem functions and services. Because of this and their branching geometry, riparian networks form a vast system of ‘blue-green arteries’ which physically and functionally connect multiple ecosystems over elevation gradients, despite covering a relatively small area of the basin. Hence, RIPARIANET argues that developing approaches able to optimise the spatial conservation of natural stream-riparian networks represent a flagship example of biodiversity protection in the EU. Although the integrity of riparian zones is fundamental for the achievement of multiple EU environmental objectives, the lack of a standardised framework of biodiversity assessment and protection across Member States has led to extensive impairment of riparian areas and frequent stakeholder conflicts. The main objective of RIPARIANET is to leverage the increasing resolution of remote sensing information to provide practitioners with evidence-based guidance and approaches to biodiversity conservation. Key questions include: i) how can we remotely assess riparian integrity and identify areas which provide effective connectivity allowing species biodiversity and ecosystem functions to persist through meta-ecological processes? ii) how can we disentangle the influence of local- and network-scale stressors and processes on riparian biodiversity to better implement river basin management schemes? iii) to what extent do currently existing protected areas in rivers account for the geometry of riparian networks and their multifunctionality?

IP	Institute for Environmental Sciences, RPTU – University of Kaiserslautern-Landau, Landau. Alemania
Socios	Italia, Portugal, España, Suecia
Presupuesto	1.304.419 €
Concedido ES	213.528 €

PROYECTO 32 SPEAR. Scenarios for Protecting European Avian Redistributions

Biodiversity loss is a global challenge that requires innovative conservation strategies to mitigate ongoing threats from habitat loss and climate change. Birds are highly responsive to environmental change and important indicators for ecosystem health. New assessments of current conservation actions are urgently needed because many bird populations are declining in Europe. The occurrence and numbers of birds, especially species of conservation concern, are among the main criteria used to identify areas of high ecological value that are central to post-2020 conservation targets. SPEAR will address Targets 3 (Governance agreements for migratory species), 5-7 (Reducing direct pressures on migratory species and their habitats), and 9-11 (Improving the conservation status and enhancing ecosystem services provided by migratory species) of the Strategic Plan of the Contracting Parties to the Bonn Convention on Migratory Species, and objectives 2 (Sustainable use and management of migratory waterbirds) and 3 (Maintaining a comprehensive flyway network of protected areas) of the Agreement on the Conservation of African-Eurasian Migratory Waterbirds. SPEAR will compile pan-European data on seabirds, waterbirds, and landbirds to meet five objectives: i) to identify potential changes in priority areas for bird conservation at land and sea, including critical gaps in the current network of protected areas in Europe needed to build a Trans-European Nature Network, ii) to assess the resilience of European networks to environmental change and identify alternatives that will be robust under future scenarios of threats and pressures, iii) to assess the cost-effectiveness of management plans for protected areas that will facilitate adaptation of birds to climate change, iv) to plan adaptive and sustainable management for harvested species, and v) to develop new knowledge and governance tools needed for conservation of multifunctional wetlands.

IP	Department of Terrestrial Ecology, Norwegian Institute for Nature Research, Trondheim. Noruega
Socios	Bélgica, Finlandia, Dinamarca, España, Suecia, Suiza, Países Bajos, Reino Unido
Presupuesto	2.141.811 €
Concedido ES	209.100 €

PROYECTO 33 TRASNATURE. TRANSboundary governance models of biodiversity protection: case studies for an enhanced protection of NATURAL resources in Europe

The governance of biodiversity represents a realm of research and policy-making that is crucial to address the causes of biodiversity loss. The mere designation of national protected areas is not sufficient to ensure conservation and has failed to stop biodiversity loss and degradation, inter alia because it does not adequately guarantee ecological connectivity and societal inclusion.

Transboundary governance models for biodiversity conservation appear as alternative forms of conservation that respond to the needs of ensuring both a more effective management of biodiversity and the inclusion of different governmental and non-governmental actors and authorities. This approach includes different government levels and addresses power imbalances, with a view to realizing connectivity, the prevention of pollution, and the protection of wildlife. In order to improve knowledge about alternative modes of conservation that span different countries and different types of authorities, this project aims to identify and study successful examples of transboundary biodiversity conservation, propose ways to address common challenges and effectively protect biodiversity, and elaborate policy recommendations to improve the effectiveness of transboundary biodiversity conservation governance.

IP	Institute for Comparative Federalism, Eurac Research, Bolzano/Bozen. Italy
Socios	Bélgica, Finlandia, España
Presupuesto	1.226.380 €
Concedido ES	153.381 €

PROYECTO 34 TransWILD. Transformative wildlife management to enhance biodiversity protection and ecosystem services provision in shared and protected multi-use landscapes across Europe

The recovery of formerly rare wildlife populations (i.e. crane, wolf, beaver and others) in Europe is a remarkable wildlife conservation success story, and yet presents daunting challenges for human-wildlife coexistence in shared cultural landscapes, leading to trade-offs such as illegal wildlife killing, crop and livestock damages, and ensuing social conflicts. Ensuring long-term conservation outcomes for wildlife species, including saving of small populations from extinction to sustaining large recovered populations, requires a profound understanding of benefits and trade-offs of wildlife conservation, the effectiveness of alternative policy and management coping strategies as well as the role of stakeholders and alternative governance modes.

Advance knowledge on effective and integrative wildlife biodiversity management in Europe by:
 1)Identifying the role of landscape structure and land use diversity on wildlife benefits and costs;
 2)Disentangling the complex human-dynamics in wildlife management; 3)Transdisciplinary integration of academic and stakeholder knowledge as well as its generalisation and upscaling.

IP	Department of Land use & Governance, Humboldt University of Berlin, Müncheberg, Alemania
Socios	Bulgaria, Italia, Noruega, España
Presupuesto	1.323.040 €
Concedido ES	206.517 €

PROYECTO 36 WOLFNESS. Preserving the natural heritage of wolves: a multidisciplinary approach towards effective and socially acceptable management of wolf-dog hybridization across Europe

Through a multidisciplinary network of researchers working in a conservation biology context, WOLFNESS promotes the application of novel genetic, genomic, demographic, and behavioural approaches to provide science-based support for effective and socially acceptable WDH management. The main objectives are: a) standardizing genetic and analytical procedures for the unambiguous identification of early-generation hybrids, b) establishing sampling and analytical procedures to estimate admixture, c) quantifying admixture in selected European wolf populations; d) investigating the phenotypic effects of dog introgression in wolves, e) evaluating management alternatives to address WDH, f) assessing perceptions of WDH and the social acceptability of management options, and g) evaluating the efficacy of current EU policies in addressing WDH. Developing tools to assess and monitor WDH in European wolf populations. WOLFNESS promotes sharing expertise among different genetic labs to reliably detect admixed individuals. Sampling issues will also be addressed to quantify admixture in selected European wolf populations. Assessing phenotypic effects of introgression in wolves. WOLFNESS adopts whole genome sequencing to estimate the effects of admixture on behaviour, life-history traits, ecology, and interactions with humans, using both controlled experiments with captive wolf-dog hybrids, and field work techniques. Evaluating alternative management strategies and their social acceptability. Through literature reviews, field work, and population modelling, WOLFNESS evaluates the technical feasibility and expected efficacy of alternative WDH management strategies. By complementing psychological and anthropological approaches, WOLFNESS also recognizes different actors, elaborating on how to increase awareness and maximize social acceptance of more effective WDH management. Stakeholder engagement, policy impact and outreach. WOLFNESS findings will be relevant for the Bern Convention and fuel progress for the conservation of Large Carnivores in the frame of the European Commission and its Habitats Directive, providing technical and policy support at the European and national levels, and interacting with the main stakeholders and informing the general public.

IP	Department of Biology and Biotechnologies “Charles Darwin”, Sapienza University of Rome, Rome. Italia
Socios	Alemania, Portugal, Eslovenia, España, Suecia Turquía.
Presupuesto	1.740.803 €
Concedido ES	255.102 € (Universidad de León 31.857 €), (Agencia Estatal Consejo Superior de Investigaciones Científicas-CSIC 223.245 €)

BiodivMon. Improved transnational monitoring of biodiversity and ecosystem change for science and society.

La convocatoria BiodivMon contribuirá a avanzar en el conocimiento sobre la biodiversidad a través del seguimiento, basándose en anteriores y los esfuerzos existentes en toda Europa y más allá. Su objetivo es apoyar proyectos de investigación transnacionales que contribuya a:

- refinar, mejorar y desarrollar los métodos existentes, y/o desarrollar, probar, aplicar y evaluar nuevos métodos para caracterizar, comprender y modelar el estado, la dinámica y las tendencias de la biodiversidad en niveles espaciales relevantes y escalas temporales;
- desarrollar herramientas para una mejor implementación y armonización de los esquemas de monitoreo en todos los países y regiones;
- mostrar el poder de la información de seguimiento (nueva y existente) para informar políticas transformadoras y gestión.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número de convocatorias conjunta internacionales: 1 (2022)

Participación de AEI en convocatorias conjuntas: 1 (2022)

CONVOCATORIA CONJUNTA INTERNACIONAL 2022

Países participantes	Austria, Bélgica, Brasil, Bulgaria, República Checa, Dinamarca, Estonia, Finlandia, Francia, Alemania, Grecia, Hungría, Irlanda, Italia, Costa de Marfil, Letonia, Lituania, República de Moldavia, Marruecos, Países Bajos, Noruega, Polonia, Portugal, Rumania, Eslovaquia, Eslovenia, Sudáfrica, España, Suecia, Suiza, Taiwán, Túnez, Turquía
Temáticas	Theme 1: Innovation and harmonisation of methods and tools for the collection and management of biodiversity monitoring data. Theme 2: Addressing knowledge gaps related to biodiversity status, dynamics, and trends in order to reverse biodiversity loss. Theme 3: Making effective use of available biodiversity monitoring data.
Presupuesto total	46 M €
Concedido ES	1.950.520 €
Proyectos aprobados	33
Proyectos financiados por AEI	9 (1 coordinado)

Nº	Acrónimo y título del proyecto	Países participantes
1	ANTENNA Making Technology Work for Monitoring Pollinators	Alemania , Países Bajos, Dinamarca, España, Grecia, Irlanda
2	BIG-PICTURE Developing data management and analytical tools to integrate and advance professional and citizen science camera-trapping initiatives across Europe	Noruega , Italia, España, Alemania, Países Bajos, Bélgica, Francia, Polonia, Eslovenia, Suecia
	Bio-Boost+ Boosting the Frequency and Scale of Marine Biodiversity Monitoring Using Digital Imagery and Artificial Intelligence	Italia , Países Bajos, Noruega, Grecia, Francia, España, Israel
4	BioMonI Biodiversity monitoring of island ecosystems	Alemania , Austria, Portugal, Francia, España, Suiza
	CAMBioMed Coordinated and adaptive monitoring of biodiversity change across Mediterranean rocky ecosystems	Italia , Grecia, España, Suecia, Países Bajos, Israel, Croacia
6	CoForFunc Toward a biome-scale monitoring of the Congo basin FORest FUNCtional composition	Francia , Alemania, España, Bélgica, Camerún, República del Congo
7	DESTRESS DEciphering temporal trends and safe operating spaces for river biodiversity within the context of multiple STRESSors	Noruega , Dinamarca, Alemania, Suecia, Países Bajos
8	DNAquaIMG Innovating transnational aquatic biodiversity monitoring using high-throughput DNA tools and automated image recognition	Alemania , Dinamarca, Austria, Finlandia, Francia, Polonia, Portugal, Irlanda, República Checa, Serbia, Suecia
9	DNASense From gene to landscapes: development of environmental impact assessment tools for marine biodiversity monitoring using eDNA and remote sensing techniques	Suecia , Bélgica, España, Finlandia, Estonia
10	EMPHATIC E-DNA, Microbiomes, Photogrammetry and Hormones – Assessment Techniques In Cetaceans	España , Portugal, Francia, Italia
11	ENABLElocal Enabling use of biodiversity monitoring data in local conservation management	Alemania , República Checa, Suecia
12	ForBioMon Boosting FORest BIODiversity MONItoring in Europe through smart combination of existing data	Bélgica , Suecia, República Checa, Alemania
13	Forest-Web-3.0 Mobilising, harmonising and incentivising forest biodiversity and environmental monitoring data through Web 3.0 technology	Noruega , Estonia, Bélgica
14	FunDive Monitoring and mapping fungal diversity for nature conservation	Dinamarca , Estonia, España, Bélgica, Italia, República Checa, Hungría, Alemania, Portugal, Francia, Noruega, Finlandia, Polonia, Suiza, Grecia, Países Bajos

15	GINAMO Genetic Indicators for NATure MONitoring	Dinamarca , Suecia, Bélgica, Alemania, Noruega, Francia, Italia, Estados Unidos
16	GRASS4FUN Monitoring the contribution of European grasslands to the conservation of soil biodiversity and ecosystem function under multiple global change stressors	España , Alemania, Suiza, Países Bajos, Francia, Portugal
17	HiRAD Harmonising and integrating Radar-based approaches for monitoring Aerial bioDiversity	Suiza , Países Bajos, Bélgica, Finlandia, Francia, Alemania, Estados Unidos
18	IMPACT Integrated Monitoring of PARasites in Changing EnvironmenTs	Noruega , Alemania, Suiza, Irlanda, Países Bajos, España, República Checa
19	METAPLANTCODE Harmonizing plant metabarcoding pipelines in Europe to support monitoring activities in the field of plants and their functional organismic networks	Alemania , Suecia, Noruega, Suiza, Países Bajos, Portugal, Francia, Rumania, Grecia, Bélgica
20	MiDiPeat Monitoring of peat microbial diversity through vegetation properties and its implication for carbon dynamics across European peatlands	Finlandia , Alemania, Estonia, República Checa
21	MonitAnt Developing a European-level Monitoring strategy for mound- building Formica Ants and symbiont communities residing in nest mounds	Alemania , Reino Unido, Italia, República Checa, Rumania, Finlandia, Bélgica
22	MOOBYF Monitoring the Open-Ocean BiodiversitY with Fishers	Francia , Indonesia, Maldivas, Bélgica, Italia, Alemania
23	MoSTFun Monitoring Strategies and Tools to address knowledge gaps on aquatic Fungal biodiversity	Suiza , Canadá, Italia, Alemania, Suecia, Noruega, España, Estonia, Estados Unidos
24	MOTIVATE Monitoring Of Terrestrial habitats by Integrating Vegetation Archive Time series in Europe	Alemania , Austria, España, Italia, República Checa, Finlandia
25	NorTrack The Northeast Atlantic Marine Tracking Network	Irlanda , Bélgica, Noruega, Francia, Dinamarca, Canadá, Suecia
26	SEAGHOSTS The global spatial ecology and conservation of the world's smallest and elusive seabirds, the storm petrel (Hydrobatidae & Oceanitidae), across the Mediterranean and the Northeast Atlantic Ocean	España , Dinamarca, Alemania, Portugal, Grecia, Noruega, Italia, Islandia, Francia, Irlanda, Estados Unidos
27	SEPPI Standardized European monitoring of plant-pollinator interactions (SEPPI)	Alemania , Bélgica, República Checa, Finlandia, Hungría, Italia, Rumania, Letonia
28	SoilRise Raising awareness for soil biodiversity and multiplying monitoring by student-based Citizen Science	Alemania , Austria, Polonia, Francia, Irlanda
29	Sub-BioMon – Developing and testing approaches to monitor subterranean biodiversity in karst	Eslovenia , Bélgica, Italia, Hungría, Rumania, Luxemburgo
30	TABMON Towards a Transnational Acoustic Biodiversity Monitoring Network	Noruega , Países Bajos, Francia, España

31	TRANSPONDER Transnational biodiversity and ecosystem assessment approaches for ponds in Europe	Dinamarca, Hungría, Bélgica, Suiza, España, Turquía, Alemania
32	WildINTEL Building a scalable WILDLife monitoring system by integrating remote camera sampling and artificial INTELLIGENCE with Essential Biodiversity Variables	Polonia, Estados Unidos, España, Noruega, Alemania
33	WOBE Weddell Sea Observatory of Biodiversity and Ecosystem Change	Alemania, Suecia, Italia, Noruega, Países Bajos, Bélgica, Polonia, Estados Unidos.

CONVOCATORIA NACIONAL PCI 2023

PROYECTO 1 ANTENNA. Making Technology Work for Monitoring Pollinators

The main objective of the antenna project is the monitoring of pollinators in Europe. Currently, different actions are already being carried out in this sense, but there are important gaps. New technologies, such as robotics, computer vision, and molecular methods, can help overcome these gaps by increasing taxonomic and geographical coverage, speed, accuracy, content and efficiency of identification, and temporal resolution. Within the framework of the antenna project, we lead workpackage 3, titled "integrated monitoring and modeling". In our project, we will be in charge of integrating disparate pollinator monitoring data under a comparable framework. Specifically, our group will focus on testing different monitoring options in the field and developing new methods to integrate and analyze data from various sources collected in antenna. This task is fundamental to quickly respond to ecological challenges and make informed decisions in real time. antenna's overall objective is to fill key gaps in monitoring by advancing novel technologies that will support and complement pollinator monitoring schemes across the EU. Our project focuses on goal 4, which is to provide a framework for integrative monitoring by combining multiple data streams and develop routines for near real-time forecasting models as a basis for early warning systems. In addition, we will participate in other complementary objectives as support. One of the main tasks is to lead task 3.1 where we will develop robust metrics to detect path changes in insect populations. One of the problems in the field of ecological prediction is that the models used focus on climate responses at centenary scales, which does not meet the needs for quick decision making for environmental conservation, which have to be almost in time real. Given the advantage that the antenna project can collect data in very short times, the models we want to develop in this project intend to be models that allow a forecast to be made almost real time.

IP	Helmholtz Centre For Environmental Research. Alemania
Socios	Países Bajos, Dinamarca, España, Grecia, Irlanda
Presupuesto	1.805.372 €
Concedido ES	237.160€ (Universidad Politécnica de Madrid 58.080 €) y (Agencia Estatal Consejo Superior de Investigaciones Científicas – CSIC 179.080 €)

PROYECTO 4 BioMonI. Biodiversity Monitoring of Island Ecosystems

Oceanic islands contribute disproportionately to global biodiversity, hosting many endemic species with unique evolutionary and functional adaptations that reflect life in isolation. Simultaneously, islands are epicentres of biodiversity change, being particularly vulnerable to anthropogenic disturbances such as habitat loss, climate change, and the introduction of non-native species. The islands that are part of the European Union Member States' Overseas Entities also contribute significantly to the biodiversity of the EU, making them crucial for reaching European and global biodiversity targets. At the same time, islands are severely under-represented in many global biodiversity databases and monitoring initiatives BioMonI aims at building a global long-term monitoring network specifically tailored to the pressing needs of biodiversity conservation and monitoring on islands. BioMonI will develop and implement a novel approach that considers mobilizing existing monitoring data, identifying gaps in those data as well as in existing monitoring efforts, and developing and harmonizing monitoring schemes for island biodiversity across the oceanic islands of the European Union and beyond. Specifically, we will focus on: 1) leveraging historical archives on Essential Biodiversity Variables (EBV) and Essential Ecosystem Service Variables (EESV) and providing the biodiversity informatics and IT infrastructure needed to facilitate their valuation. 2) providing optimized and standardized field sampling protocols and tested methods that combine long-term monitoring with emerging technology such as environmental DNA and remote sensing. 3) conducting targeted resurveys and establishing a network of new long-term monitoring plots. 4) scaling up the monitoring of biodiversity and ecosystem structure, functioning, and services using remote sensing, macroecological modelling, and future scenarios The different work packages of BioMonI encompass different spatiotemporal scales, spanning from unlocking palaeoecological archives to scenarios of future island biodiversity. Plot-based monitoring within BioMonI-Plot focuses on monitoring plant diversity, vegetation and habitat structure using classic vegetation surveys and terrestrial laser scanning as well as genetic and genomic tools. Unmanned aerial vehicle and satellite imagery will be used for scaling up field-based data and derive Essential Biodiversity Variables (EBVs) and Essential Ecosystem Service Variables (ESVs). These activities will be complemented by dedicated projects providing e-infrastructures and stakeholder engagement and coordination.

IP	University of Göttingen. Alemania
Socios	Austria, Portugal, Suiza, Francia, España, Turquía, Polonia, República Checa, Noruega, Eslovaquia
Presupuesto	1.932.695 €
Concedido ES	244.420€ (Agencia Estatal Consejo Superior de Investigaciones Científicas-CSIC 122.210 €) y (Universidad de la Laguna 122.210 €)

PROYECTO 6 COFORFUND. Toward a biome-scale monitoring of the Congo basin FORest FUNCTIONal composition

CoForFunc aims at developing an integrated approach for the monitoring of tree functional diversity of the CBF to support biome-scale assessment of their vulnerability to expected climate change and human-induced transformations.

IP	Tropical Forest Ecology, IRD-AMAP lab, Montpellier University. Francia
Socios	Alemania, España, Bélgica, Camerún, Congo
Presupuesto	1.224.698 €
Concedido ES	196.020 €

PROYECTO 14 FUNDIVE. Monitoring and Mapping Fungal Diversity for Nature Conservation

Fungi constitute one of the largest groups of organisms on the planet and have a central importance for the functioning of ecosystems. Many fungi are highly specialized and associated with threatened habitats, such as old forests, old grasslands, and forests on calcareous or nutrient poor soils. Also, they play a crucial role in the carbon cycle, regulating both the absorption and release of carbon in terrestrial ecosystems. Despite their evident relevance for understanding nature and changes in ecosystems, fungi have traditionally been ignored in the conservation of biodiversity. They were not included in the Bern Convention or in the EU Habitats Directive and, therefore, the conservation of fungi is mainly mediated by local and national initiatives of variable nature. Understanding fungi as crucial actors of the ecosystem. New methodological approaches have allowed a much deeper understanding of the biodiversity and biogeography of fungi. Firstly, citizen science has emerged as a very attractive approach to data collection involving a rich community of amateur mycologists. This has promoted data collection on fungal biodiversity, and the Global Biodiversity Information Fund (GBIF) now stores over 26 million fungi records, mainly from citizen science. Secondly, the development of molecular tools that allow us to explore environmental fungal DNA (edna) from different substrates has boosted our ability to explore fungal communities. Currently, over 600 million edna-based fungi records are available through open databases. Finally, fungi have entered the global conservation agenda, with nearly 600 species evaluated for the International Union for Conservation of Nature (IUCN) Red List so far.

IP	Center for macroecology, Evolution and Climate, Globe Institute, University of Copenhagen (CMEC). Dinamarca
Socios	Estonia, Bélgica, Italia, República Checa, Hungría, Alemania, Portugal, Francia, Noruega, Finlandia, Polonia, Suiza, Grecia, Países Bajos
Presupuesto	3.955.990,70€
Concedido ES	244.420€ (Agencia Estatal Consejo Superior de Investigaciones Científicas-CSIC 122.210 €), Consorci Centre de Ciència i Tecnologia Forestal de Catalunya 122.210 €)

PROYECTO 16 GRASS4FUN. Monitoring the Contribution of European Grasslands To The Conservation Of Soil Biodiversity And Ecosystem Function Under Multiple Global Change Stressors

Natural grasslands and cereal fields play a fundamental role in the conservation of biodiversity and sustainable food production. Natural grasslands (including grasslands within a protected area and unprotected grasslands) and cereal fields provide multiple ecosystem services, but also involve important trade-offs (for example, food production vs. soil carbon sequestration). However, unlike what happens with plants and animals above the soil, the capacity of European protected areas to conserve soil plant and microbial diversity and the ecosystem services of natural grasslands under conditions of global environmental change is practically unknown. In

addition, we know very little about how cereal fields will respond to the many stress factors of global change, such as drought, pesticides and overfertilization, which threaten the conservation of biodiversity and soil function, as well as the production of food. Objectives 1 and 2 will evaluate whether protected areas promote soil biodiversity and multiple ecosystem services in European natural grasslands and monitor microbial diversity and function in cereal fields. To this purpose, we will carry out a European-wide study in triples of meadows with different land use intensities (from protected and unprotected natural meadows to corn and wheat fields). Sampling in the cereal fields will support the follow-up that the crop microbiome initiative began in these places 3-5 years ago. In objectives 3 and 4, grass4fun will further investigate if the multiple stressing factors of global change affect the microbiome and the function of European natural meadows and cereal fields. To do this, we will combine biodiversity modeling and mapping and the function of the soil through climate change and land cover scenarios with a manipulative study using microcosms subjected to multiple stressors of global change. Grass4fun will be carried out in close collaboration with an advisory board of stakeholders to facilitate engagement and assimilation by end users, policymakers and society with the fundamental objective of providing pioneering knowledge to increase grassland resilience to global tensions and protect European biodiversity, including organisms living in soils. Grass4fun will provide fundamental knowledge for the long-term economic benefits of the EU and is in line with multiple European-wide programs, such as the farm-to-table strategy, EJP Soil and the European Green Deal.

IP	Agencia Estatal Consejo Superior de Investigaciones Científicas-CSIC. España
Socios	Alemania, Suiza, Países Bajos, Francia, Portugal
Presupuesto	2.080.597 €
Concedido ES	348.480 € (Instituto de Ciencias Agrarias 89.540 €) y (Instituto de recursos naturales y agrobiología-IRNASE 258.940 €)

PROYECTO 18 IMPACT. Integrated Monitoring of Parasites In Changing Environments

Parasites are typecast as biological villains due to their threats to human health and wildlife conservation, despite most metazoan parasites having no zoonotic potential, and constituting an overwhelming proportion of current biodiversity. Unsurprisingly, parasites remain the most neglected components of biodiversity management strategies, and completely absent from conservation discussions, unlike their more charismatic free-living hosts. Furthermore, the decline and disappearance of parasites is seldom a focus in long-term or distribution monitoring programs, and the value of parasites as integrative biological indicators remains under-exploited due to the lack of cost-effective monitoring tools for detecting broad-scale biodiversity changes. IMPACT aims to achieve the overall goal of providing evidence-based knowledge to support the integration of parasites into aquatic biodiversity monitoring directives and environmental decision making. Specifically, IMPACT will determine the spatial-temporal status and long-term trends of European freshwater fish parasite biodiversity; explore different facets of diversity, and establish a curated reference library of specimens and molecular barcodes to facilitate identification of freshwater fish parasites; critically evaluate eDNA as an integrative tool for assessing fish parasite diversity in aquatic biodiversity monitoring; and gain knowledge about stakeholders' perceptions of parasites and their role in environmental governance. Subsequently, IMPACT will break down key barriers to the inclusion of parasites in transnational biodiversity and ecosystem change monitoring by co-developing with relevant stakeholders and society groups a framework to

facilitate the explicit inclusion of parasites in national and international biodiversity management and conservation strategies

IP	Aarhus University (AU). Dinamarca
Socios	Alemania, Suiza, Irlanda, Países Bajos, España, República Checa
Presupuesto	2.134.155 €
Concedido ES	127.050 €

PROYECTO 24 MOTIVATE. Monitoring of Terrestrial Habitats By Integrating Vegetation Archive Time Series In Europe

MOTIVATE integrates vegetation-plot time series data with various forms of quantitative monitoring and qualitative stakeholder perceptions in order to improve how monitoring data is put into practice by decision-makers at the EU level. The data produced in MOTIVATE will be the basis of habitat- and species-specific assessments of plant biodiversity status and trends. Fundamental to the project is a knowledge exchange and capacity building component that seeks to secure the involvement of a future generation of botanists in the continuation of time series in Europe.

IP	Martin Luther University Halle-Wittenberg (MLU). Alemania
Socios	Austria, España, Italia, Suiza, Finlandia
Presupuesto	1.627.898,32 €
Concedido ES	181.500 €

PROYECTO 31 TRANSPONDER. Transnational Biodiversity and Ecosystem Assessment Approaches For Pondsapes In Europe

In the architectural domain, there is a need for full integration and interoperation between satellite, aerial and terrestrial network components, merged in a unique dynamic-adaptive network infrastructure denoted as the 3D network. Within this architecture, the evolution of mobile communications needs a combination of several innovative and complementary advances at the physical layer (PHY), medium access control (MAC), and radio resource management (RMM) that may be optimized with the use of Artificial Intelligence (AI) and Machine Learning (ML). With these goals in mind, PASSIONATE will unlock ML for wireless by customizing and accounting-by-design the unique properties (“physics-based”) of the networks they are applied to. Physics-based ML is, in addition, the suitable approach to ensure the scalability, generalization, reliability, and user trust of ML, enabling ML solutions that are technically robust and possibly explainable-by-design.

IP	Aarhus University (AU). Dinamarca
Socios	Dinamarca, Hungría, Bélgica, Suiza, Finlandia
Presupuesto	1.686.680 €
Concedido ES	156.090 €

PROYECTO 32 WILDINTEL. Transnational Biodiversity and Ecosystem Assessment Approaches For Pondscares In Europe

It should be noted that particle physics experiments involve not only scientific and technological challenges, but also computational. The increase in luminosity in this new period of data collection has involved paradigm changes in data acquisition methods, computation and analysis techniques, all of them challenges in a large-scale, global and collaborative research context. Various fields of physics and engineering are necessary for this task. In addition, it has been seen how the techniques that emerged have applications in other domains. these challenges can only be faced if a large number of scientists and engineers collaborate in a coordinated way.

IP	Institute of Nature Conservation, Polish Academy of Sciences. Polonia
Socios	Estados Unidos, España, Noruega, Alemania
Presupuesto	1.444.510 €
Concedido ES	215.380 €

ERA-MIN 2 – Implement a European-wide coordination of research and innovation programs on raw materials to strengthen the industry competitiveness and the shift to a circular economy

El objetivo de la ERA-NET Cofund on Raw Materials (ERA-MIN 2) es fortalecer la coordinación de los programas de investigación nacionales y regionales en el campo de las materias primas no agrícolas y no energéticas mediante la implementación de convocatorias conjuntas internacionales para la financiación de proyectos de investigación. En línea con la Iniciativa de Materias Primas de la UE y el Plan de Implementación Estratégica de la Asociación Europea para la Innovación en Materias Primas, los temas de la convocatoria ERA-MIN 2 han abordado los tres segmentos de las materias primas no energéticas y no agrícolas: minerales metálicos, industriales y de construcción, cubriendo toda la cadena de valor: exploración, extracción, procesamiento / refinación, así como reciclaje y sustitución de materias primas críticas.

Socios: Coordinador: Portugal (Foundation for Science and Technology (FCT), Argentina (Ministry of Science, Technology and Productive Innovation (MINCYT), Bélgica (Fund for Subsidiary Economic and Innovation (Hermesfond), Research Foundation Flanders (FWO), Brasil (Fund for Financing Studies of Projects and Programs (FINEP), Chile (National Commission for Scientific and Technological Research (CONICYT), Finlandia (Finnish Funding Agency for Technology and Innovation (TEKES), Francia (Agency for Environment and Energy Management (ADEME), National Research Agency (ANR), Alemania (Project Management Juelich / Research Centre Juelich (PTJ/FZJ), Irlanda (Department of Communications, Energy and Natural resources (DCENR), Italia (Ministry of Education, University and Research (MIUR), Polonia (National Centre for Research and Development (NCBiR), Rumanía (Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI), Eslovenia (Ministry of Education, Science, Culture and Sport (MESCS/MIZS), Sudáfrica (Department of Science and Technology (DST), **España (Centro para el Desarrollo Tecnológico Industrial (CDTI), Instituto para la Competitividad Empresarial de Castilla y León (ICE), Agencia Estatal de Investigación (AEI), Suecia (Swedish Governmental Agency for Innovation Systems (VINNOVA), Turquía (The Scientific and Technological Research Council of Turkey (TUBITAK).**

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número de convocatorias conjunta interancionales: 2 (2017, 2018)

Participación de AEI en convocatorias conjuntas: 2 (2017, 2018)

CONVOCATORIA CONJUNTA 2018

Países participantes	Bélgica, Brasil, Canadá, Chile, Finlandia, Francia, Alemania, Grecia, Irlanda, Italia, Polonia, Portugal, Rumanía, Eslovaquia, Eslovenia, Sudáfrica, España, Suecia, Turquía
Temáticas:	1. Supply of raw materials from exploration and mining 2. Design 3. Processing, Production and Remanufacturing 4. Recycling and Re-use of End-of-Life Products 5. Cross-cutting topics (non-technological innovations regarding: A) New business models, B) Improvement of methods or data for environmental impact assessment, C) Social acceptance and trust/public perception of raw materials)

Presupuesto total	8.8 M €
Presupuesto ES	239.000 €
Proyectos aprobados	12
Proyectos financiados por AEI	2

Nº	Acrónimo y título del proyecto	Países participantes
1	MIWACUT. Investigating the microwave assisted cutting of carbonate rocks	Turquía, Rumanía
2	AUREOLE. tARgeting eU cRitical mEtals (Sb, W) and predictability of Sb-AsHg enviroNmentaL issuEs	Francia, España, Portugal
3	MINECO. New Eco-innovative Materials for Mining Infra	Finlandia, Portugal
4	SbRECMEMTEC. Electro-electrodialysis technology on the copper minerals processing industry to the recovery of antimony from mining tailings and recycling the solution media	Brasil, Chile, España
5	MiCCuR. Microbial Consortia for enhanced Copper Recovery	Suecia, Alemania, Sudáfrica, Chile
6	RedOxRec. Reduction/ Oxidation Recycling	Alemania, Eslovenia, Bélgica
7	NEXT-LIB. Novel Circular Economic Approaches for Efficient Extraction of Valuables from Spent Li-Ion Batteries	Suecia, Francia, Italia, Finlandia, Suecia, Portugal
8	Siderec. Siderophores assisted Biorecovery of Technology Critical Elements: Gallium (Ga), germanium (Ge) and indium (In) from end-of-life products	Francia, Chile, Alemania
9	LIMEX. Innovative Membrane Extraction of Lithium for Spent Lithium-Ion Battery Recycling	Francia, Suecia, Portugal
10	RECEMENT. Re-generating (raw) materials and end-of-life products for re-use in Cement/Concrete	Turquía, Eslovenia, Rumanía
11	LICOBAT. Lithium and Cobalt recovery from batteries coming from the reverse logistics chain of WEEE	Brasil, Italia
12	SupplyPBM. Securing the Supply chain for rare earth Polymer-Bonded Magnets by recycling	Alemania, Francia

CONVOCATORIA NACIONAL: APCIN 2019

PROYECTO 2 AUREOLE. tArgeting eU cRitical mEtals (Sb, W) and predictability of Sb-AsHg enviroNmentAL issUES

Antimony (Sb), a critical metal for Europe strategic for the European (EU) aircraft industry & battery manufacturing plants, is widely used in industrial operations. Its most promising use may be for rechargeable Li- & Na-ion batteries. The project is based on disruptive concepts: i) new 3D large-scale metallogenic model integrating deep-seated processes to determine the spatial distribution of ore deposits; ii) the use of mineral prospectivity data weighted by surface data to determine the probability of environmental risk over large areas. Despite a high EU potential, the knowledge on Sb remains poorly constrained. EU remains under the threat of the Chinese supply. In parallel, metalloids (Sb, As, Hg) of geogenic origin are recognised as a global threat for human health. Then, a large-scale identification of these areas should be a priority. In this 3 year project, it will produce i) a new 3D metallogenic model that will contribute to the understanding of the mineralising processes; ii) a new understanding of surface processes that control the mobilisation & transport of metalloids; iii) a new large-scale mineral prospectivity and iv) a new large-scale environmental risk assessment by weighting mineral prospectivity with earth surface properties. The consortium of 4 leading research entities from 3 EU countries in the field of ore genesis and environmental risk assessment is completed by the Antea Group, whose core business is the analysis and quantification of environmental risk. The expected outcomes will result in high impact deliverables devoted to the targeting of new Sb deposits and a new large-scale environmental assessment maps for decision-making dealing with human health. Long term expected impacts would be an increase of EU Sb resources & sustainable supply. The project will provide new results to the SCREEN, IMP@CT, FRAME projects and will interact with consortiums about electromobility such as the EU Lithium Institute and the EU Battery Alliance.

IP	Bureau de Recherches Géologiques et Minières, Francia
Socios	Francia (Institut des Sciences de la Terre d'Orléans (ISTO), Antea Group), España (Universidad de Castilla-La Mancha), Portugal (University of Porto – FCUP)
Presupuesto total	454.122 €
Concedido ES	98.000 €

PROYECTO 4 SbRECMEMTEC. Electro-electrodialysis technology on the copper minerals processing industry to the recovery of antimony from mining tailings and recycling the solution media

The main objective of Sb-RECMEMTEC project is the recovery of antimony (Sb), a Critical Raw Material, from wastes and effluents generated during the pyro- and hydrometallurgical processing of copper (Cu) using membrane separation processes (MSP): electrodialysis (ED) and electro-electrodialysis (EED). While Sb is of fundamental importance to newly developed technologies, it is generally obtained as a by-product of other metallic ores. Therefore, the current and future supply of Sb depends not only on Sb production, but also on the efficient recovery of other primary ores. Sb-RECMEMTEC will address the challenging subject of applying MSP in the processing of Cu-low-grade mining tailings and of Cu-sulphide minerals, not only to concentrate/purify the electrolytes, but also to recover Sb and acid solutions. ED/EED processes will be studied, using the circular economy approach, to the primary Cu-production, avoiding Sb

losses and minimizing the generation of effluents. Sb-RECMEMTEC consortium consists of a multidisciplinary team, bringing together 5 partners from 3 countries (Chile, Brazil and Spain). Wastewaters, containing, besides Cu, elements of added-value, such as Sb, will be managed by the company TRANSDUCTO (Chile), being characterized by the USACH group (Chile). ED/EED processes will be evaluated with commercial membranes and with membranes produced at FEEVALE (Brazil). The UPV group (Spain) will carry out the scientific studies of the Sb electrorecovery on different cathodes and the characterization of the ion transport through the membranes provided by FEEVALE. The group of UFRGS (Brazil) will be responsible for performing small-scale pilot studies of ED/EED in order to demonstrate its feasibility for recovering acid solutions and Sb. USACH and TRANSDUCTO will incorporate the results obtained to implement a new production process. A high enhance innovation capacity is expected, since a new process will be incorporated directly on the copper line production.

IP	Universidade Federal do Rio Grande do Sul, Brasil
Socios	Brasil (ASPEUR / Feevale), Chile (Universidad de Santiago de Chile, Transducto S.A.), España (Universitat Politècnica de Valencia)
Presupuesto total	577.900 €
Concedido ES	141.000 €

ERA-MIN 3 Cofund – Raw Materials for the Sustainable Development and the Circular Economy

ERA-MIN3 comprende una asociación público-pública paneuropea progresiva de 25 organizaciones públicas que financian la investigación de 19 países/regiones europeas y 3 terceros países, cuyo objetivo es continuar fortaleciendo la comunidad de materias primas minerales (RM) y contribuir al desarrollo sostenible y responsable. el suministro de materias primas y la transición de la UE hacia una economía circular y neutra en carbono.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número de convocatorias conjunta interancionales: 1 (2021)

Participación de AEI en convocatorias conjuntas: 1 (2021)

CONVOCATORIA INTERNACIONAL CONJUNTA 2021

Países participantes	Bélgica, Bulgaria, República Checa, Estonia, Finlandia, Francia, Alemania, Irlanda, Italia, Polonia, Portugal, Rumania, Eslovenia, Eslovaquia, Sudáfrica, España, Suecia, Turquía
Temáticas:	1. Supply of raw materials from exploration and mining. 2. Circular Design. 3. Processing, Production and Remanufacturing. 4. Recycling and Re-use of End-of-Life Products 5. Cross-cutting topics indirectly contribute to raw materials efficiency
Presupuesto total	69.900.000 €
Presupuesto ES	1.237.474 €
Proyectos aprobados	22
Proyectos financiados por AEI	6 (2 coordinados)

Nº	Acrónimo y título del proyecto	Países participantes
1	2BoSS. Toward sustainable batteries based on silicon, sulfur and bio-mass derived carbon	España, Italia, Francia, Alemania
2	Abtomat. Utilization of aluminium bearing raw materials for the production of aluminium metal, other metals and compounds	República Checa, Suecia, Turquía, España, Estonia
3	ACROBAT. Advanced CRMs Recycling from spent LFP Batteries	Bélgica, Italia, Alemania
4	AI-COSTSQO. Artificial Intelligence and Combined Survey Techniques for Stone Quarries Optimization	Turquía, Rumania, Eslovenia, Italia
5	CO2TREAT. Accelerated CO ₂ Treatment of alkaline residues for low carbon binders – CO2TREAT	Bélgica, Alemania, Eslovenia

6	Cider. Circular product design for automotive components made from recycled and sustainable composite material	Alemania, Francia, España, Estonia
7	FUTURE. Fiber-optic sensing and uav-platform techniques for innovative mineral exploration	Sudáfrica, Suecia, Italia, Francia
8	INN4MIN. Development of innovative and sustainable approaches applied to the recovery of gold and critical elements from ores and spent printed circuit boards	Portugal, Francia, Alemania
9	MW4REMAM. Microwave enhanced recovery of REEs and plastic from WEEE and re-use in Additive Manufacturing of novel magnetic components	Bélgica, Bulgaria, Rumania
10	PEGMAT. Evolved magmatic and pegmatitic systems as sources of critical raw materials and industrial minerals	República Checa, Francia, Rumania, Bulgaria, Eslovaquia
11	PG2CRM. Phosphogypsum Processing to Critical Raw Materials	Francia, Alemania, Polonia, España, Portugal, República Checa, Marruecos
12	PHIGO. Thermal Processing of P-rich ashes aiming for HIGH-GRADE PHOSPHORUS Products	Suecia, Turquía, Portugal, Polonia, Italia, Rumania
13	PHOSTER. Phosphorus and magnesium recovery from waste streams for production of high-value renewable fertilizers	Italia, Eslovenia, España
14	POTASSIAL. Zero-waste valorisation of feldspathic ores: Green application and sustainable sourcing of strategic raw materials	Turquía, Suecia, Eslovaquia, Reino Unido
15	RecMine. Environmental footprint reduction through eco-friendly technologies of mine tailings recycling	Rumania, Portugal, Bulgaria, Turquía, España
16	RecyLIB. Direct Recycling of Lithium-Ion Batteries	Alemania, Francia, Bélgica
17	Recycl3D. Recycled aggregates for 3D printed concrete structures	Italia, España, Portugal, Polonia, Brasil, Estado Unidos
18	RecycleBIM. Integrated Planning and Recording Circularity of Construction Materials through Digital Modelling	Portugal, Alemania, España, Sudáfrica, Italia, Francia
19	Rendering3D. Recycling End of Life permanent magnets by innovative sintering and 3D printing	Italia, Francia, España
20	SEEMS DEEP. Seismic and electromagnetic methods for deep mineral exploration	Finlandia, Suecia, Francia, Polonia
21	Scandere. Scaling up a circular economy business model by new design, leaner remanufacturing, and automated material recycling technologies	Suecia, Polonia, Irlanda, Bélgica, Francia, Alemania, Rumania
22	TailingR32Green. tailings Reprocessing, Revalorization and Risk reduction connecting innovations in metal recovery, geopolymerization, ceramics & sealing layers	España, Portugal, Sudáfrica, Perú

CONVOCATORIA NACIONAL PCI 2022

PROYECTO 1 2BoSS. Toward sustainable batteries based on silicon, sulfur and bio-mass derived carbon

The recycling of raw materials to manufacture new components, hence closing the circular economy loop, is especially critical in a fastgrowing and strategic sector such as energy storage. The sustainable production of batteries requires securing the availability of raw materials, and the use of effective strategies for their recycling. Given the intrinsic limitations of current lithium-ion batteries, a new sustainable battery technology is needed. 2BoSS will develop sustainable batteries compatible with the circular economy by: 1) validating a silicon-sulfur battery technology designed to minimize the use of CRMs, provide optimized performance, and enable the circular use of material resources. 2) validating effective recycling strategies for the separation and reuse of raw materials; 3) assessing the cost, life cycle, and environmental, health and safety impact; and 4) designing high-performance products and their scaled-up manufacturing. 2BoSS will validate a battery technology supported on a cobalt-free Li₂S-based cathode and a graphite-free silicon-based anode, using nitrogen-doped carbon cloths obtained from organic waste as current collector. Besides improving performance and minimizing the use of CRMs, a key advantage of the battery technology here proposed is the easier recycling of its raw materials. 2BoSS batteries are designed to use no metal collector and to incorporate no metal additive at the cathode, anode and electrolyte, which will allow a more effective and economical separation of the two key raw materials. 2BoSS will design, validate and define the up-scaling of effective lixiviation strategies to separate and regenerate the battery key elements. Additionally, life cycle assessment and social life cycle assessment will be carried out to better understand environmental and social impacts of the developed technology along the life cycle and to provide valuable feedback to optimize their contribution to a more circular economy.

IP	Fundacio Institut De Recerca De L'energia De Catalunya. España
Socios	Politecnico di Torino (Italia), Commissariat à l'énergie atomique et aux énergies alternatives (Francia), Cleopa GmbH (Alemania)
Presupuesto total	1.002.683 €
Concedido ES	250.000 €

PROYECTO 11 PG2CRM. Phosphogypsum Processing to Critical Raw Materials

More than three-quarters of phosphate fertilizers produced globally are produced using phosphoric acid as an intermediate product, leaving 4–6 t low-radioactive phosphogypsum (PG) per t P₂O₅ produced, as relevant by-product/waste. About 85% of the 5.6–7.0 billion t PG produced globally over the lifetime of the phosphate industry are disposed of in stacks in 52 countries worldwide. The largest stacks in the EU are found in Lithuania, Poland, Spain, Greece, Bulgaria, Serbia and Kosovo, the Netherlands, Belgium, Portugal and Finland. 3–4 billion t are accessible for recovery worldwide and approximately 2 billion t are accessible for recovery in Europe. At the current rate of production, these stacks of low-radioactive material are growing by some 200 million t per year. From a regional environmental point of view, PG maybe the single most critical processing issue of fertilizer production today. The objective of the project “Phosphogypsum Processing to Critical Raw Materials” (PG2CRM) is to further develop an innovative process for REE recovery from PG that has recently been patented by the coordinator from TRL 4-5 (lab-scale experiments) which is the current state to TRL 7-8 (continues pilot plant operation). The focus will

be on the comprehensive use of PG and besides the opportunity to recover REEs from it, the remaining gypsum matrix will be used as an inexpensive material in construction/sound insulation.

IP	École des Mines de Saint-Étienne. Francia
Socios	Freiberg University of Mining and Technology (Alemania), Institute of Nuclear Chemistry and Technology (Polonia), Universidad de Huelva (España), NOVA.ID.FCT/ NOVA School of Science & Technology (Portugal), Czech University of Life Sciences Prague (República Checa), Biopolinex Sp. Z. o. o. (Polonia), ALFERROCK GmbH (Alemania), OCP S.A. (Marruecos)
Presupuesto total	2.576.988 €
Concedido ES	171.810 €

PROYECTO 17 Recycl3D. Recycled aggregates for 3D printed concrete structures

Construction & Demolition Waste (CDW) represents one of the most relevant materials flows globally and ambitious goals for its management were set by the EU. Nonetheless, market uptake of recycling and recovery products from CDW is still lacking. In particular, the fine recycled aggregates (fRA) are still the most under-used component without a clear entry point into the circular economy model. The recovery/recycling of CDW can be improved by developing its use in higher-grade applications through innovation and emerging technologies. In this context, the Recycl3D (Recycled aggregates for 3D printed concrete structures) project aims at maximizing the recovery of fRA derived from CDW and valorizing it as an essential constituent in the fabrication of new concrete elements through innovative 3D printing technologies. Therefore, Recycl3D tackles the challenges of sustainability (circular economy) and innovation (additive manufacturing) of current relevance for the construction industry. The actions within Recycl3D will facilitate the entry of fRA from CDW into the circular economy value-chain and at the same time increase the material efficiency and lead to higher added value. Then, the mechanical, durability and service-life of 3D-RAC elements (considering also their recoverability and recyclability) could be consistently predicted and, consequently, the barriers for future market uptake can be addressed by designing and optimizing 3D-RAC structural prototypes and testing them in relevant environments. These outcomes will directly impact both the scientific and industrial communities at both the global/European level and the national/regional one. The project consists of Applied/Industrial Research activities in the fields of sustainable construction materials & structures and additive manufacturing performed by a carefully tailored Consortium that ensures a multidisciplinary and complementary expertise needed to significantly advance current knowledge.

IP	University of Salerno. Italia
Socios	Universitat Politècnica de Catalunya (España), c5Lab (Portugal), Laboratório Nacional de Engenharia civil (Portugal), West Pomeranian University of Technology in Szczecin (Polonia), BETOTEST POLSKA Sp. z o.o. (Polonia), Federal University of Rio de Janeiro (Brasil), Arizona State University (Estados Unidos)
Presupuesto total	1.427.580 €
Concedido ES	187.535 €

PROYECTO 18 RecycleBIM. Integrated Planning and Recording Circularity of Construction Materials through Digital Modelling

The project intends to make a multi-national and multi-stakeholder effort towards the creation of an integrated framework for circularity of raw materials of construction, leveraged on the wealth of information that is brought about by 'Building Information Modelling'. The framework includes five main aspects: (i) development of a new methodology of survey of constructions to-be-demolished, based on state of the art methods (e.g. handheld laser scanning) to allow semi-automated digital twins of buildings to be created at a controlled cost; (ii) establish adequate BIM modelling rules (and information requirements) that allow the BIM model to host all the relevant information for the full deconstruction analysis, including health and safety aspects, deconstruction phasing/techniques and quantity take off regarding the materials available for reuse and recycling; (iii) create an IFC-based tool for multi-criteria optimisation of deconstruction strategies and materials, so that designers of new construction, or planners of deconstruction of 'to-be-demolished' can have their BIM models analysed in a platform that manages an integrated multi-criteria optimisation procedure for deconstruction phasing and strategies, including LCA/LCC analysis (with distinct peculiarities when making Design for Deconstruction, or when solely planning the demolition of an existing building); (iv) strategic and optimised use of recycled demolition waste in 3D printed concrete for local digital construction practice; (v) make all the previous developments together with a specific set of tools for Municipalities to use in their process of issuing both deconstruction and new building permits based on BIM models (openBIM), as to manage better focus in municipal approvals based on traceable data, and at the same time, keeping accurate records of material circularity at a local level (enabling global optimisation strategies at municipal level).

IP	University of Minho. Portugal
Socios	Technische Universität Darmstadt (Alemania), Universidade de Vigo (España), Stellenbosch University (Sudáfrica), ACCA software S.p.A. (Italia), Südthessische Wertstoffrückgewinnungs GmbH (Alemania), University of the Western Cape (Alemania), LEZAMA DEMOLICIONES S.L. (España), Lafarge Centre de Recherche (Francia), Newton (Portugal), Marta Campos – Arquitectura (Portugal), Gaiurb EM (Portugal)
Presupuesto total	2.001.664 €
Concedido ES	153.985 €

PROYECTO 19 Rendering3D. Recycling End of Life permanent magnets by innovative sintering and 3D printing

The global demand of NdFeB permanent magnets (PMs), increased enormously in these last years due to the huge production of machines in which NdFeB magnets are key components: wind turbines, electric and hybrid vehicles and others. Since the world Rare Earth (RE) market is China's controlled, one of the most promising solution for the future independence of Europe from the Chinese monopoly, is the reuse or recycle of RE-based PM from End of Life (EoF) magnets. The recent directives of the European Commission in terms of reducing dependence from imports and increased capability to produce and use raw materials, is focused on the Strategic Implementation Plan, in which one of the action areas is "Recycling of raw materials from products, buildings and infrastructure". The present project Recycling End of Life permanent magnets by innovative

sintering and 3D printing (Rendering3D) is addressed to the development of a scientific and technical base for a route to recycle EoL NdFeB PMs in order to produce new magnets with similar or even better magnetic features. It involves the controlled milling of EoL magnets to a powder, which is fed to two pipelines. The “sintering” line leads to sintered magnets while the “3D printing” line leads to 3D printed bonded magnets. These processes mainly entail mechanical processing and no costly chemical or thermal process. with large environmental footprint. are involved. The general aim outlined above requires achievement of several particular goals: Processes to optimize a protocol to achieve submicrometric high quality magnetic powders from EoL magnets for the production of different types of magnets; and Products to obtain either isotropic and anisotropic sintered magnets and 3D printed customized shape bonded magnets. Finally, this project seeks to raise the awareness of companies using permanent magnets to contribute to the recovery of these magnets in a European Circular Economy Path, totally independent from third parties.

IP	Università di Genova. Italia
Socios	Consiglio Nazionale delle Ricerche (Francia), NKAD PRINTERS (Francia), University of the Basque Country (España), Universite de Paris (Francia)
Presupuesto total	808.135 €
Concedido ES	174.915 €

PROYECTO 22 TailingR32Green. Mine tailings Reprocessing, Revalorization and Risk reduction connecting innovations in metal recovery, geopolymerization, ceramics & sealing layers

TailingR3 2Green ultimate goal is to develop a New Business Model based on a circular and zero-toxic approach to revalorize and reuse the mine tailings while minimizing their environmental impact. This green economy and zero toxic approach will lead to (1) the full bio-recovery of critical raw elements as REE and Co diluted in secondary sources as mine tailings, (2) the revalorization of mineral by-products as construction bricks and (3) the mine tailing sealing by in-situ geopolymerization process to create sealing layers that will prevent the water percolation and pollutant lixiviation to the surrounding ecosystems. TailingR3 2Green approach is flexible and adaptable to the geochemical and mineralogical nature of the mine tailings, and in parallel, it has been designed to maximize the economic gain minimizing the environmental impact. The global challenge pursued by in TailingR3 2Green is easily understood if it is considered the potentials of the current inactive and active tailing deposits worldwide jointly with the increasing pressure of the critical raw elements (CRE) market. The connection of the CRE recovery, mineral by-products revalorization, and environmental impact minimization is essential to build up new economic business models that evaluate the benefits balancing the economic, societal and environmental gains of the process. The innovative and circular approach pursued in the project will have concrete and measurable direct and side impacts specifically mentioned on this call, like:

- (1) greener mining technology development,
- (2) secondary CRE resources revalorization,
- (3) founding business parallel opportunities thanks to mineral by-products reshaping,
- (4) securing CRE supply for EU, and

(5) gaining the trust of the society on the need of a future green-mining and its importance to secure the transition to a green-energy and circular society.

IP	Universidad de Huelva. España
Socios	University of Aveiro (Portugal), Central University of Technology (Sudáfrica), Basque Center for Materials, Applications & Nanostructures (España), University of the Free State (Sudáfrica), National University del Altiplano (Perú)
Presupuesto total	932.755 €
Concedido ES	299.230 € (Fundacion Bcmaterials-Basque Center for Materials, Applications and Nanostructures 77.395 €), (Universidad de Huelva 221.835 €)

JPI OCEANS – JPI Healthy and Productive Seas and Oceans.

El objetivo de JPI Oceans es aunar esfuerzos para fomentar la cooperación y la coordinación transnacional en materia de investigación e innovación marina y marítima mediante el desarrollo de actividades conjuntas de investigación científica y tecnológica en temas marinos y marítimos. Se trata en definitiva de hacer un uso más eficiente de los recursos y capacidades de investigación e innovación existentes a nivel nacional para poder abordar de forma más eficiente y efectiva los grandes retos relacionados con los mares y océanos, incluyendo aspectos relacionados con las necesidades de investigación para dar apoyo a políticas.

La Iniciativa de Programación Conjunta JPI Oceans (Joint Programming Initiative “Healthy and Productive Seas and Oceans”-) es una iniciativa que fue propuesta por Noruega, España y Bélgica al Consejo de Competitividad la UE en mayo de 2010. La iniciativa fue finalmente aprobada por el Consejo de Competitividad en sus conclusiones del 6 de diciembre de 2011. En la misma están representados actualmente un total de 18 países, incluyendo 15 EEMM de la UE así como 3 países asociados al Programa Marco de la UE (Noruega, Islandia y Turquía).

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número de convocatorias conjuntas internacionales: 13 (2015, 4 en 2018, 2 en 2019, 4 en 2020 y 2 en 2021).

Participación de MINECO/AEI en convocatorias conjuntas: 3 (2015, 2018, 2019, 2020, 2021).

CONVOCATORIA CONJUNTA 2015

Países participantes	Bélgica, Francia, Alemania, Irlanda, Italia, Países Bajos, Noruega, Portugal, España y Suecia.
Temáticas	Microplásticos en el entorno marino
Presupuesto total	7.700.000 €
Concedido ES	550.000 €
Proyectos aprobados	4
Proyectos financiados por AEI	2 (1 proyecto coordinado)

Nº	Acrónimo y título del proyecto	Países participantes
1	BASEMAN. Defining the baselines and standards for microplastics analyses in European waters	Alemania, Noruega, Francia, Portugal, Italia, Irlanda, Suecia
2	EPHEMARE. Ecotoxicological effects of microplastics in marine ecosystems	Grecia, España, Países Bajos, Bélgica, Italia
3	PLASTOX.	Noruega, Alemania, Francia, Países Bajos, Suecia, Italia,

Direct and indirect ecotoxicological impacts of microplastics on marine organisms	Portugal, Irlanda, Bélgica, Reino Unido
WEATHER-MIC.	
4 How microplastic weathering changes its transport, fate and toxicity in the marine environment	Alemania , Noruega, Suecia, Bélgica

CONVOCATORIA NACIONAL APCIN 2015

PROYECTO 1 BASEMAN. Defining the baselines and standards for microplastics analyses in European waters

The ubiquitous presence and massive accumulation of microplastics in marine habitats and the uptake of microplastics by various marine biota is now well recognized by scientists and authorities worldwide. BASEMAN teams experienced scientists (from different disciplines and countries) to undertake a profound and detailed comparison and evaluation of all approaches from sampling to identification of microplastics. BASEMAN deploys cutting-edge approaches to tackle the two major themes of the call: 1) “The validation and harmonisation of analytical methods” which is indispensable for 2), the “Identification and quantification of microplastics”.

IP	Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research, Alemania
Socios	Alemania (GEOMAR, University of Oldenburg, University of Bayreuth), Noruega (Norwegian Institute for Water Research, Norwegian Institute of Air Research, The National Institute of Nutrition and Seafood Research), Francia (University of Maine, CNRS-LOV), Portugal (NOVA.ID FCT, Instituto Português do Mar e da Atmosfera), Irlanda (Galway-Mayo Institute of Technology), Italia (CNR-IAMC, OGS- National Institute of Oceanography and Experimental Geophysics), España (Instituto Español de Oceanografía, Universidade da Coruña) , Suecia (University of Gothenburg, The National Institute of Nutrition and Seafood Research)
Concedido ES	125.000 € + 125.000 € = 250.000 €

PROYECTO 2 EPHEMARE. Ecotoxicological effects of microplastics in marine ecosystems

The project targets (1) the uptake, tissue distribution, final fate and effects of microplastics in organisms representative of pelagic and benthic ecosystems, and (2) the potential role of microplastics as vectors of model PPs that readily adsorb to their surfaces.

IP	Universidad de Vigo, España
Socios	España (Instituto Español de Oceanografía (IEO), Universidad de Murcia) , Francia (University of Bordeaux, IFREMER), Alemania (University of Heidelberg), Bélgica (University of Antwerp), Portugal (Interdisciplinary Centre of Marine and Environmental Research, University of Algarve), Italia (Marche Polytechnic University, National Research Council), Suecia (University of Örebro), Noruega (University of Oslo), Irlanda (University College Cork)
Concedido ES	100.000 € + 60.000 € + 140.000 € = 300.000 €

CONVOCATORIA CONJUNTA 2019

Países participantes	Bélgica, Francia, Noruega, Malta, Suecia, Alemania, España Portugal, Italia, Brasil, Alemania, Irlanda, Estonia, Dinamarca
Temáticas	1. Sources of microplastics 2. Methods for identifying smaller micro- and nanoplastics 3. Monitoring their circulation in marine systems and their effects on marine organisms
Presupuesto total	10.500.000 €
Concedido ES	650.000 €
Proyectos aprobados	6
Proyectos con financiación AEI	4 (1 proyecto coordinado)

Nº	Acrónimo y título del proyecto	Países participantes
1	ANDROMEDA. Analysis techniques for quantifying nano-and microplastic particles and their degradation in the marine environment	Francia, Bélgica, Noruega, Malta, Suecia, Alemania, España
2	HOTMIC. Horizontal and vertical oceanic distribution, transport and impact of microplastics.	Alemania, Bélgica, Dinamarca, Irlanda, Italia, Portugal
3	I-PLASTIC. Dispersion and impacts of micro- and nano-plastics in the tropical and temperate oceans: from regional land-ocean interface to the open ocean	España, Portugal, Italia, Brasil
4	FACTS. Fluxes and Fate of Microplastics (MP) in Northern European Waters	Dinamarca, Alemania, Italia, Noruega, Suecia
5	MICROPLASTIX. Integrated approach on the fate of MicroPlastics (MPs) towards healthy marine ecosystems	Suecia, Brasil, Francia, Alemania, Irlanda, Italia, España
6	RESPONSE. Toward a risk-based assessment of microplastic pollution in marine ecosystems	Italia, Estonia, Francia, España, Dinamarca, Portugal, Irlanda, Noruega, Suecia, Alemania, Bélgica

CONVOCATORIA NACIONAL APCIN 2020

PROYECTO 1 ANDROMEDA. Analysis techniques for quantifying nano-and microplastic particles and their degradation in the marine environment

Current methods for microplastic (MP) analysis can be divided into low-cost versus more advanced methods. ANDROMEDA recognizes that further development and validation is needed

for both approaches. Low-cost methods are needed that can identify a broad range of MP polymers with acceptable accuracy. Advanced methods need further development in order to push the limit of detectability for smaller sizes of MP and nanoplastics (NP) and improve their ability to analyze MP types that are currently difficult to analyze by microspectroscopy.

Moreover, to study plastic degradation mechanisms over a reasonable time frame, lab-based accelerated degradation approaches are required that mimic natural fragmentation and additive chemical leaching. Within ANDROMEDA, in situ MP detection, efficient sampling and

cost-effective laboratory methods will be developed and optimized to analyze MP. Approaches will be based on hyperspectral imaging, chemical markers and fluorometric detection techniques. Advanced analysis techniques making use of μ FTIR, Raman imaging and SEM-EDX

(amongst others) will be applied to quantify and characterize MP and NP down to 1 μ m, 0.2 μ m or lower. Specific tasks will focus on challenging types of MP such as microfibers, tire wear particles (TWPs) and paint flakes. UV, hydrolytic and thermo-oxidative methods to study accelerated plastic degradation at the lab-scale will be developed and used to prepare partially degraded reference materials.

Comprehensive degradation studies will be conducted to study in detail the mechanisms of UV and microbial degradation, as well as to investigate the influence of parameters such as temperature, pH and hyperbaric pressure, where attention will be paid to additive chemical leaching. Quality assurance will be a central theme in all aspects of the project. Partners specialized in dissemination, communication and data management will ensure strong stakeholder involvement and efficient outreach of the project results.

IP	Université d'Aix-Marseille. Institut Méditerranéen d'Océanologie. Marsella, Francia
Socios	Bélgica, Francia, Noruega, Malta, Suecia, Alemania, España
Presupuesto	2.619.000 €
Concedido ES	150.000 €

PROYECTO 3 I-PLASTIC. Dispersion and impacts of micro- and nano-plastics in the tropical and temperate oceans: from regional land-ocean interface to the open ocean

Recently the acceleration of “smaller plastic” pollution has increased the need to develop novel collaborative tools for synergistic problems affecting coastal and oceanic ecosystems. One of the main hurdles is the lack of standardized, comparable and integrated information on smaller (micro- and nano-) plastic pollution (including plastic fragmentation, abundance and microplastic/nanoplastic sources, regional hotspots of accumulation, and transport at the land-sea interface). The i-plastic project aims to assess the dispersion and impacts of micro- and nano-plastics in the tropical and temperate oceans, from the regional land-ocean interface to the open ocean. We will quantify the seasonal transport and dispersion in three selected estuaries (hotspots of plastic sources) and adjacent coastal waters and shorelines under distinct flow and climate regimes (i.e., tropical and temperate systems). In-situ monitoring will be performed in the selected system of the eastern and western Atlantic Ocean and Mediterranean Sea. The impacts on distinct commercially valuable species (as part of the human diet) from the target regions will be

addressed through in-situ observations and laboratory experiments. New approaches will be implemented to detect and characterize nanoplastics in environmental matrices (i.e.: water, short-term sediment trap, sediment and biota) and ascertain processes of macroplastic fragmentation. Finally, the data generated during the i-plastic project will be used to feed regional models for the dispersion of micro- and nano-plastics, which in turn will be used to elaborate a model of their dispersion at the Atlantic scale. In this context, the i-plastic project will provide missing knowledge concerning the fate of plastics in the ocean and the effects of smaller plastics on the ecosystems of different areas worldwide, by making projections to understand the impacts and dispersion of micro and nano-plastics in the next decades of the Anthropocene.

IP	Catalan Institution for Research and Advanced Studies (ICREA), Institute of Environmental Sciences and Technologies (ICTA), Autonomous University of Barcelona (UAB) Universitat Autònoma de Barcelona. España
Socios	Portugal, Italia, Brasil
Presupuesto	929.000 €
Concedido ES	185.000 €

PROYECTO 5 MICROPLASTIX. Integrated approach on the fate of MicroPlastics (MPs) towards healthy marine ecosystems

Once a promising material for the future, plastic has exponentially become an environmental threat with ubiquitous distribution. The UN and the G7 have recognised marine litter and microplastic pollution to have negative effects on aquatic ecosystems and, potentially, on human health. Despite the scientific progress in this field so far, researchers are only starting to unveil the tip of the iceberg. After being released in the marine environment, plastics undergo weathering and biofouling processes shaped by environmental conditions that lead to the fragmentation of larger items into microplastics (MPs). These increase the difficulty of accurately estimating abundances and polymer types in aquatic ecosystems.

MicroplastiX aims to overcome knowledge gaps concerning MP weathering, degradation and fragmentation processes. MicroplastiX distinctively develops a holistic approach combining field data with laboratory experiments; deploys a comprehensive quality assurance scheme; evaluates MP interaction with biota (including release of plastic chemicals and sorbed pollutants); creates an inventory of colonization taxa; assesses horizontal and vertical transport, gradients and temporal distribution, all which will contribute to advanced multiscale models to predict fate and pathways.

An experienced research team from several countries and diverse backgrounds will study a wide geographical area of ecologic and economic relevance, including Brazil, France, Germany, Ireland, Italy, Spain and Sweden (including two regions of upwelling, which is a novelty). Efforts for a synergistic collaboration ensure successful achievement of scientific objectives. MicroplastiX will thus contribute to the UN Sustainable Development Goals towards healthy and sustainable marine ecosystems and its results will potentially serve as benchmark guidelines for future work on MPs dynamics in the Atlantic Ocean and Mediterranean Sea, while complying with European and international policies.

IP	Royal Institute of Technology (IKTH), Suecia
Socios	Suecia, Brasil, Francia, Alemania, Irlanda, Italia, España
Presupuesto	2.698.000 €
Concedido ES	146.000 €

PROYECTO 6 RESPONSE. Toward a risk-based assessment of microplastic pollution in marine ecosystems

RESPONSE integrates expertise on oceanography, environmental chemistry, ecotoxicology, experimental ecology and modelling to answer key research questions on fate and biological effects of microplastics (MPs) and nanoplastics (NPs) in marine ecosystems. Hydrological transport dynamics will identify possible accumulation zones in European coastal ecosystems, while characterization of vertical distribution of MPs and NPs in the water column and sediments will optimise practical monitoring and sampling efforts. Links between oceanographic conditions, environmental distribution of MPs and NPs, trophic transfer and impact on pelagic food webs and benthic communities will be addressed by analysing their abundance and typologies in representative marine species, as well as relevant ecosystem functions and services. Innovative mesocosm and laboratory studies will validate weighting factors and toxicological thresholds for MPs and NPs. The approach will assess the role of size, shape and other polymer characteristics in modulating biological effects of particles, both alone and in combination with other environmental stressors. A technological Smart Hub, combining complementary instrumental facilities and expertise of some partners and external companies, will support analytical needs of the consortium and further methodological developments. The overall aim of RESPONSE is to develop a quantitative Weight Of Evidence (WOE) model for MPs and NPs in the marine environment. The model will be designed to integrate and differentially weight data from a suite of lines of evidence, including (1) the presence of MPs and NPs in water column and sediments, (2) their bioavailability and bioaccumulation in key indicator species from benthic and planktonic communities (3) sublethal effects measured via biomarkers, (3) the onset of chronic adverse effects at the organism level, and (4) ecological functioning. The results will provide support for development of MSFD monitoring strategies.

IP	Polytechnic University of Marche - Ancona, Italia
Socios	Italia (Università Politecnica delle Marche), Estonia (TAL-TECH), Francia (Université de Bordeaux), España (Universida de Vigo), Dinamarca (Danmarks Tekniske Universitet), Portugal (Universidade do Algarve), Francia (Ifremer), Portugal (CIIMAR), Italia (CNR IAS), Noruega (Universitetet I Oslo), Suecia (Örebro Universitet), Alemania (Universität Meidelberg), Bélgica (Universiteit Antwerpen), Irlanda (University College Cork)
Presupuesto	2.633.000 €
Concedido ES	140.000 €

JPI OCEANS – Underwater Noise in the Marine Environment

La humanidad es ruidosa por naturaleza y el impacto del ruido en las sociedades humanas parece bien conocido. Con una conciencia cada vez mayor, nuestra sociedad (investigación científica, organizaciones no gubernamentales, formuladores de políticas y ciudadanos) reconoce el ruido antropogénico como un contaminante emergente y una amenaza para los ambientes subacuáticos. La contaminación acústica submarina impacta en la salud de las poblaciones de animales marinos y en la productividad biológica. El tema tiene un valor científico primordial, con gran relevancia para los marcos regulatorios nacionales y un impacto potencial significativo a través de la percepción pública.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número de convocatorias conjuntas internacionales: 2 (2021, 2022)

Participación de AEI en convocatorias conjuntas: 2 (2021, 2022)

CONVOCATORIA CONJUNTA 2022

Países participantes	Bélgica, Alemania, Irlanda, Italia, Noruega, Polonia, Rumania, España
Temáticas	Underwater Noise in the Marine Environment
Presupuesto total	8.200.000 €
Concedido ES	1.066.041 €
Proyectos aprobados	5
Proyectos con financiación AEI	4 (1 coordinado)

Nº	Acrónimo y título del proyecto	Países participantes
1	DIAPHONIA. Diagnostic framework to Assess and Predict the impact Of underwater Noise on mArine species	Italia, Noruega, España, Alemania
2	DeuteroNoise. Characterization of maritime noise in different European basins and its impact on ecological relevant deuterostome invertebrates	Italia, Rumania, España, Noruega
3	ORCHESTRA. ecOsystem Responses to Constant offshOrE Sound specTRA	Alemania, Italia, Bélgica, Irlanda
4	PURE WIND. Impact of sound on marine ecosystems from offshore wind energy generation	Noruega, España, Alemania, Italia, Irlanda, Bélgica, Polonia

- SONORA.**
- 5** Filling the gap: Thresholds assessment and impact beyond acoustic pressure level linked to emerging blue-growth activities **España, Italia**

CONVOCATORIA NACIONAL PCI 2022

PROYECTO 1 DIAPHONIA. Diagnostic framework to Assess and Predict the impact Of underwater Noise on mArine species

The project will develop a possible diagnostic fingerprinting composed of several tissue markers incorporating molecular, metabolomic and microscopic techniques to identify functional and morphological changes in the acoustic pathways of invertebrates, fishes and marine mammals. In addition, the project will explore the relationship between behavioural and cellular, molecular, organ effects of both short and long-term noise exposure in fish from different European ocean basins. DIAPHONIA will also gain insight into the morpho-functionality of the peripheral hearing apparatus in marine mammals and its role in defining the animal's acoustic sensitivity, by developing a standardised workflow for wave propagation in the associated tissues.

IP	University of Padua. Italia
Socios	Polytechnic University of Catalonia, BarcelonaTech (España), The Norwegian University of Science and Technology (Noruega), University of Veterinary Medicine Hannover, Foundation (Alemania)
Presupuesto total	1.368.804 €
Concedido ES	211.560 €

PROYECTO 2 DeuteroNoise. Characterization of maritime noise in different European basins and its impact on ecological relevant deuterostome invertebrates

Among noise sources, maritime traffic is of relevance on animal wellness, although its impact is little known in many European sea-basins. To date, there has been an almost exclusive focus on vertebrates, in which noise involves the mechanoreceptor cells of the ear and can cause hearing impairment or deafness. Homolog cells have been discovered in tunicates, marine invertebrates closely related to vertebrates, thus opening the question on their ability to sense and be affected by noise. Tunicate mechanoreceptors sense sound waves and particle movement and are predictable targets of noise pollution. DeuteroNoise aims to characterize the noise pollution caused by maritime traffic (also using simulations) in selected sites of the North Adriatic Sea, Lagoon of Venice, North Sea, Black Sea, and Barcelona shore, and test its effects on behavior, nervous system and sensory organs, immune system, and resilience in marine invertebrates closely related to vertebrates (deuterostomes): hemichordates, echinoderms, cephalochordates, and tunicates. These animals are common in European seas and cover different levels of the trophic network, from the holoplanktonmeroplankton to sessile or sedentary primary consumers. Noise level will be detected on site and simulated in the laboratory. A behavioral, morphological and genetic survey will be conducted on sampled animals living in polluted vs non-polluted areas. Moreover, animals will be exposed to noise in laboratory-controlled conditions to verify its effect on larval, juvenile and adult stages at individual level and over generations. Comparative studies will allow us to: highlight causes of noise pollution in the different basins; determine how species react to it; identify its genetic and morphological signatures; predict sensitivities in closely related animals that cannot easily be studied in laboratory or on-site; predict noise pollution and infer the best practices to reach the Good Environment Status of European basins.

IP	University of Padua. Italia
Socios	National Research And Development Institute For Marine Geology And Geoecology – GEOECOMAR (Rumania), Anton Dohrn Zoological Station (Italia), Ramon Llull University Foundation (España), University of Milan Bicocca (Italia), Barcelona University (España), University of Bergen (Noruega)
Presupuesto total	1.391.947 €
Concedido ES	267.279 € (Universidad de Barcelona 133.701 €), (Universitat Ramon Llull Fundacio Privada 133.578 €)

PROYECTO 4 PURE WIND. Impact of sound on marine ecosystems from offshore wind energy generation

Sounds from offshore wind farms (OWF) are among the main contributors of anthropogenic noise to the marine environment. Substantial effort has been expended on understanding possible impacts of noise resulting from the development stages of the OWF lifecycle. Despite 30 years of OWF operation in EU waters, our understanding of the impacts in the operational phase on marine ecosystems is limited. In this consortium, we aim to address this gap by expanding our knowledge of the radiated noise and the biological consequences of these operations and placing them in appropriate regulatory contexts, including provisions for adaptive mitigation advice. From the source and medium side, we will quantify key features of radiated noise from fixed and floating OWF, to increase understanding and simulate cumulative effect of clusters on radiated noise, helping us to identify sensitive habitats in cross-basin soundscapes. From the biological perspective, we will identify spatial and qualitative use of operating OWF by top predators and study the impacts of OWF noise on zooplankton behavior. These efforts will advance our knowledge of acute and cumulative effects of operational OWF noise across pelagic food webs. Harmonising and combining these two sides, we will develop knowledge and tools for integration of all aspects of noise production and propagation from operational OWF. This will facilitate assessment of planned OWF expansion for marine spatial planning and environmental impact. Finally, we will synthesise knowledge and best practices from EU and international experiences with fixed offshore wind installations and transfer this into the development of policy, mitigation, and regulation for the floating OWF within national, EU and international frameworks. With expected substantial expansion in OWF infrastructure globally as part of the green shift, our data and approaches will help facilitate this transition while minimizing impacts on the marine ecosystems.

IP	The Norwegian University of Science and Technology (Noruega)
Socios	Consortium for the design, construction, equipment and operation of the oceanic platform of the Canary Islands (España), Federal Maritime and Hydrographic Agency (Alemania), Gavin and Doherty Geosolutions (Irlanda), Royal Belgian Institute of Natural Sciences (Bélgica), Polytechnic University of Catalonia, BarcelonaTech (España), University of Genoa (Italia), University College Cork, National University of Ireland (Irlanda), University of Veterinary Medicine Hannover, Foundation (Alemania), Maritime Institute, Gdynia Maritime University (Polonia), National Research Council (Italia)
Presupuesto total	2.112.093 €

Concedido ES	267.279 € (Universidad de Las Palmas de Gran Canaria 94.710 €), (Consorcio para el diseño, la construcción, equipamiento y explotación Plataforma Oceanica de Canarias- PLOCAN 172.569 €)

PROYECTO 5 SONORA. Filling the gap: Thresholds assessment and impact beyond acoustic pressure level linked to emerging blue-growth activities

Emerging blue economy industries, such as marine aquaculture or seabed exploitation, have expanded in the last years. Adverse side effects associated with these activities should be considered to achieve sustainable blue growth in the future. Related activities, such as shipping, construction of marine infrastructures or seismic campaigns are causing a progressive and more rapid increase of noise levels in the marine environment. Despite the numerous studies conducted in recent decades on the impact of underwater noise on marine life, there is still a lack of knowledge and methodological procedures, and the results are often qualitative. The assessment of quantitative thresholds for behavioural and physiological impacts on fish will be addressed in the present proposal. Most marine organisms, and in particular fish, detect sound primarily using particle motion (PM). However, most of the performed studies addressed only pressure field effects. We propose to deepen the knowledge about the relationship between PM and acoustic pressure field to evaluate the impact of both variables on fish. Anthropogenic noise generated by ocean-based industries will be characterised numerically and experimentally. PM relationship with pressure will be evaluated in situations beyond free field, considering shallow waters and reverberant environments. Knowledge about sources and sound propagation is the key for developing methodologies to evaluate noise impact on marine ecosystems. We propose to investigate noise impact on fish in marine aquaculture facilities, both in indoor tanks and offshore aquaculture cages. Noise effects on commercial aquaculture fish species will be considered, focusing on physiological impacts on early development larval stage, where very few studies have been undertaken. Not only commercial species, but also surrounding wild ecosystems around the cages will be considered. Based on the results and the knowledge acquired, risk matrices will be developed.

IP	Universidad de Alicante. España
Socios	National Institute of Oceanography and Experimental Geophysics (Italia), Polytechnic University of Valencia (España), University of Palermo (Italia), University of Trieste (Italia)
Presupuesto total	801.195 €
Concedido ES	319.923 € (Universidad Politécnica de Valencia 160.638 €), (Universidad de Alicante 159.285 €)

JPI WATER – JPI Water challenges for a changing world

La Iniciativa de Programación conjunta ‘Water Challenges for a Changing World’ (the Water JPI) tiene como objetivo abordar el ambicioso desafío de "Lograr sistemas de agua sostenibles para una economía sostenible en Europa y en el extranjero".

Se han identificado desafíos específicos en los dominios económico, ecológico, social y tecnológico. Los objetivos abordan la necesidad de una mayor coordinación en la investigación, el desarrollo y la innovación europeos y abordan temas como la participación de los usuarios, el logro de objetivos en el uso coordinado de fondos y el progreso en la integración de las agendas y actividades de I+D+I. Las preguntas de investigación se reparten en cinco ejes:

- mantener la sostenibilidad del ecosistema;
- desarrollar sistemas de agua segura para los ciudadanos;
- promover la competitividad en la industria del agua;
- implementar una bio-economía basada en el uso inteligente del agua;
- cerrar la brecha del ciclo del agua.

Coordinador: España (MINECO)

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número de convocatorias conjuntas: 3 (2013, 2014, 2017)

Participación de MINECO en convocatorias conjuntas: 3 (2013, 2014, 2017)

CONVOCATORIA NACIONAL APCIN 2013

PROYECTO 1 METAWATER. New metagenomics and molecular based tools for European scale identification and control of emergent microbial contaminants in irrigation water

Irrigation water may be the source of microbiological contamination of fresh vegetables and has been associated to important food-borne epidemics of gastroenteritis, acute hepatitis and other important diseases. The proposed project will investigate what pathogenic microorganisms are contaminating irrigation water used in Europe, where are there they coming from, what treatments are more useful for removing microbial pathogens from reclaimed water and how to improve management of irrigation water and National and International regulations.

IP	Universidad de Barcelona, España
Socios	España (Universitat Rovira i Virgili, Universitat Politècnica de Valencia), Alemania (Bavarian Health and Food Safety Authority, Technische Universität München), Chipre (State General Laboratory of Cyprus), Dinamarca (Technical University of Denmark)
Concedido ES	248.000 € + 50.000 € + 100.000 € = 398.000 €

PROYECTO 2 MOTREM. Integrated processes for MOnitoring and TReatment of EMerging contaminants for water reuse

The MOTREM project focuses on the development of integrated processes for monitoring and treatment of emerging contaminants (ECs), improving the efficiency of the removal of these pollutants in urban wastewater treatment plants (WWTPs), especially for water reuse. For this goal, the project combines cross- and multi-disciplinary expertise on water treatment processes design and engineering, analytical chemistry and ecotoxicology applied to ECs that guarantee the generation not only on new scientific knowledge but also of innovative commercial solutions to the market.

IP	Universidad Rey Juan Carlos (URJC), España
Socios	España (FCC Aqualia S.A, Bruker Española), Alemania (Universität Stuttgart), Finlandia (University of Helsinki), Italia (Università di Torino)
Concedido ES	225.000 €

PROYECTO 3 PERSIST. Fate and PERSISTence of emerging contaminants and MRB in a continuum of surface water groundwater from the laboratory scale to the regional scale

The project aims to increase our knowledge on the behaviour of a selection of targeted pharmaceutical products and multi resistant bacteria in both surface water and groundwater bodies. The study will be carried out at two complementary hydrogeological field sites, in Spain, the Empordà basin, and in France, the Vistrenque basin, chosen for their complementarities.

IP	La Salle, University of Nîmes, Francia
Socios	España (Fundació Institut Català de Recerca de l' Aigua), Alemania (Helmholtz Zentrum München)
Concedido ES	136.000 €

PROYECTO 4 PROMOTE. PROtecting water resources from MObile TracE chemicals

PROMOTE focuses on persistent, mobile organic contaminants (PMOC). PMOC are highly polar compounds and as such likely to occur in the water cycle and in raw waters used for drinking water production. PROMOTE follows two strategies to identify and monitor PMOC: (a) developing and applying analytical methods for screening of water samples for PMOC and (b) selection and prioritization of candidate substances based on REACH data and developing analytical methods for their quantitative analysis.

IP	Helmholtz Centre for Environmental Research (UFZ), Alemania
Socios	Alemania (Fresenius University of Applied Sciences, Federal Environment Agency), España (Universidade de Santiago de Compostela), Francia (Institut de Chimie des Milieux et Matériaux de Poitiers), Noruega (Norwegian Geotechnical Institute), Países Bajos (University of Amsterdam)
Concedido ES	162.000 €

PROYECTO 5 StARE. Stopping Antibiotic Resistance Evolution

StARE will investigate a large number of European urban wastewater treatment plants (UWTPs) to evaluate ARB&G abundance versus chemical contamination and regional backgrounds. Guidelines for ARB&G (Antibiotic Resistant Bacteria & Genes) monitoring in water will be developed. The efficiency, impact and cost-effectiveness of advanced wastewater technologies will be evaluated, based on an innovative biological risk control strategy. This will integrate chemical and biological contaminants, such as priority hazardous substances, pathogenic bacteria and viruses, ARB&Gs, and mobile genetic elements.

IP	Universidade Católica Portuguesa, Portugal
Socios	Portugal (University of Aveiro), Finlandia (University of Helsinki), Chipre (Univesity of Cyprus), España (Fundació Institut Català de Recerca de l' Aigua, Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC) , Noruega (Norwegian School of Veterinary Science), Alemania (Technische Universität Dresden), Irlanda (National University of Ireland)
Concedido ES	115.000 € + 183.000 € = 298.000 €

PROYECTO 6 TRACE. Tracking and assessing the Risk from Antibiotic resistant genes using Chip technology in surface water Ecosystems

TRACE will develop detection technologies that allow for a simpler on-site detection of antibiotic resistance, thereby enabling a much higher throughput and faster result-to-user turnaround.

IP	Leibniz Institute of Photonic Technology Jena, Alemania
Socios	Alemania (Food GmbH Jena Analytik-Consulting Jena), Portugal (Universidade Nova de Lisboa), Irlanda (University College Dublin), Italia (Sapienza University of Rome), España (Fundació Institut Català de Recerca de l' Aigua)
Concedido ES	150.000 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2014 (COFINANCIADA POR LA UE)

En el marco de la ERA-Net COFUND WaterWorks 2014

Países participantes	
Temáticas	Research and Innovation for Developing Technological Solutions and Services: for Water Treatment, Reuse, Recycling and Desalination for Water Resources Management; Mitigate Impacts of Extreme Events (Floods and Droughts) at Catchment Scale.
Presupuesto total	11.350.000 €
Concedido ES	1.500.000 €
Proyectos aprobados	16
Proyectos financiados por AEI	12 (5 proyectos coordinados)

No.	Acrónimo y título del proyecto	Países participantes
1	ACWAPUR. Accelerated water purification during artificial recharge of aquifers - a tool to restore drinking water resources	Dinamarca, Italia, España, Suecia
2	Biorg4Waste WaterVal+ Bioorganic novel approaches for food processing waste water treatment and valorisation: Lupanine case study	Portugal, Chipre, Italia, España
3	DESERT. Low-cost water DEsalination and SEnsor Technology compact module	Italia, España, Bélgica
4	DOMINO. Dikes and Debris Flows Monitoring by Novel Optical Fiber Sensors	Italia, Países Bajos, España
5	IMDROFLOOD. Improving Drought and Flood Early Warning, Forecasting and Mitigation using real-time hydroclimatic indicators	España, Estonia, Moldavia, Portugal, Rumanía, Sudáfrica
6	INXCES. INnovations for eXtreme Climatic Events	Noruega, Suecia, Países Bajos, Rumanía
7	IRIDA. Innovative remote and ground sensors, data and tools into a decision support system for agriculture water management	España, Italia, Noruega, Rumanía
8	MEPROWARE. Novel methodology for the promotion of treated wastewater reuse for mediterranean crops improvement	Italia, Portugal, España
9	MUFFIN. Multi-Scale Urban Flood Forecasting: From Local Tailored Systems to a Pan-European Service	Suecia, Países Bajos, Finlandia
10	PROGNOS. Predicting In-Lake Responses to Change Using Near Real Time Models	Suecia, Irlanda, Dinamarca, Noruega, Israel
11	Pioneer_STP. The Potential of Innovative Technologies to Improve Sustainability of Sewage Treatment Plants	España, Dinamarca, Italia, Suecia
12	SIM. Smart irrigation from soil moisture forecast using satellite and hydro meteorological modelling	Italia, China, Países Bajos, España
13	STEEL STREAMS. Solid Transport Evaluation and Efficiency in Prevention: Sustainable Techniques of Rational Engineering and Advanced MethodS	Italia, Suecia, Portugal
14	TH.E.R.BIO.R. Thermal energy recovery from a novel sequencing batch biofilter granular reactor	España, Dinamarca, Italia
15	Watintech. Smart decentralized water management through a dynamic integration of technologies.	España, Dinamarca, Italia, Portugal
16	WE-NEED. WatEr NEEDs, availability, quality and sustainability	Italia, Israel, Portugal, España

CONVOCATORIA NACIONAL APCIN 2015 – 2

PROYECTO 1 ACWAPUR: Accelerated water purification during artificial recharge of aquifers - a tool to restore drinking water resources

Water is essential for life, not only for direct consumption, but also for sanitary requirements, and for agricultural and industrial production. Pure drinking water is a limited resource and the demand for water is increasing globally due to human population growth, increased wealth, and climate change. Development of efficient and cost-effective techniques for water purification and reuse is therefore urgent. Artificial recharge of aquifers is an often used technique to replenish deficient water resources. Water being insufficient for drinking water is infiltrated via basins or surface spreading through soils and aquifer sediment thereby improving the water quality. Although artificial recharge has been used for decades, the technique is often operated as a black box without knowledge of the microorganisms and the metabolic processes and pathways involved. ACWAPUR aims at developing techniques, steering tools and management guidelines to prevent leaching of pathogens, inorganic nutrients and organic pollutants to underlying aquifers during artificial recharge processes. This will be achieved by the construction of advanced treatment membranes with a porosity that prevent leaching of pathogens and at the same time provide optimal conditions for microbial degradation processes.

IP	Geological Survey of Denmark and Greenland, Dinamarca
Socios	España (Instituto de Diagnóstico Ambiental y Estudios del Agua, Universitat Politècnica de Catalunya (UPC)), Suecia (Swedish University of Agricultural Sciences (SLU)), Italia (Italian National Council of Research (CNR))
Concedido ES	110.000 € + 110.000 € = 220.000 €

PROYECTO 2 Biorg4WasteWaterVal+: Bioorganic novel approaches for food processing waste water treatment and valorisation: Lupanine case study

Processing industry uses a large volume of fresh water to deliver safe food for humanity, which is obtained from public water providers or ground and spring water sources. The resulting brackish wastewater is often disposed of in public sewers or using different suboptimal solutions. The food processing industry is comprised of several factories of small/medium size, calling for a modular technological solution able to be quickly implemented at the companies' site. In this project, novel separation processes using low energy and chemicals at low cost will be developed based on novel membrane processes and adsorbers capable of purifying the water for in-situ recycling at zero cost for the company.

IP	University of Lisbon, Portugal
Socios	Portugal (Associacao do Instituto Superior Tecnico para a Investigacao e Desenvolvimento (IST-ID/UL)), A Tremoceira Estrela da Piedade (TEP) Lda (SME), Italia (Politecnico di Milano (POLIMI)), España (Basque Centre for Macromolecular Design & Engineering (Basque Excellence Research Centre)), Chipre (Cyprus University of Technology)
Concedido ES	105.000 €

PROYECTO 3 DESERT: Low-cost water DESalination and SENsoR Technology compact module

Irrigated agriculture is the primary user of water in Europe and is a very competitive economic sector of the European Union. Almost the 46% of the region's population lives in places (almost nine European countries), which are water-stressed (EEA, 2009[1]). Moreover, in Europe also the problem of water quality degradation of surface and groundwater bodies has received great interest because of the excessive use of mineral fertilizers in agriculture (OECD, 2013[2]). The present project proposal, with participating partners from Italy, Spain and Belgium, addresses these issues and is in line with the topics of this call, by proposing an innovative water desalination and sensor technology compact module for continuously monitoring water quality and nutrient content. The effectiveness of these solutions will be tested by means of sustainability assessment, energy and cost efficiency of the system. DESERT technology, in order to contrast water scarcity and increase the water quality, looks for increase energy savings keeping part of the nutrients and using solar energy to treat the non- conventional water. The water value as a scarce resource will be evaluated by combining water characteristics, soil and climate features with environmental impacts and energy efficiency indicators in the crop-water function model.

IP	Università degli Studi di Bari Aldo Moro, Italia
Socios	España (Centro de Edafología y Biología Aplicada del Segura Agencia Estatal Consejo Superior de Investigaciones Científicas CEBAS-CSIC, Novedades Agrícolas S.A.), Bélgica (Univesité de Liège), Italia (Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria)
Concedido ES	115.000 €

PROYECTO 4 DOMINO: Dikes and Debris Flows Monitoring by Novel Optical Fiber Sensors

With more than 5 million people affected, more than 1000 killed, and with estimated total damages exceeding 4.5 billion Euros just in Europe and during the last decade, floods are among the most disruptive natural events threatening our Society. Due to increase in extreme weather events and rapid socio-economic developments in vulnerable locations, the risks connected to floods in general are growing rapidly, and the awareness of these risks and of the need to face them efficiently with an integrated approach is well testified in the "7th Environment Action Programme" of the EC. Strategies for adaptation and protection can range from reinforcing civil structures, such as dikes and drainage channels, to careful planning of land use and definition of apt evacuation plans; in any case, these strategies would strongly benefit from effective monitoring tools and early warning systems. In this perspective, project DOMINO aims at developing novel fiber optic sensors (FOS) for the monitoring of dikes and debris flows, that could eventually be used to prevent disasters and manage the related emergency. DOMINO will pursue this goal along two main research lines: the development of a distributed FOS for ground vibration measurement, to be employed in debris-flows monitoring, and the development of distributed and quasi-distributed FOSs for pressure measurement, to be employed mainly in the monitoring of dikes.

IP	University of Padova, Italia
Socios	Países Bajos (Delft University of Technology), España (Universidad de Alcalá) , Italia (National Research Council – Research, Institute for Geo-Hydrological Protection)
Concedido ES	125.000 €

PROYECTO 5 IMDROFLOOD: Improving Drought and Flood Early Warning, Forecasting and Mitigation using real-time hydroclimatic indicators

Strengthen drought and flood forecasting and early warning is essential to improve adaptation to climate change. Project plans different actions to improve the mitigation of the impact of droughts and floods at the catchment level. All these actions will be implemented in different catchments of Europe and South Africa, covering contrasted environmental conditions and specific problematic. IMDROFLOOD will make use of currently available information sources on meteorological, hydrological and remote sensing data to generate new information relevant for flood and drought risk management. New monitoring networks and Doppler radar images will be tested for the generation of more suitable and operative drought indices and the role of ecosystems and vegetation communities in the mitigation of the impact of floods and droughts will be assessed, while probabilistic flood forecasting systems will be developed, integrating all these tools to implement a powerful Early Warning System.

IP	Agencia Estatal Consejo Superior de Investigaciones Científicas CSIC, España
Socios	Portugal (Fundacao da Faculdade de Ciencias da Universidade de Lisboa (FFCUL), Sudáfrica (University of Cape Town), Rumanía (National Meteorological Administration), Estonia (University of Tartu), Moldavia (Research Institute of Field Crops "Selectia"), España (Farisa Asesores y Consultores S.L. (commercial name: MeteoGRID), Universidad de Vigo)
Concedido ES	200.000 € + 100.000 € = 300.000 €

PROYECTO 7 IRIDA: Innovative remote and ground sensors, data and tools into a decision support system for agriculture water management

Efficient agriculture water use is of crucial importance for water resources management. Consequently, accurately determining evapotranspiration (ET) is the first step for improving irrigation efficiency and productivity and for quantifying the ecosystem water balance. Several approaches for determining ET have been proposed in literature, but the relation between high and low spatial resolution methods still remains unresolved in irrigation studies and water management planning. The present proposal will create a mixed model where isolated actual ET and soil moisture measurements, obtained in the representative areas within a plot, can be correlated with actual ET results obtained by means of low-resolution methods. In this sense, the combination of on-the-ground high-resolution ET methods with the analysis of thermal and hyperspectral imagery provided by unmanned aerial vehicle (UAV/RPAS/UAS) (at plot scale), manned vehicles and satellites (at catchment scale) should ease the mixing performance and solve the upscaling. The proposal will integrate the methodologies and routines into a decision support system (DSS) that will serve to manage the large amount of inputs (Big Data Analysis) and to provide simple irrigation recommendation to the end-users.

IP	Centro de Edafología y Biología Aplicada del Segura Agencia, Estatal Consejo Superior de Investigaciones Científicas CEBAS-CSIC, España
Socios	España (Innovati Servicios Tecnológicos, SL, Agencia Estatal Consejo Superior de Investigaciones Científicas (IAS-CSIC), Italia (University of Catania, Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria), Rumanía (National Meteorological Administration), Noruega (NIBIO, Norwegian Institute of Bioeconomy Research)
Concedido ES	105.000 € + 210.000 € = 315.000 €

PROYECTO 8 MEPROWARE: Novel methodology for the promotion of treated wastewater reuse for mediterranean crops improvement

With the decreasing availability of fresh water resources, particularly for the agricultural sector, the use of treated wastewater has gained popularity over the last decades. Wastewater treatment and reuse have reached extremely high levels of technological advancement and flexibility, providing multipurpose uses of treated water ranging from safe restoration of natural water bodies up to drinking standards. The present proposal introduces an innovative methodological approach to treated wastewater reuse specifically addressing well-defined types of crops, agronomic practices, and water constraints that are typical of Mediterranean countries. The underlying idea is to provide evidence of the positive relationships between treated wastewater reuse and plants growth and crops productivity with specific reference to the Mediterranean. To obtain this, in a framework of water and nutrient use efficiency, reuse practices will be made more easily acceptable by stakeholders through their direct participation to the implementation of the proposed methodology.

IP	IRSA CNR, Water Research Institute-National Research Council, Italia
Socios	Italia (CIHEAM-IAMB, Centre International de Hautes Etudes Agronomiques Mediterraneennes - Istituto Agronomico Mediterraneo di Bari), Portugal (University of Lisbon) España (Universidad de Castilla-La Mancha)
Concedido ES	110.000 €

PROYECTO 11 Pioneer_STP: The Potential of Innovative Technologies to Improve Sustainability of Sewage Treatment Plants

Pioneer_STP addresses the challenges related to wastewater treatment (WWT) from a holistic perspective. Concepts such as resource recovery, sludge management, energy balance optimization, new effluent quality requirements (Emerging Pollutants, EP) and emission of greenhouse gases (GHGs) are compulsory to drive the European water sector to be more innovative, productive and competitive. The project aims at assessing the impact of the integration of (4) innovative Unit Technological Solutions (UTS) (comprising in total 9 technologies), nowadays developed at lab- or pilot-scale, targeted to energy recovery and nutrients removal/recovery, into a Sewage Treatment Plant (STP). Each UTS will be characterised not only in terms of efficiency but also concerning their environmental (LCA, Risk), economic (LCC) and energetic impacts.

IP	Universidad de Santiago de Compostela, España
Socios	Italia (University of Verona), Dinamarca (Technical University of Denmark), Suecia (Royal Institute of Technology), España (FCC Aqualia)
Concedido ES	220.000 €

PROYECTO 12 SIM: Smart irrigation from soil moisture forecast using nd Hydro-Meteorological Modelling

The work aims at developing an operational tool for real-time forecast of irrigation water requirements to support parsimonious water management in case of actual or forecasted drought period. The system will be a prototype version of a World Wide Web platform (smart device), that will support users in parsimonious irrigation water management from basin authority to single farm. In particular in water limited period: i) farmers to maintain soil moisture in an optimum value interval allowing water saving and reducing plant stress, ii) irrigation consortiums to manage the water among users, according to the actual and forecasted water need; iii) water authorities to manage at basin scale the water withdraw of reservoirs respect to the actual and forecasted water request, and quantitative meteorological forecast. The system combines satellite monitoring of soil moisture and of evaporative fluxes, quantitative meteorological forecast and detailed distributed hydrological modelling of soil water balance and crop water needs. It provides real-time and forecasted soil moisture behavior at high spatial and temporal resolutions (from 10 m to 250 m, from 1 hour to daily) with forecast horizons from few up to fifteen days. This compared to water stress thresholds defined for each specific crop and its growth stage will determine the correct timing of irrigation and the amount of water. Economic impacts at basin scale of the developed technology will be evaluated starting from single farm to larger irrigation districts considering not only the role of water and energy saved in financial terms based on the local cost of the water and crop production, but also the environmental benefit due to a parsimonious use of the water.

IP	Politecnico di Milano, Italia
Socios	Italia (Università della Tuscia, Modellistica e monitoraggio idrologico, Meteo Operations Italia - Centro Epson Meteo), Países Bajos (Delft University of Technology), China (RADI-CAS), España (Universidad de las Islas Baleares, Universidad de Valencia)
Concedido ES	115.000 € + 115.000 € = 230.000 €

PROYECTO 14 H.E.R.BIO.R: Thermal energy recovery from a novel sequencing batch biofilter granular reactor

THERBIOR focuses on the development, implementation and diffusion of technologies to improve energy efficiency in wastewater treatment plants (WWTPs) using a fully off-grid solar-assisted heat pump (SHP) system, applicable Europe-wide but centred on the Mediterranean region. The THERBIOR project aims to provide solution for the tourism sector, which is characterised by intense seasonal water demand and wastewater discharge. The integration of physical infrastructure such as a highly efficient tubular heat exchanger coupled to a fully off-grid reversible watersource heat pump with a pioneering, novel Sequencing Batch Biofilter Granular Reactor (SBBGR) already installed in the Water Research Institute (CNR-IRSA, Italy), which creates new value through reuse and repurposing. This technology may help to produce benefits for local populations in the form

of wastewater management, giving people access to clean water, and thus contributing to societal well-being through better human health as a result of better water quality. Projections for future climate change point to increasing resource depletion and water scarcity, which will have a serious socio-economic and environmental impact.

IP	Universidad de Almería, España
Socios	Dinamarca (2.0.-LCA Consultants), España (Hedera Helix Ingeniería y Biotecnología S.L.), Italia (CNR-IRSA National Research Council- Water Research Institute)
Concedido ES	170.000 €

PROYECTO 15 Watintech: Smart decentralized water management through a dynamic integration of technologies

The project proposes a combination of concepts of sewer mining with urban run-off treatment in decentralized treatment facilities to enhance the recovery of valuable resources including water, methane (heat, energy) and value-added chemicals, either extracting or producing them from the fluxes inside a sewage pipe. It is also postulated that this combination improves the management of centralized wastewater infrastructures under variable weather events (such as heavy rain episodes combined with long dry periods). The impact of sewer mining and wastewater characteristics on downstream wastewater treatment plants (WWTP) will also be analysed. In an ideal scenario, besides generating the value-added products for local reuse, decentralized treatment will also impact positively on the existing centralized sewage collection and treatment facilities, an aspect rarely taken into account in the design of decentralized infrastructure.

IP	Catalan Institute for Water Research ICRA, España
Socios	España (ACCIONA Agua S.A.), Italia (Universita' di Catania (UNICT), Dinamarca (Technical University of Denmark (DTU), Portugal (NOVA.ID.FCT Universidade Nova de Lisboa)
Concedido ES	220.000 €

PROYECTO 16 WE-NEED: WatEr NEEDs, availability, quality and sustainability

Groundwater (GW) is a major source of water supply in Europe. This natural resource is endangered by several factors, such as improper water management policies, including over-exploitation, and contamination by anthropogenic activities. Ignoring the profound consequences of GW depletion and quality deterioration is the foundation on which unsustainable water policies are built. The goal of this project is to develop new management strategies to assist in the sustainable use of two key components of the GW resource: pumping wells, used to obtain water for drinking purposes, and natural springs, typically employed for crop irrigation as well as for recreational use. We ground our activities on observations linked to two field sites in Italy. These sites are archetypal of two distinct realities and can be considered representative of diverse environmental settings and conditions of Europe-wide interest. As such, key features of our approach and techniques are resilience and adaptability, so that the approach can be readily adapted and employed in other European aquifer systems. We will (i) build conceptual models to describe groundwater system functioning under the influence of uncertain parameters and processes defined at diverse spatial-temporal scales; (ii)

characterize the fate of emerging contaminants (ECs) such as pharmaceuticals, personal care products and engineered nanomaterials, as well as agricultural and industrial chemicals, in aquifers and the way they may threaten the quality of GW; and (iii) quantify the effect of multiple sources of uncertainty on sustainable management and protection of groundwater, here including hydrogeological settings, well abstraction rates, sources of contamination, anthropogenic actions, EC loads, natural attenuation processes, spatial and temporal distribution of redox conditions and ecotoxicological concerns.

IP	Politecnico di Milano Italy, Italia
Socios	Israel (Weizmann Institute of Science), Portugal (Universidade de Aveiro), España (Universitat Politècnica de Catalunya)
Concedido ES	110.000 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2016

“Sustainable Management Of Water Resources In Agriculture, Forestry And Freshwater Aquaculture Sectors”

En el marco de la ERA-Net COFUND WaterWorks 2015

Países participantes	Bélgica, Canadá, Chipre, Dinamarca, Egipto, Finlandia, Francia, Alemania, Irlanda, Italia, Moldavia, Países Bajos, Noruega, Polonia, Portugal, Rumanía, Sudáfrica, España (CDTI, MINECO), Suecia, Taiwán, Túnez, Turquía
Temáticas	1. Increasing the efficiency and resilience of water uses 2. Monitoring and reducing soil and water pollution 3. Integrating social and economic dimensions into the sustainable management and governance of water resources
Presupuesto total	16.754.924 €
Concedido ES	1.178.213 €
Proyectos aprobados	21
Proyectos con MINECO/AEI	8 (3 coordinados)

Nº	Acrónimo y título del proyecto	Países participantes
1	ABAWARE. Advanced biotechnology for intensive – freshwater aquaculture wastewater reuse	Noruega, Alemania, Finlandia, Irlanda, Rumanía, Suecia
2	AgriAs. Evaluation and management of As contamination in agricultural water and soil	Finlandia, Alemania, Francia, Suecia
3	AGRINuPeS¹ Integrated monitoring and control of water, nutrients and plant protection products towards a sustainable agricultural sector	Portugal, España, Países Bajos, Suecia, Turquía

4	AgWIT. Agricultural Water Innovations in the Tropics	Canadá, Alemania, Costa Rica, Brasil, Dinamarca, Suecia, Taiwán
5	AquaVal. Valorisation of water use in aquaculture using multi trophic systems	Portugal, España, Italia
6	AWARE. Assessing the fate of pesticides and wastewater-borne contaminants in agricultural crops and their environmental risks	España, Alemania, Francia, Noruega
7	CLEARANCE. Circular Economy Approach to River pollution by Agricultural Nutrients with use of Carbon-storing Ecosystems	Polonia, Alemania, Dinamarca
8	ECOSAFEFARMING. Development and testing of a novel photocatalytic system for efficient cogeneration of clean water and hydrogen for ecosafe agriculture	Turquía, Alemania, Canadá, España
9	Eutro-Sed. Eutrophication hotspots resulting from biogeochemical transformations and bioavailability of phosphorus in the fluvial suspended sediment of geologically contrasting agricultural catchments	Irlanda, Canadá, Suecia,
10	FORWARD. Operational monitoring and Forecasting system for Resilience of agriculture and forestry under intensification of the WateR cycle: a bid Data approach	España, Bélgica, Dinamarca
11	IMPASSE. Impacts of MicroPlastics in AgroSystems and Stream Environments	Noruega, Canadá, España, Países Bajos, Suecia
12	INNOMED. Innovative options for Integrated Water Resources Management in the Mediterranean	España, Chipre, Francia, Italia, Moldavia, Portugal
13	LEAP. Legacies of Agricultural Pollutants (LEAP): Integrated Assessment of Biophysical and Socioeconomic Controls on Water Quality in Agroecosystems	Canadá, Dinamarca, Portugal, Suecia
14	OPERA. Operationalizing the increase of water use efficiency and resilience in irrigation	Países Bajos, Sudáfrica, Francia, Italia, Polonia, España
15	POTENTIAL. Variable rate irrigation and nitrogen fertilization in Potato; engage the spatial variation	Bélgica, Alemania, Dinamarca, Países Bajos
16	ProWsper. How to PROtect Water, Soil and Plants production all together	Rumanía, Francia, Portugal
17	REWATER. Sustainable and safe water management in agriculture: Increasing the efficiency of water reuse for crop growth while protecting ecosystems, services and citizens' welfare	Portugal, Rumanía, España, Suecia
18	SMARTECOPONICS. On-site microbial sensing for minimising environmental risks from aquaponics to human health	España, Francia, Italia

SOSTPRO.

19	S ource S Tream (headwater) P ROtection from forest practices: what are the costs and benefits, and how best to do it?	Canadá, Finlandia, Suecia
20	Water4ever. Optimizing water use in agriculture to preserve soil and water resources	Portugal, España, Italia, Turquía
21	WaterFARMING. Improvement of water and nutrient retention and use efficiency in arable farming systems from field to catchment scale in Europe and North Africa	Dinamarca, Alemania, Egipto, Países Bajos, Túnez

CONVOCATORIA APCIN 2017

PROYECTO 5 AquaVal. Valorisation of water use in aquaculture using multi trophic systems

AquaVal is framed in the subtopic in Challenge I the "water reuse and water recycling technologies in the agriculture and freshwater aquaculture sectors", with clear relation to other challenges and subtopics and the European Strategy on Bioeconomy. AquaVal aims to the development of technological solutions for the treatment of water used in freshwater aquaculture facilities. The technological solutions will be combined to comprise a full treatment system, to remove pollutants and valorise effluents following the circular economy precepts. Treated water will be obtained with quality for recycling/reuse to the producing facility or discharge into natural water sources. This system will include the application of biological treatment technologies where biomass is grown in the form of granules and enriched in microbial populations able to remove nutrients and micropollutants. Application of new processes, which are less energy requiring, will be evaluated.

IP	Universidade Católica Portuguesa-UCP, Portugal
Socios	España (Universidade de Santiago de Compostela , Grupo Tres Mares S.A.- GTM), Italia (University of Torino)
Concedido ES	129.852 €

PROYECTO 6 AWARE. Assessing the fate of pesticides and wastewater-borne contaminants in agricultural crops and their environmental risks

The AWARE project aims to investigate the fate and potential reduction of pesticides and wastewater-borne contaminants in soil/plants from agricultural crops. Moreover, in the AWARE project we will evaluate environmental risks in agricultural fields due to the use of pesticides and the irrigation practices involving reused wastewater. Both pollution sources may have some inherent risks associated to food production.

IP	Instituto de Diagnóstico Ambiental y Estudios del Agua del Consejo Superior de Investigaciones Científicas (IDAEA-CSIC), España
Socios	Alemania (Helmholtz Zentrum München GmbH (HGMU)), Francia (Institut National de la Recherche UMR Agroécologie, Dijon (UM-HSM, INRA), Noruega (Norwegian Institute of Bioeconomy Research (NIBIO))
Concedido ES	222.770 €

PROYECTO 8 ECOSAFEFARMING. Development and testing of a novel photocatalytic system for efficient cogeneration of clean water and hydrogen for ecosafe agriculture

This project aims to bring a solution to water and energy issues by achieving an optimized and energy free disinfection of urban wastewater using novel solar assisted-treatment technologies for production of safe food and clean energy with reduced water footprint.

IP	Istanbul University (IU), Turquía
Socios	Turquía (MIR Arastirma ve Gelistirme A.S. (MIR), Alemania (Brandenburg University of Technology (BUT), Canadá (University of Ontario Institute of Technology (UOIT), España (Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas – Plataforma Solar de Almería (CIEMAT-PSA)
Concedido ES	111.780 €

PROYECTO 11 IMPASSE. Impacts of MicroPlastics in AgroSystems and Stream Environments

In IMPASSE, we propose to develop and communicate new understanding of MP behavior in agrosystems which is urgently needed to avoid the potential of serious and long lasting environmental contamination. The highly interdisciplinary project includes risk communication, stakeholder engagement, ecotoxicology, catchment modelling, decision support tools, monitoring and experimental work needed to understand and then minimize threats associated with MPs in agrosystems.

IMPASSE will contribute substantially to an avoidance of current and future pollution in soils and waters in agricultural landscapes and develop guidance on how drainage management may influence MP mobility.

IP	Norwegian Institute for Water Research (NIVA), Noruega
Socios	Canadá (Trent University, Winsor University), España (IMDEA Agua), Países Bajos (Vrije University Amsterdam), Suecia (Swedish University of Agriculture)
Concedido ES	135.000 €

PROYECTO 12 INNOMED. Innovative options for Integrated Water Resources Management in the Mediterranean

The main goal of INNOMED is to develop and apply a multidisciplinary approach to quantify the physical and economic effects of alternative management options in forestry and agriculture on the catchment's water balance, in order to ensure efficient water use systems and practices in both sectors and to promote sustainable water management solutions at the catchment level.

IP	Consejo Superior de Investigaciones Científicas (EEAD-CSIC), España
Socios	Chipre (The Cyprus Institute, CYI), Francia (Centre International de Recherche sur l'Environnement et le Développement, CIRAD-UMR-CIRED), Italia (National

	Research Council, CNR-ISAFOM, Politecnico di Milano, POLIMI), Moldavia (RIFC), Portugal (Research Institute of Field Crops 'Selectia', RIFCNOVA.ID.FCT)
Concedido ES	179.523 €

PROYECTO 14 OPERA. Operationalizing the increase of water use efficiency and resilience in irrigation

OPERA aims to bring advances from remote sensing, soil moisture monitoring and forecasting rapidly towards implementation and commercialization. A series of case studies demanding precision irrigation, increased water use efficiency and resilience are used to research the practitioner needs, ways to increase the robustness of information supply, alternative crops, and concrete local barriers that had prevented the transfer of research results into the farmer and water manager practice. While water scarcity and the urgency to increase water use efficiency is the common nominator at all sites, the case studies will offer the access to different types of irrigation systems under different climatic conditions. In contrary to technological driven research projects, OPERA will apply a transdisciplinary approach to identify jointly (i) the user demands of farmers, farmer associations, extension services as well as water management organization, (ii) best possible combinations of information technologies and (iii) innovative service models to realize a practical transition towards an increased use of precision irrigation in practice. In this way the project contributes to optimal watering strategies and water saving, increase of agricultural productivity (tuning water supply to demand) and farm competitiveness in the agricultural market, and contributes to the creation of “green” job opportunities and economic growth for the EU and the associated international countries.

IP	Wageningen Environmental Research (Alterra), Países Bajos
Socios	Sudáfrica (Stellenbosch University (SU)), España (Evenor Tech (Evenor), Instituto de Recursos Naturales y Agrobiología de Sevilla (IRNAS – CSIC), Francia (French National Institute for Agricultural Research (INRA – EMMAH), Italia (University of Florence (UNIFI – DISPAA), Council for Agricultural Research & Analysis of Agricultural Economics (CREA), Polonia (Institute of Technology and Life Sciences (ITP))
Concedido ES	130.188 €

PROYECTO 18 SMARTECOPONICS. On-site microbial sensing for minimising environmental risks from aquaponics to human health

The main objective of SMARTECOPONICS is the design and development of a novel approach for monitoring the main biological hazards affecting consumers of aquatic foods. This includes pathogens (coliforms and cyanobacteria) and biotoxins that, when consumed in excess of threshold quantities, can lead to illness. The proposal offers a complete solution to monitor microbiological species involved into maintain the equilibrium among microbial activity, nutrients and wastes along the value chain of aquaponics regards human health risks. Some aspects regard this equilibrium like reduction new water make-up consumption, could increase bacterial concentration, and this risk have to be minimised.

IP	Instituto de Microelectrónica de Barcelona (IMB-CNM-CSIC), España

Socios	España (Waterologies SL), Francia (INRA - Pisciculture Expérimentale INRA des Monts d'Arrée), Italia (CONSIGLIO NAZIONALE DELLE RICERCHE CNR-IREA)
Concedido ES	179.100 €

PROYECTO 20 Water4ever. Optimizing water use in agriculture to preserve soil and water resources

The project builds on three basic statements (1) diffuse agriculture pollution is an extra cost for farmers that needs to be minimized; (2) plot scale monitoring can be achieved using low cost sensors and remote sensing; and (3) models are the interdisciplinary tools required to optimise irrigation and fertilization practices and to link spatial and temporal scales. The consortium was built by grouping teams from various disciplines with experience and tools on the various subjects to be addressed in the project. Every team will carry new developments, but at the beginning of the project the consortium they will have all sensors and models necessary to set up the experiments, which will then be improved based on partners' experiences and following a multidisciplinary approach.

IP	Instituto Superior Técnico (IST), Portugal
Socios	Portugal (Deimos, INESC TEC), España (isardSAT, Universidad Politécnica de Cartagena (UPCT), Italia (Istituto per le Macchine Agricole e Movimento Terra (IMAMOTER), Turquía (AIBU)
Concedido ES	90.000 €

WaterWorks - Water Works 2018-2022 in Support of the Water JPI (WaterWorks2017) and of the EC Call SC5-33-2017: Closing the water cycle gap

La nueva ERA-NET Cofund Water Works 2017 nace en el marco de la Iniciativa de Programación Conjunta del Agua (Water JPI), con la misión de promover la cooperación internacional y movilizar recursos dentro y fuera de Europa, para afrontar los retos prioritarios asociados al agua y contribuir a la consecución de los Objetivos de Desarrollo Sostenible (ODS) del agua (ODS6) y el clima (ODS13), dentro de la Agenda 2030 de Naciones Unidas.

Water Works 2017 se enmarca en el reto 5 del Programa H2020 de la UE, en concreto en la temática SC5-33-2017, "Cerrando el Ciclo del Agua", cuya ambición radica en lograr implementar la temática 5 de la Agenda Estratégica de Investigación (SRIA) de la Water JPI. La misión de esta iniciativa consiste en reconciliar el suministro y demanda de recursos hídricos, en términos tanto de calidad como de cantidad, y en todas las escalas espaciales y temporales.

Con una destacable dimensión internacional, Water Works 2017 reunirá a un compendio de 20 agencias de financiación de 18 países/regiones de Europa, África y América, con el objetivo principal de lanzar una convocatoria conjunta, cofinanciada por la UE, para promover proyectos transnacionales de I+D, en la esfera del uso sostenible y eficiente de los recursos hídricos, cerrando el ciclo entre la oferta y la demanda. Esta iniciativa se convierte en una oportunidad para impulsar actividades de cooperación internacional y transferencia del conocimiento, que contribuyan a reducir la fragmentación de la I+D, estrechar los lazos y sinergias entre programas nacionales y avanzar en la implementación de la Agenda Estratégica de la Water JPI.

CONVOCATORIA CONJUNTA 2018

Países participantes	Francia, Bélgica, Brasil, Chipre, Egipto, España (CDTI y AEI-MINECO), Estonia, Finlandia, Francia, Países Bajos, Irlanda, Israel, Italia, Noruega, Polonia, Rumanía, Sudáfrica, Suecia, Túnez
Temáticas:	1. Enabling sustainable management of water resources 2. Strengthening socio-economic approaches to water management 3. Supporting tools for sustainable integrative management of water resources
Presupuesto total	15.200.000 € (incluyendo financiación de la UE)
Presupuesto ES	600.000 €
Proyectos aprobados	18
Proyectos con financiación AEI	6

Nº	Acrónimo y título del proyecto	Países participantes
1	ATeNaS. To ally technology, nature and society for integrated urban water management	Polonia, Finlandia, Francia
2	BLOOWATER. Supporting tools for the integrated management of drinking water reservoirs contaminated by Cyanobacteria and Cyanotoxins	Italia, Noruega, Suecia
3	EnTruGo. Enhancing Trust in government through effective water Governance strategies	Países Bajos, Noruega, Sudáfrica, Suecia
4	EviBAN. Evidence based assessment of NWRM for sustainable water management	Noruega, Finlandia, Francia, Sudáfrica
5	FLUXMED. Strategies for increasing the water use efficiency of semi-arid Mediterranean agrosilvopastoral systems under climate change	Italia, Chipre, Egipto, Francia, Túnez
6	iAqueduct. An integrative information aqueduct to close the gaps between global satellite observation of water cycle and local sustainable management of water resources	Países Bajos, Israel, Italia, Suecia, España
7	IN-WOP. Mind the Water Cycle Gap: Innovating Water Management Optimisation Practice	Países Bajos, Francia, Italia, Túnez
8	MARadentro. Managed Aquifer Recharge: Assessing the Risks of Recharging Regenerated Water	España, Francia, Italia, Suecia
9	NATWIP. Nature Based Solutions for Sustainable and Resilient Water Management in the Anthropocene	Suecia, Noruega, Polonia, Sudáfrica, España, Brasil
10	NEWTS. Nudges for Economics of Water Tariffs	Francia, Sudáfrica, España, Túnez
11	RainSolution. Research-based Assessment of Integrated approaches to Nature-Based solutions	Suecia, Brasil, Estonia, Irlanda, Países Bajos, Noruega, Rumanía
12	RECOWATDIG. Sustainable technology for the staged recovery of an water from of high moisture fermentation products	Polonia, Países Bajos, Suecia
13	REFORM WATER. Reducing the effects of forest management on inland waters	Finlandia, Estonia, Irlanda, Suecia
14	Sense and Purify Spy. Combining remote sensing with in-situ sensing to track the spatial and temporal in fresh and transitional waters	Irlanda, Francia, Irlanda, Sudáfrica, España
15	SIMTWIST. Simulating tourism water consumption with stakeholders	Países Bajos, Italia, España
16	URBANWAT. Tools and criteria for URBAN groundWATER management	España, Francia, Países Bajos

17	WaterHarmony. Closing the Water Cycle Gap With Harmonised Actions for Sustainable Management of Water Resources	Noruega, Israel, Países Bajos, Polonia, Rumanía, España, Suecia
18	WATERPEAT. Water management for sustainable use and protection of peatlands	Finlandia, Irlanda, Noruega

CONVOCATORIA NACIONAL: APCIN 2019

PROYECTO 6 iAqueduct. An integrative information aqueduct to close the gaps between global satellite observation of water cycle and local sustainable management of water resources

An integrative information aqueduct (iAqueduct) is proposed to close the gaps between global satellite observation of water cycle and local needs of information for sustainable management of water resources. In the past decades, various satellite missions have been developed to monitor the global water cycle, in particular the variables related to precipitation, evapotranspiration and soil moisture, often at (tens of) kilometre scales of spatial resolution. Whilst these data are highly effective to characterise water cycle variation on regional to global scale, they are not suitable for sustainable management of water resource, which always needs more detailed information on local (e.g. in terms of information provided by an in-situ sensor, e.g. a TDR for soil moisture or a piezometer for groundwater level) and field scale. To effectively exploit existing knowledge at different scales we thus need to answer the following questions: How to downscale the global water cycle products to local scale? How to convert the coarse resolution data into fine scale water information at the management scale for water, vegetation and soil processes? And how to use such fine-scale water information to improve the management of soil and water resources? The envisioned iAqueduct aims to accomplish these goals combining EC/ESA Copernicus satellite data (with intermediate resolution) with high resolution Unmanned Aerial System (UAS) and in-situ observations to develop scaling functions for soil properties and soil moisture and evapotranspiration at meter scales. iAqueduct will integrate the various components from the global water cycle observation to local soil and water states in an open-source water information system and test and demonstrate their utility on pan-European scale at a set of carefully selected research sites for sustainable management of water resources. iAqueduct complements the actions developed under the European Strategy Forum for Research Infrastructures (ESFRI) by coordinating a set of European research groups and sites allowing the scaling up to pan-European level under the aegis of the COST action Harmonization of UAS techniques for agricultural and natural ecosystems monitoring (HARMONIOUS) in which 70 institutions from 32 countries participate.

IP	University of Twente, Países Bajos
Socios	Israel (Tel Aviv University), Italia (Università degli Studi della Basilicata, University of Naples Federico II), Suecia (Swedish University of Agricultural Sciences), España (Universitat Politècnica de València)
Presupuesto total	€
Concedido ES	147.000 €

PROYECTO 8 MARadentro. Managed Aquifer Recharge: Assessing the Risks of Recharging Regenerated Water

Severe shortage in good quality water reserves is a global problem that will increase with a growing world population. Managed Aquifer Recharge (MAR) will contribute to replenish depleted aquifers and restore ecological services in fresh water ecosystems. However, risks associated to the occurrence of pathogens and anthropogenic emerging pollutants in groundwater have led to question the reuse of reclaimed water for MAR. MARadentro aims to assess and minimize these risks, and to increase the benefits of MAR guaranteeing human health and environment protection through the development of affordable and effective permeable reactive layers. These integrate biotic and abiotic processes to enhance pathogen retention and inactivation and pollutant adsorption and degradation by making available a broad range of sorption sites and a sequence of redox states. The applicability of the proposed MAR layers will be validated by upscaling from lab and pilot experiments to field scale studies. Transport modelling, risk assessment, economic balance and establishment of recommendations to stakeholders and authorities in the water sector will guarantee the smooth implementation of this MAR concept and the positive public response to water reuse. The transfer of the knowledge gathered in MARadentro to policy makers will help in EU regulation on MAR.

IP	Instituto de Diagnóstico Ambiental y Estudios del Agua-Agencia Estatal Consejo Superior de Investigaciones Científicas (IDAEA-CSIC), España
Socios	Francia (HydroSciences Montpellier CNRS), Italia (Centre Nationale pour le Recherche), España (Universidad Politécnica de Cataluña, Aqualia Gestion Integral del Agua SA) , Suecia (Swedish University of Agricultural Sciences)
Concedido ES	149.090 € + 100.000 € = 249.090 €

PROYECTO 9 NATWIP. Nature Based Solutions for Sustainable and Resilient Water Management in the Anthropocene

The project "Nature Based Solutions for Water Management in the Periurban" aims to contribute to closing the water cycle gap by exploring the potentials that Nature Based Solutions (NBS) offer to address water management challenges in landscape areas that have been neglected because they lie in the transition zones between the urban and the rural, hereby referred to as periurban areas. The main objective is to exchange learning experiences among the partnership and promote the debate between science and society in order to increase awareness among practitioners and users on the application of NBS to manage water scarcity, pollution, and risks related to extreme hydrological events. There are 4 project sub-objectives which will be reached through four workpackages (WPs) aiming at (1) review of international experiences, (2) establish methodological framework to assess NBS, (3) apply the framework at each of the case study sites, and (4) create a common narrative. Besides, a fifth workpackage will be responsible for project management and communication. NATWIP aims to progress beyond the state of the art where the question of closing the water cycle gap is restricted to urban cores, ignoring the specificities of the peri-urban areas. The innovativeness of the project lies in developing an integrated methodological framework for assessing nature-based solutions for water in the peri-urban, developing a 'best practices' guidebook for promoting adoption of NBS, and in general, building and sharing knowledge on the potential of NBSs for water in the peri-urban spaces. The project will include case study sites in Norway, Sweden, Spain, Poland, South Africa, India and Brazil

where the project partners have established contacts. The project is expected to contribute to themes 2 and 3 of the call.

IP	Royal Institute of Technology, Suecia
Socios	Noruega (Norwegian Geotechnical Institute), Polonia (University of Agriculture in Krakow), Sudáfrica (Stellenbosch University), España (Universitat Politècnica de Catalunya) , Brasil (Centre for Conservation & Sustainability Science, Pontifical Catholic University of Rio de Janeiro)
Concedido ES	82.500 €

PROYECTO 10 NEWTS. Nudges for Economics of Water Tariffs

The project aims to provide a socio-economic assessment of green nudging policies, focusing on water consumption controlling and/or proper understanding by the households of the charging system, taking into account adjustments in pricing policy that nudges, by their effects on water demand functions, may generate. From an operational point of view, it consists in developing a microsimulation model, based on econometric estimates of household water demand, to assess socio-economic returns of mix policies, combining nudges and pricing instruments, and identify financially sustainable DSM policies that improve existing pricing of water. The effects of nudges on household water consumptions are examined through the realization of controlled experiments, in laboratory and in the field. Controlled field experiments are deployed on a large scale in Gijón (Spain), Saint Paul (Reunion Island - France) and Sfax (Tunisia). Econometric estimation of residential water demand is carried out to measure basic needs of the households, price-sensitivity of demand and perceived prices of water, and to infer the effects of behavioural interventions on these factors. Using a broad set of appropriate indicators to measure affordability, incentive efficiency and distributional effects, cost-benefit analysis are conducted to infer the effects of nudges on the socio-economic performance of the existing pricing system (that may be improved) and propose optimal policies, according to well-defined decision criteria for local public decision-makers, in various frameworks. These methodologies articulate to construct a decision support model that will be posted on line, with an evaluation software package on a web platform.

IP	University of La Réunion, Francia
Socios	Francia (Laboratoire d'Economie Appliquée de Grenoble, Centre de Recherche en Economie et Management, Groupe de Recherche Angevin en Economie et Management), Sudáfrica (Economics Policy Research Unit), España (Universidad de Oviedo) , Túnez (Laboratory for Research in Quantitative Development Economics)
Concedido ES	147.400 €

PROYECTO 15 SIMTWIST. Simulating tourism water consumption with stakeholders

Tourism tends to be concentrated in warm and dry regions and seasons, competing with local populations, nature, agriculture and other sectors for scarce water resources. Tourism water use has long been overlooked, but has gained (renewed) interest as a result of the realities of climate change. In many tourism destinations, a sustainable water system is untenable without a central role for tourism. The proposal's ultimate aim is to inform public and private decision-makers in

tourism on the effectiveness of measures to increase water efficiency and reduce water consumption. The proposal takes a systemic and stakeholder-centred look at tourism-related water use. Systemic in the sense that it addresses both supply and demand, is interdisciplinary and dynamic, and takes feedbacks into account. Stakeholder-centred in the sense that individual stakeholders are the basic unit of analysis, putting stakeholder heterogeneity centre-stage, and that stakeholder behaviour is studied in its social and economic context. Through interviews, statistical analyses and behavioural simulations, insights are collected on how tourists and tourism stakeholders behave with respect to water use. The Companion Modelling approach that we propose provides stakeholders with a simplified but clearly recognizable spatial setting, which allows them to more easily position themselves in the socio-environmental system at hand. In our proposal, the spatial setting is constituted by the river catchments and reservoirs that provide the tourism destination with fresh water. The dynamics of these river catchments and reservoirs are represented by reservoir models as well as hydrological models. Such representation sets the scene for the water consumption work and allows for the exploration of various scenarios of future water availability. In each of the mass tourism case study areas, Benidorm (Spain) and Rimini (Italy), water supply and water demand are confronted in an Agent-Based Model. The agents in such a model are the tourism stakeholders. They exhibit different behaviour as they differ in terms of resources, relationships, perceptions, and other features. Once the current interactions between supply and demand are understood, the agent-based model is used to explore future development, for example through climate change scenarios (that influence both the supply and demand side) or the introduction of water saving policies. The agent-based model can be used as a safe laboratory for policy experimentation, testing the effectiveness of policy measures for achieving reductions in water consumption. The project will provide decision-makers with a better grasp of the way possible interventions affect the tourism water system at hand.

IP	Wageningen University and Research, Países Bajos
Socios	Italia (University of Bologna), España (Universidad de Alicante)
Concedido ES	146.000 €

PROYECTO 16 URBANWAT. Tools and criteria for URBAN groundWATER management

The aims of the research presented in this pre-proposal is to propose an improvement of tools and criteria for groundwater management in urban areas to ensure the sustainability of urban water resources and define their potential uses, from an integral approach. In this way, it is committed to the circular economy of water, trying to make the hydrological cycle circular, efficient and sustainable, thereby improving quantitative and qualitative aspects. The research will involve a multidisciplinary approach including the investigation of the natural state of the hydrological cycle, identification of pollutants (general chemistry, pollutants of emerging concern (CECs) and microbiology studies) and their risks developing innovative technologies and methodologies. This research will focus in Barcelona city. Furthermore, we will make use of the full-scale testing and demonstration facility called ‘WaterStreet’ at TUDelft. The results will provide novel, cost-efficient technologies for urban groundwater management, with beneficial environmental, economic and societal effects, for the European Union (EU) as a whole are expected. In addition, the focus on emerging contaminants and their transformation compounds and the microbiological studies can be expected to provide additional valuable knowledge required to help assess the risks associated with groundwater human use from both environmental

and human health perspectives. On the other hand, URBANWAT propose to use novel approaches based on liquid chromatography high resolution mass spectrometry (HLC-RMS) approaches to identify differences in degradation in different anoxic conditions using CECs as indicators of contamination and their transformation products (TPs) as indicators of degradability, the use of selected infrastructures to analyse fate and transport of selected contaminant in the soil-plant continuum as a remediation system, the use of encapsulated DNA nanoparticles to research the movement of the contaminants and the application of viral metagenomics to explore the presence of new and emergent viruses in groundwater samples.

IP	Instituto de Diagnóstico Ambiental y Estudios del Agua-Agencia Estatal Consejo Superior de Investigaciones Científicas (IDAEA-CSIC), España
Socios	España (Universidad de Barcelona), Francia (HydroSciences Montpellier), Países Bajos (Delft University of Technology)
Concedido ES	154.877 € + 75.000 € = 229.877 €

ERA4CS ERANET Cofund – European Research Area for Climate Services

El objetivo general de ERA4CS es mejorar la adopción y la satisfacción de los usuarios con los servicios climáticos (incluidos los servicios de adaptación) así como mejorar la calidad de los servicios climáticos. Al mismo tiempo, ERA4CS tiene como objetivo mejorar la experiencia científica sobre los riesgos del cambio climático y las opciones de adaptación, y conectar ese conocimiento con la toma de decisiones, por ejemplo, desarrollando y evaluando estrategias y vías de adaptación al clima a diferentes escalas (regiones, ciudades, zonas de captación, sectores vulnerables, etc.). ERA4CS impulsará la iniciativa JPI Clima movilizándose más profundamente, dentro de los Estados miembros de la UE y los países asociados, involucrando tanto a las organizaciones de investigación como a las organizaciones de financiación de la investigación, los distintos servicios nacionales de clima y las diversas disciplinas de la academia, incluidas las humanidades y las ciencias sociales.

Francia (Agence Nationale de la Recherche (ANR), Alemania (Deutsches Zentrum für Luft- und Raumfahrt EV (DLR), Alfred-Wegener-Institut Helmholtz-Zentrum für Polar- und Meeresforschung (AWI), Helmholtz-Zentrum Geesthacht Zentrum für Material- und Küstenforschung (HZG), Austria (Bundesministerium für Wissenschaft, Forschung und Wirtschaft (BMWFW), Universitaet Graz (Uni Graz), Austrian Research Promotion Agency (FFG), Bélgica (Service Public Fédéral de Programmation Politique Scientifique (BELSPO), Institut Royal Météorologique de Belgique (RMI), Dinamarca (Innovationsfonden (IFD), Danmarks Meteorologiske Institut (DMI), Eslovaquia (Slovenska Akademia Vied (SAS), **España (Agencia Estatal de Investigación (AEI)**, Agencia Estatal de Meteorología (AEMET), Barcelona Supercomputing Center - Centro Nacional de Supercomputacion (BSC), Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC), Universidad de Cantabria (UC-IHC), Universitat Rovira i Virgili (URV-C3), Finlandia (Ilmatieteen Laitos (FMI), Suomen ympäristökeskus (SYKE), Francia (Bureau de Recherches Géologiques et Minières (BRGM), Commissariat à l’Energie Atomique et aux Energies Alternatives (CEA), Centre National de la Recherche Scientifique (CNRS), Institut national de l’information géographique et forestière (IGN), Institut national de la recherche agronomique (INRA), Météo-France (Météo-France), Grecia (National Center for Scientific Research "Demokritos" (NCSR), Irlanda (Environmental Protection Agency of Ireland (EPA), Department of the environment, community and local government (Met Eireann), Italia (Centro Euro-Mediterraneo sui Cambiamenti Climatici SCARL (CMCC), Consiglio Nazionale delle Ricerche (CNR-DTA), Ministero dell’Istruzione, dell’Università e della Ricerca (MIUR), Noruega (Norges forskningsrad (RCN), Meteorologisk institutt (Met Norway), Países Bajos (Nederlandse Organisatie voor Wetenschappelijk Onderzoek (NWO), Koninklijk Nederlands Meteorologisch Instituut-KNMI (KNMI), Portugal (Fundação para a Ciência e a Tecnologia (FCT), Associacao para a Investigacao e Desenvolvimento de Ciencias (FCIENCIAS.ID), Reino Unido (The University of Reading (UREAD), Met Office (Met Office), Natural Environment Research Council (NERC), República Checa (Ustav Vyzkumu Globalni Zmeny AV CR VVI (UVGZ), Rumanía (Administratia nationala de meteorologie R.A. (Meteo-Ro), Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI), Suecia (Forskningsrådet för miljö, areella näringar och Samhällsbyggande (FORMAS), Sveriges Meteorologiska och Hydrologiska Institut (SMHI).

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número de convocatorias conjuntas internacionales: 1 (2016)

Participación de AEI en convocatorias conjuntas: 1 (2016)

CONVOCATORIA CONJUNTA 2016:

Era4cs Joint Call on Researching and Advancing Climate Services Development

Países participantes	Austria, Bélgica, Dinamarca, Comisión Europea, Francia, Alemania, Irlanda, Países Bajos, Noruega, Portugal, Rumanía, España, Suecia
Temáticas	Researching and Advancing Climate Services Development: Advanced co-development with users; Institutional integration.
Presupuesto total	72.000.000 € (in kind + cash)
Concedido ES	1.038.645 €
Proyectos aprobados	26
Proyectos con financiación AEI	7 (1 proyecto coordinado)

Nº	Acrónimo y título del proyecto	Países participantes
1	AQUACLEW. Advancing QUALity of CLimate services for European Water	Suecia, Alemania, Austria, Dinamarca, España , Francia
2	CIREG. Climate information for integrated renewable electricity generation	Alemania, Bélgica, Dinamarca, Ghana, Suecia
3	CitiSense. Citizen Sensing – Urban Climate Resilience through Participatory Risk Management Systems	Suecia, Noruega, Países Bajos, Portugal
4	CLIM2POWER. Translating climate data into power plants operational guidance	Portugal, Alemania, Austria, Francia, Irlanda, Suecia
5	CLIMALERT. Climate Alert Smart System for Sustainable Water and Agriculture	Portugal, Alemania, España
6	ClimApp. Translating climate service into personalized adaptation strategies to cope with thermal climate stress	Suecia, Dinamarca, Países Bajos
7	ClimINVEST. Tailored Climate Information for Investment Decisions	Noruega, Francia, Países Bajos
8	CLISWELN. Climate Services for the Water-Energy-Land Nexus	Alemania, Austria, España , Rumanía
9	Co-Cli-Serv. Co-development of place-based climate services for action	Francia, Alemania, Bélgica, Noruega, Países Bajos
10	CO-MICC. Supporting risk assessment and adaptation at multiple spatial scales: Co-development of methods to utilize	Alemania, Austria, Francia

uncertain multi-model based information on freshwater-related hazards of climate change

11	CoCLiME. Co-development of CLimate services for adaptation to changing Marine Ecosystems	Irlanda, Alemania, España , Francia, Noruega, Rumanía, Suecia
12	EVOKED. Enhancing the value of climate data – translating risk and uncertainty utilizing a Living Labs approach	Noruega, Alemania, Países Bajos, Suecia
13	INNOVA. Innovation in Climate Services Provision	Alemania, España , Francia, Países Bajos
14	INSeaPTION. INtegrating SEA-level Projections in climate services for coastal adaptaTION	Francia, Alemania, España , Países Bajos
15	ISlpedia. The open inter-sectoral impacts encyclopedia	Alemania, España , Francia, Países Bajos, Suecia
16	SALIENSEAS. Enhancing the Saliency of climate services for marine mobility Sectors in European Arctic Seas	Países Bajos, Dinamarca, Noruega, Suecia
17	SENSES. Climate Change ScENario SErviceS: Mapping the future	Alemania, Austria, Países Bajos, Suecia
18	WATExR. Integration of climate seasonal prediction and ecosystem impact modeling for an efficient adaptation of water resources management to increasing climate extreme events	España , Alemania, Dinamarca, Irlanda, Noruega, Suecia
19	DustClim. Dust Storms Assessment for the development of user-oriented Climate Services in Northern Africa, Middle East and Europe	Proyecto in kind España
20	ECLISEA. European advances on CLimate services for coasts and SEAs	Proyecto in kind España
21	EUPHEME. EUropean Prototype demonstrator for the Harmonisation and Evaluation of Methodologies for attribution of extreme weather Events	Proyecto in kind Reino Unido
22	INDECIS. Integrated approach for the development across Europe of user oriented climate indicators for GFCS high-priority sectors: agriculture, disaster risk reduction, energy, health, water and tourism	Proyecto in kind España
23	MEDSCOPE. MEDiterranean Services Chain based On climate PrEdictions	Proyecto in kind Italia
24	SERV_FORFIRE. Integrated services and approaches for Assessing effects of climate change and extreme events for fire and post fire risk prevention	Proyecto in kind Italia
25	URCLIM. URban CLIMate services	Proyecto in kind Francia
26	WINDSURFER. WIND and wave Scenarios, Uncertainty and climate Risk assessments for Forestry, Energy and Reinsurance	Proyecto in kind Reino Unido

CONVOCATORIA NACIONAL APCIN 2017

PROYECTO 1 AQUACLEW: Advancing QUALity of CLimate services for European Water

The overall goal of AQUACLEW is to use innovative research techniques and integrated co-development with users to advance the quality, and usability of climate services that provide climate change information to water related sectors. Data and information in present climate services reflect high uncertainties and low resolution, which is difficult to use in practical climate adaptation work. AQUACLEW will therefore work to improve confidence and site specific information by better tailoring climate data and adaptation knowledge. In AQUACLEW, we not only co-develop the climate service with users, we also co-develop the research requirements, the service interfaces and the guidance tools. By integrating users and researchers throughout the climate service production chain, the quality, usability and user uptake of climate services for water will be improved. In AQUACLEW we aim to produce research that will be transferable to improve climate services everywhere. During the project we will develop regional, national and pan-European climate services together with some 30 users to be evaluated in 7 real-world climate adaptation case studies across Europe.

IP	Swedish Meteorological and Hydrological Institute, Suecia
Socios	Alemania (TU Dortmund University), Austria (University of Innsbruck, University of Natural Resources and Life Sciences), Dinamarca (Geological Survey of Denmark and Greenland), España (Universidad de Córdoba, Universidad de Granada) , Francia (National Research Institute of Science and Technology for Environment and Agriculture)
Concedido ES	95.000 € + 96.000 € = 191.000 €

PROYECTO 5 CLIMALERT: Climate Alert Smart System for Sustainable Water and Agriculture

The CLIMALERT project emerges to provide climate information in a format that prospective users find it easy to understand and/or incorporate into decision-making. Main goals are: i) potentiate the link between climate research, water resources, and the agriculture sector to assist in management of natural resources, enhance agricultural livelihoods and reduce underlying causes of vulnerability, ii) advance the techniques and tools currently used to incorporate weather and climate information at different time scales into risk assessment and decision-making in agriculture (management practices), and iii) contribute to a global framework to improve the transfer and exchange of information on future or near-term climate scenarios to help decision-makers in applying adaptation and mitigation strategies

IP	University of Minho, Portugal
Socios	Portugal (Instituto Português do Mar e da Atmosfera), Alemania (Helmholtz-Centre for Environmental Research), España (Fundació Institut Català de Recerca de l'Aigua)
Concedido ES	97.445 €

PROYECTO 8 CLISWELN: Climate Services for the Water-Energy-Land Nexus

The aim of CLISWELN is to advance the provision of Climate Services (CS) for drought-related decision making, by using the water-energy-land nexus (WELN) to integrate the cross-sectoral links of drought-risk management with further synergistic co-benefits between the provision of climate services and long-term societal objectives like sustainable land planning, mitigation of CO₂ emissions and other locally relevant policy targets connected with the Sustainable Development Goals. CLISWELN will study case studies with conflicting water uses dealing with cities, regions and river basins that have specific drought-related vulnerabilities: large amounts of water used for bioenergy, suboptimal forest management compromising water availability downstream, and a vulnerable touristic sector operating in the dry season.

IP	Helmholtz-Zentrum Geesthacht Zentrum für Material- und Küstenforschung GmbH, Alemania
Socios	Austria (Universität für Bodenkultur Wien), España (Centro de Investigación, Ecología y Aplicaciones Forestales), Rumanía (National Institute for Research and Development in Forestry "Marin Dracea")
Concedido ES	70.800 €

PROYECTO 13 INNOVA: Innovation in Climate Services Provision

INNOVA explicitly wants to consider climate services innovations for transformational adaptation in addition to incremental adaptation. In this way, the impacts of the project will be more far-reaching. This includes social innovations next to technological innovations. INNOVA augments its impacts by connecting the private, public and knowledge communities in the development of innovative climate services as climate change adaptation and disaster risk responses. We aim at co-developing advanced climate service that delineate the production, transfer, communication needs for the use of reliable climate information in order to enhance the capacity of decision-makers to deal with climate uncertainties knowledge.

IP	Helmholtz Center Geesthacht, Alemania
Socios	Alemania (Ecologic institut gemeinnützige GmbH, Climate Service Center Germany (GERICS), España (Universidad Politécnica de Valencia), Francia (Universite des Antilles), Países Bajos (Wageningen UR)
Concedido ES	150.000 €

PROYECTO 14 INSeaPTION: INtegrating SEA-level Projections in climate services for coastal adaptaTION

The INSeaPTION project aims at addressing these limitations by co-designing and co-developing, together with users, coastal climate services based on state-of-the art sea-level rise, impact, adaptation and transdisciplinary science. The project will deliver coastal climate services based on end-users' needs and their decision and governance context, covering the whole chain of climate service development from global to regional mean and extreme sea-level projections with their impacts and uncertainties to local sea-level, coastal impacts and adaptation pathways.

IP	Bureau de Recherches Géologiques et Minières, Francia
Socios	Francia (CREOCEAN, UMR 7266 Laboratoire Littoral Environnement et Sociétés), Alemania (Global Climate Forum), España (Universidad de las Islas Baleares), Países Bajos (University of Utrecht)
Concedido ES	107.000 €

PROYECTO 15 ISIpedia: The open inter-sectoral impacts enciclopedia

This project addresses the coproduction of climate-impacts knowledge, in a hands-on collaboration between scientists and users such as climate-adaptation-policy experts and other stakeholders. The project team boasts world-class experts in science-policy dialogue, cross-sectoral impacts research and research coordination, and scientific excellence in impacts modelling. The end product is an open climate-impacts service portal, ISIpedia, offering tailored access to state-of-the-art climate-impacts assessments and data, based on the cross-sectoral, multi-model simulations conducted within the Inter-Sectoral Impact Model Intercomparison Project (ISIMIP, www.isimip.org). ISIpedia's development will integrate the full chain of climate-impact-service co-development, from research design and implementation, to delivery, with tasks fulfilled by the ISIMIP team, a Stakeholder Engagement Team (SET), and the ISIpedia Assessment and Editorial Team (AET). ISIpedia users may include climate adaptation planners e.g. involved in National Adaptation Plans (NAPs) and implementation practitioners, regional knowledge hubs, trans- and interdisciplinary scientists including climate economists, and regional climate experts from the private sector such as (re-)insurance companies.

IP	Potsdam Institute for Climate Impact Research, Alemania
Socios	Alemania (Karlsruhe Institute of Technology, Global Climate Forum, Senckenberg Biodiversity and Climate Research Centre, Climate Analytics, Institute of Physical Geography), Austria (International Institute for Applied Systems Analysis), España (Universidad Pablo de Olavide, Universitat Autònoma de Barcelona) , Francia (Commissariat à l'Energie Atomique), Países Bajos (Utrecht University), Suecia (Umeå Centre for Global Health Research)
Concedido ES	75.200 € + 99.200 € = 174.400 €

PROYECTO 18 WATExR: Integration of climate seasonal prediction and ecosystem impact modeling for an efficient adaptation of water resources management to increasing climate extreme events

WATExR aims to integrate state-of-the-art climate seasonal prediction and water quality simulation in an advanced solution to ensure efficient decision making and adaptation of water resources management to an increased frequency of climate extreme events. Our goal is to assess the potential of solution-oriented, innovative integrative advanced modeling tool implemented in QGIS for understanding and anticipating the impacts of climate extreme events, thus increasing the adoption of Climate Services in water resources management. This will be achieved by identifying end-user demands in 7 case studies in Europe and Australia relating to the impact of climate extreme events on water supply companies, fisheries, and water authorities implementing the Water Framework Directive (WFD). WATExR activities will be implemented in a co-development framework ensuring a solution-oriented approach tailored to user demands. Finally,

WATExR will join the Inter-Sectoral Impact Model Intercomparison Project (ISIMIP2), contributing a selected set of water quality impact models following the ISIMIP2 simulation protocol.

IP	Institut Català de Recerca de l'Aigua, España
Socios	España (Universidad de Cantabria), Alemania (Helmholtz-Centre for Environmental Research), Dinamarca (Aarhus University), Irlanda (Marine Institute Galway, Dundalk Institute of Technology), Noruega (Norwegian Institute for Water Research), Suecia (Uppsala University)
Concedido ES	148.000 € + 140.000 € = 288.000 €

AXIS - Assessment of Cross(X) - sectoral climate Impacts and pathways for Sustainable transformation

El consorcio AXIS se creó para mejorar la integración de una variedad de disciplinas de investigación relacionadas con la investigación climática en torno al objetivo común de mejorar la evaluación de los posibles impactos del cambio climático en los sistemas biofísicos y la sociedad humana. Con este fin, AXIS planea lanzar e implementar una única convocatoria transnacional, financiada por 11 financiadores de investigación europeos. El consorcio AXIS está profundamente integrado en JPI Climate y tiene como objetivo implementar elementos de su Agenda Estratégica de Investigación e Innovación. JPI Climate y ERA-NET que promueven los servicios climáticos ERA4CS incluyen una serie de actividades adicionales. Por lo tanto, dentro de esta propuesta no se planean actividades adicionales. Se buscará una estrecha asociación del consorcio AXIS y JPI Climate con otras iniciativas internacionales clave (Foro de Belmont, GFCS, Future Earth, UN PROVIA, Copernicus) para continuar trabajando contra la fragmentación de disciplinas y geografías en ciencias climáticas. A este respecto, está prevista una estrecha conexión con la propuesta paralela de CSA SINCERE.

Socios: **Coordinador Alemania** (German Aerospace Center (DLR), Austria (Austrian Research Promotion Agency (FFG), Bélgica (Belgian Federal Science Policy Office (BELSPO), National Fund for Scientific Research (FNRS), Francia (National Research Agency (ANR), Irlanda (Environmental Protection Agency Ireland (EPA), Moldavia (Center of International Projects (CIP), Países Bajos (Netherlands Organisation for Scientific Research (NWO), Noruega (Research Council of Norway (RCN), España (Agencia Estatal de Investigación-AEI), Suecia (Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (FORMAS).

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número de convocatorias conjuntas internacionales: 1 (2018)

Participación de MINECO en convocatorias conjuntas: 1 (2018)

CONVOCATORIA CONJUNTA INTERNACIONAL 2018

Países participantes	Austria, Bélgica, Francia, Alemania, Irlanda, Países Bajos, Noruega, España, Suecia
Temáticas	1. Cross-sectoral and cross-scale climate change impact assessments 2. Integration of biophysical climate change impact estimates with economic models 3. Developing pathways to achieve the long-term objectives of the Paris Agreement, taking into account interactions with SDGs closely linked to SDG 13 ("climate action")
Presupuesto total	15.586.070 €
Presupuesto ES	510.524 €
Proyectos aprobados	10
Proyectos con financiación AEI	2019-1 (4); 2019-2 (1)

Nº	Acrónimo y título del proyecto	Países participantes
1	CROSSDRO. Cross-sectoral impact assessment of droughts in complex European basins	Alemania, Irlanda, Suecia, España , Moldavia
2	DIRT-X. Evaluating sediment Delivery Impacts on Reservoirs in changing climaTe and society across scales and sectors	Austria, Alemania, Suecia, Países Bajos, Noruega
3	MAPPY. Multisectoral analysis of climate and land use change impacts on pollinators, plant diversity and crops yields	Austria, Alemania, Bélgica, España , Países Bajos
4	CHIPS. Climate Change Impacts and Policies in Heterogeneous Societies	Francia, Alemania, Suecia, España
5	LAMACLIMA. LAnd MANagement for CLimate Mitigation and Adaptation	Alemania, Países Bajos, Noruega, Bélgica
6	BIO-CLIMAPATHS. Assessing climate-led social-ecological impacts and opportunities for resilient pathways in the EU bioeconomy	Austria, Alemania, España
7	SHAPE. Sustainable development pathways achieving Human well-being while safeguarding the climate And Planet Earth	Austria, Alemania, Suecia, Países Bajos, Noruega
8	UNCHAIN. Unpacking climate impact CHAINs. A new generation of action- and user-oriented climate change risk assessments	Francia, Austria, Alemania, Suecia, España , Países Bajos, Noruega
9	MECCA. Targeting mental models of climate change risk to facilitate climate action	Alemania, Países Bajos, Noruega
10	NorthWesternPaths. Scenarios and pathways toward sustainable land-use and food production for Western and the Nordic European countries as part of the global FABLE Consortium	Alemania, Suecia, Noruega

CONVOCATORIA NACIONAL: APCIN 2019-1

PROYECTO 1 CROSSDRO. Cross-sectoral impact assessment of droughts in complex European basins

CROSSDRO will develop a multi-sectoral and cross-scale evaluation of drought impacts in complex European basins with contrasting climatic, hydrologic, environmental and socioeconomic conditions and it will assess impacts at the continental level. Project objectives seek to advance scientific understanding and develop practical guidance through the engagement of key stakeholders throughout the work. Specifically, CROSSDRO will determine the interrelated impacts of droughts on forestry and land cover, water resources (over different sub-systems i.e. snow, streamflow, reservoir level and ground water), and different economic sectors that are highly vulnerable to water resources availability: e.g. agriculture, hydro-power and tourism. The objectives will be reached by means of experimental studies, both in the field and the laboratory, remote sensing, historical series and modelling approaches that account for past droughts and future scenarios. The objectives will be underpinned through the involvement of key stakeholders to learn about past drought challenges and problems on the stakeholders' side and specifically address their information needs. Land and water managers, end-users and economic agents will

be involved from the outset of the project. This will allow development of more efficient drought management models with potential to improve multi-sectoral adaptation to drought impacts.

IP	Agencia Estatal Consejo Superior de Investigaciones Científicas-Instituto Pirenaico de Ecología (CSIC-IPE), España
Socios	Alemania (Potsdam Institute for Climate Impact Research (PIK), Irlanda (Maynooth University (MU), Suecia (Lund University (ULUND), España (Universitat Pompeu Fabra) , Moldavia (Selectia Research Institute of Field Crops (RIFC)
Presupuesto total	1.042.219 €
Concedido ES	179.989 €

PROYECTO 3 MAPPY. Multisectoral analysis of climate and land use change impacts on pollinators, plant diversity and crops yields

The objective of this project is to study quantitatively the feedback processes linking pollinators, plant diversity and crop yields in the framework of climate and land use changes. The response of agricultural yields to climate change is critically dependent on these feedbacks that until now remain largely unexplored. In order to fill this gap, we will focus on studying interactions between three main sectors: biodiversity/nature conservation, forestry and agriculture. Within agriculture, the emphasis will be put on three sub-sectors: fruit crops, food/fodder crops and energy crops. We will use diverse types of crop and vegetation models to estimate the impacts of climate change on each studied sector in several case study regions in Europe. The study will be undertaken with local stakeholders, who will identify most relevant topics to be addressed by the consortium. The interdependencies between the sectors will be analysed through the dynamics of land use and land cover on the one hand and dynamics of pollinator communities on the other hand.

IP	University of Liège, Bélgica
Socios	Austria (University of Natural Resources and Life Sciences), Alemania (Justus-Liebig University Giessen, Senckenberg Biodiversity and Climate Research Centre (BiK-F), Potsdam Institute for Climate Impact Research (PIK), Bélgica (University of Namur), España (Instituto de Agricultura Sostenible-Agencia Estatal Consejo Superior de Investigaciones Científicas (IAS-CSIC), Países Bajos (Naturalis Biodiversity Center)
Presupuesto total	1.719.577€
Concedido ES	110.000 €

PROYECTO 4 CHIPS. Climate Change Impacts and Policies in Heterogeneous Societies

CHIPS brings together a multidisciplinary, international consortium to advance the state-of-the-art in four ways: (i) novel damage functions specific for impact channels relevant for distribution and growth, bridging the scales between spatially explicit impact data and aggregate macro regions; (ii) an explicit representation of household heterogeneity in the REMIND-MAGPIE and NICE IAMs; (iii) conceptual advances to address multi-level equity considerations and new welfare metrics with a focus on poverty; (iv) assessment of the distributional effects of carbon pricing and climate impacts in Europe through empirics and micro-simulation. In a comprehensive analysis the enhanced modeling framework will be applied to study distributional impacts of climate change and

climate policies in a rich scenario framework based on the Shared Socioeconomic Pathways. A specific regional focus will be put on Europe and synergies with the SDGs will be explored.

IP	Potsdam Institute for Climate Impact Research (PIK), Alemania
Socios	Francia (Centre d'Economie de la Sorbonne (UMR 8174), Alemania (Mercator Research Institute on Global Commons and Climate Change), Suecia (University of Gothenburg), España (Universidad Nacional de Educación a Distancia)
Presupuesto total	1.310.466 €
Concedido ES	101.000 €

PROYECTO 8 UNCHAIN. Unpacking climate impact CHAINs. A new generation of action- and user-oriented climate change risk assessments

UNCHAIN aims at further developing a practical and manageable climate change risk assessment framework based on the concept of Impact Chains. UNCHAIN will address, support and integrate a broad array of stakeholders. Its audiences are local authorities, private businesses, private home owners, and sub-national and national authorities in their capacity of supporting and facilitating local policy-making. UNCHAIN's scientific objectives will in general contributing to enabling accurate, science based, high resolution CC risk assessments, and will in particular relate to six innovations relating to existing climate change risk assessment frameworks: (1) address a shift in adaptation focus from merely adjusting to the possible need for transforming society; (2) apply the concept of coproduction of knowledge during all stages of knowledge production; (3) analyze how societal change, regardless of climate change, can affect local climate change vulnerabilities and the socioeconomic consequences involved in local climate change adaptation; (4) develop a framework for an improved understanding of uncertainties involved in local decision-making on climate change adaptation, aiming to shift focus from mastering to managing such uncertainties; (5) identify risks of mal-mitigation and mal-adaptation and how to reduce such risks, and (6) identify transnational climate risks and ways to adapt to such risks.

IP	Vestlandsforskning (Western Norway Research Institute), Noruega
Socios	Francia (TEC Conseil, INSA Strasbourg), Austria (Paris-Lodron University Salzburg (PLUS), Alemania (Gesellschaft für Wirtschaftliche Strukturforchung, Fraunhofer Gesellschaft zur Förderung der angewandten Forschung e.v.), Suecia (Stockholm Environment Institute), España (Instituto Español de Oceanografía (IEO), Países Bajos (Wageningen University & Research), Noruega (Nordland research Institute)
Presupuesto total	2.055.000 €
Concedido ES	119.535 €

CONVOCATORIA NACIONAL: APCIN 2019- 2

PROYECTO 6 BIO-CLIMAPATHS. Assessing climate-led social-ecological impacts and opportunities for resilient pathways in the EU bioeconomy

The EU is in the process of developing and implementing bioeconomy strategies to foster the transition from a fossil fuel-based to a renewable, biobased economy. Nevertheless, a more direct dependency of economic value chains on the provisioning function of ecosystems increases the socioeconomic system's vulnerability to climate hazards. Hence, innovative, interdisciplinary approaches are needed to assess different climate hazard related, cross-sectoral impacts in society. In particular, there is a need to assess climate-led resilience pathways that account for socio-economic factors, including direct losses, indirect distributive effects and the role of finance. Filling in a major knowledge gap, BIOCLIMAPATHS develops the first interdisciplinary methodological framework that contains the whole logic flow of the knowledge development process based on:

1. A novel databases of cross-sectoral climate risks that allow to map spatially explicit climate hazards' impact of the biophysical dimension (biomass losses) in the bioeconomy;
2. Advances the state of the art in bioeconomy sector modeling to disclose the channels of climate risks' transmission across interdependent biophysical, economic and financial systems at the subnational level with an ABM, integrated in a global input-output framework;
3. Identification of co-produced resilience solutions based on the assessment of challenges and opportunities for sustainable, inclusive and climate-resilient development in the EU under different bioeconomy pathways (food, materials and energy).

IP	Vienna University of Economics & Business, Austria
CO-IP	Elisabeth Marie Louise de Schutter, Vienna University of Economics & Business, Austria
Socios	Prajal Pradhan, Potsdam Institute for Climate Impact Research (PIK), Alemania, Sebastian Poledna, International Institute for Applied Systems Analysis, Risk and Resilience, Advanced Systems Analysis, Austria, Patricia Fuentes Saguar, Pablo de Olavide University, España
Presupuesto total	673.000 €
Concedido ES	74.000 €

CONCERT-EJP - European Joint Programme for the Integration of Radiation Protection Research

CONCERT-EJP tiene como objetivo contribuir a la integración sostenible de los programas de investigación europeos y nacionales en protección de radiación. CONCERT como acción de cofinanciación se esfuerza por lograr atraer y agrupar los esfuerzos nacionales de investigación en protección radiológica con los programas de investigación EURATOM para hacer un mejor uso de los recursos públicos de I + D y abordar los desafíos comunes europeos en protección radiológica de manera más eficaz mediante esfuerzos conjuntos de investigación En áreas clave.

Socios: **Alemania (BFS- Federal Office for Radiation Protection, HMGU - Helmholtz Zentrum München)**, **Finlandia (STUK - Sateilyturvakeskus)**; **Bélgica (CEN- Centre d'étude de l'Energie Nucleaire)**, **Francia (ANR - Agence National de la Recherche, CEA - Commissariat a l'Energie Atomique, IRSN - Institut de Radioprotection et de Surete Nucleaire, NERIS-NERIS Platform Association, MELODI-Association Melodi, ALLIANCE-ASSOCIATION ALLIANCE EUROPEENNE ENRADIOECOLOGIE)**, **Reino Unido (DH-PHE - Department of Health - Public Health England)**, **Italia (Uni Pavia - University Pavia, ENEA - Agenzia Nazionale per le Nuove Tecnologie, L'Energia e lo Sviluppo Economico Sostenibile, ISS - Istituto Superiore di Sanita)**, **Suecia (SSM - Swedish Radiation Safety Authority)**, **España (Agencia Estatal de Investigación- Ministerio de Economía y Competitividad (AEI-MINECO), Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT)**, **Hungría (NRIRR - Frederic Joliot-Curie National Research Institute for Radiobiology and Radiohygiene, MTBA-EK - Centre for Energy Research, Hungarian Academy of Sciences)**, **Bulgaria (NCRRP - National Centre of Radiobiology and Radiation Protection)**, **Austria (MedUni Vienna - Medical University of Vienna)**, **Noruega (NRPA - Norwegian Radiation Protection Authority)**, **Países Bajos (RIVM - Rijksinstituut voor Volksgezondheid en Milieu)**, **Portugal (FCT - Fundacao para a Ciencia e Tecnologia, APA-Agencia Portuguesa do Ambiente IP)**, **Croacia (IMROH - Institute for Medical research and Occupational Health, RBI- Ruder Boskovic Institute)**, **República Checa (SURO National Radiation Protection Institute, COSMT/NPI ASCR- Nuclear Physics Institute of the ASCR VVI)**, **Rumanía (IFA - Institutul de Fizică Atomică)**, **Grecia (EEAE - Greek Atomic Energy Commission)**, **Eslovaquia (VUJE)**, **Estonia (UT - University of Tartu)**, **Lituania (RPC - Radiation Protection Centre)**, **Letonia (UL - Latvijas Universitate)**, **Finlandia (UEF - University of Eastern Finland)**, **Dinamarca (DEMA-Danish Emergency Management Agency)**, **Irlanda (EPA-Environmental Protection Agency)**; **Eslovenia (JSI-Institut JOZEF STEFAN)**, **Polonia (GIG-GLOWNY Instytut Gornictwa)**, **Suiza (FOPH-Eidgenoessisches Departement Des Innern)**.

CONVOCATORIA CONJUNTA INTERNACIONAL 2016

Países participantes	
Temáticas	Improvement of health risk assessment associated with low dose/dose rate radiation. Reducing uncertainties in human and ecosystem radiological risk assessment and management in nuclear emergencies and existing exposure situations, including NORM
Presupuesto total	10.400.000 €
Concedido ES	192.501 €

Proyectos aprobados	9
Proyectos con MINECO/AEI	3 (1 coordinado)

Nº	Acrónimo y título del proyecto	Países participantes
1	CONFIDENCE. COping with uNcertainties For Improved modelling and DEcision making in Nuclear emergenCiEs	Alemania, Reino Unido, Francia, Eslovenia, España, Irlanda, Grecia, Noruega, Portugal, Suiza, Finlandia, Dinamarca, Bélgica, Italia, Hungría, Noruega, Países Bajos, Eslovaquia
2	LDLensRad	
3	TERRITORIES. To Enhance unceRtainties Reduction and stakeholders Involvement TOwards integrated and graded Risk management of humans and wildlife In long-lasting radiological Exposure Situations	Francia, Alemania, España (CIEMAT), Noruega, Bélgica, Reino Unido, Finlandia, Estonia
4	ENGAGE. ENhancinG stAkeholder participation in the GovernancE of radiological risks for improved radiation protection and informed decision-making	Bélgica, Francia, España (Barcelona Institute for Global Health (ISG), Grecia, Italia, Eslovenia, Suiza, Eslovaquia, Alemania, Rumanía
5	LEU-TRACK. The Role of Extracellular Vesicles in Modulating the Risk of Low Dose Radiation-induced Leukaemia	Hungría, Reino Unido, Alemania
6	PODIUM. Personal Online DosImetry Using computational Methods	Bélgica, España, Alemania, Suecia, Reino Unido, Grecia, Irlanda
7	SEPARATE	
8	VERIDIC. Validation and Estimation of Radiation skIn Dose in Interventional Cardiology	
9	SHAMISEN-SINGS.	España , Italia, Francia, Japón, Noruega, Bélgica

CONVOCATORIA NACIONAL APCIN 2017

PROYECTO 1 CONFIDENCE. COping with uNcertainties For Improved modelling and DEcision making in Nuclear emergenCiEs

The H2020 CONFIDENCE Project aims to close existing gaps in several areas of emergency management and long-term rehabilitation. It concentrates on the early and transition phases of an emergency, but considers also longer-term decisions made during these phases. The project brings together expertise from all four Radiation Protection Platforms and also from Social Sciences and Humanities, such that it can address the scientific challenges associated with model uncertainties and improve radioecological predictions and emergency management (NERIS and ALLIANCE), situation awareness and monitoring strategies (EURADOS), risk estimation in the early

phase (MELODI), decision making and strategy development at local and national levels (NERIS) including social and ethical aspects (Social Sciences and Humanities).

IP KIT - Karlsruhe Institute of Technology, Alemania	
Socios	Alemania (BfS, HMGU, DIALOGIK), Reino Unido (CEH, UK Met. Office, PHE, WARWICK), Francia (CEPN, IRSN, MUTADIS), España (Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT)) , Universidad de Extremadura), Irlanda (EPA), Grecia (EEAE), Noruega (NMBU, NRPA), Suiza (University of Zurich), Dinamarca (DTU), Países Bajos (RIVM, KNMI, RIKILT), Bélgica (SCK•CEN), Finlandia (STUK), Italia (UMIL), Eslovaquia (VUJE), Eslovenia (REC), Portugal (APA, IST), Hungría (MTA EK), Noruega (Norwegian Met. Institute)
Concedido ES	35.948 €

PROYECTO 6 PODIUM. Personal Online Dosimetry Using computational Methods

“Personal Online Dosimetry Using computational Methods (PODIUM)” is a research project to improve occupational dosimetry by an innovative approach: the development of an online dosimetry application based on computer simulations, which will calculate individually the occupational doses, without the use of physical dosimeters.

IP Belgian Nuclear Research Center (CEN), Bélgica	
Socios	España (Universidad Politécnica de Cataluña-UPC) , Alemania (German Research Center for Environmental Health (HMGU), Suecia (Lund University), Reino Unido (Public Health England), Grecia (The Greek Atomic Energy Commission (EEAE), Irlanda (St. James’s Hospital Ireland (SJH)
Concedido ES	100.000 €

PROYECTO 9 SHAMISEN-SINGS. Nuclear Emergency Situations - Improvement of dosimetric, Medical And Health Surveillance) - Stakeholder INvolvement in Generating Science

SHAMISEN-SINGS brings together an experienced multi-disciplinary and multi-national consortium to answer important objectives of the call: to improve countermeasures for nuclear emergency preparedness and provide important knowledge on stakeholder engagement in radiation protection, including a critical assessment of benefits and challenges of citizen science. By taking a practical ethics approach, fostering co-reflection between natural and social scientists, it will strengthen integration of social science in radiation protection. It will also provide an independent channel for collection and management of data for use by authorities for decision making, assessment of doses, evaluation of health/social condition and health surveillance in general, and support in the implementation of BSS.

IP Barcelona Institute for Global Health, España	
Socios	Italia (Istituto Superiore di Sanità (ISS), Japón (Fukushima Medical University (FMU), Francia (Institute for Radiological Protection and Nuclear Safety (IRSN), Centre d’étude sur l’Evaluation de la Protection dans le domaine Nucléaire (CEPN), Bélgica (Belgian Scientific Institute of Public Health (WIV-ISP), Noruega (Norwegian University of Life Sciences (NMBU), España (Universitat Autònoma de Barcelona (UAB))
Concedido ES	56.553 €

MOSAiC – International Artic Drift Expedition

MOSAiC es una expedición de investigación internacional que da la bienvenida a una amplia participación de la comunidad investigadora. La iniciativa tiene como objetivo fomentar la colaboración y la coordinación para lograr avances significativos en nuestra comprensión de los procesos de sistemas acoplados del Ártico. Como socio central de MOSAiC y proveedor de la plataforma de investigación primaria (RV Polarstern), el Instituto Alfred Wegener administra este proceso en consulta con la Junta del Proyecto MOSAiC internacional. Hay tres mecanismos principales de participación:

- (1) Participantes en MOSAiC sin necesidad de amarre a bordo del Polarstern.
- (2) Participantes en MOSAiC que necesitan un puesto de atraque a bordo del Polarstern.
- (3) Socios que apoyan a MOSAiC logística o científicamente con infraestructura.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número de convocatorias conjuntas internacionales: 4 (2018, 2019, 2021, 2022)

Participación de AEI en convocatorias conjuntas: 2 (2021, 2022)

CONVOCATORIA CONJUNTA INTERNACIONAL 2018

Países participantes	
Temáticas	(1) Participantes en MOSAiC sin necesidad de amarre a bordo del Polarstern (2) Participantes en MOSAiC que necesitan un puesto de atraque a bordo del Polarstern (3) Socios que apoyan a MOSAiC logística o científicamente con infraestructura
Presupuesto total	250.000 €
Concedido ES	250.000 €
Proyectos aprobados	2
Proyectos AEI	2

Nº	Acrónimo y título del proyecto	Países participantes
1	ICE-MOD. Mejorando los modelos de emisividad del hielo marino en las microondas de baja frecuencia	España
2	SIMPATICO. Contribucion española a MOSAiC: transporte primario de aerosoles en la atmosfera artica	España, Alemania, Reino Unido, Suiza, Suecia, Italia, Estados Unidos, Dinamarca

CONVOCATORIA NACIONAL APCIN 2019-2

PROYECTO 1 ICE-MOD. Mejorando los modelos de emisividad del hielo marino en las microondas de baja frecuencia

The information provided by remote sensing platforms on sea ice thickness and snow depth is crucial to understand the changes that the arctic is facing under the threat of climate change, and in particular to study the evolution of sea ice mass and sea ice balance. According to issi virtual sea ice mission, there is the consensus that better models for sea ice and snow microwave emission are needed to achieve reliable estimates of thin sea ice thickness and snow depth from radiometry, since remote sensing platforms are the only way to grant continuous, wide area monitoring in the arctic. Mosaic offers a great and unique opportunity to fill this gap, by performing measurements with shortrange lband microwave radiometers with simultaneous in situ measurements, which will serve as ground truth. The experimental approach is the following: three lband radiometers (emirad2, elbara3 and Ariel) shall perform measurements during the whole year round. The most interesting time periods are during autumn (freezeup) and winter ice growth and snow accumulation. The emirad2 will be installed on the polarstern deck. The elbara3 and Ariel will be deployed over separate sledges to make mobile systems, which can measure under different ice conditions. The radiometers will perform several tracks on the ice camp region. The Ariel system is much lighter and smaller than elbara3, permitting therefore, to measure along longer transects and under more variate ice conditions. The Ariel system will be rented to the balamis company thanks to this Spanish funded call. Many routinely in situ acquisitions will be performed under the regular mosaic acquisition plan.

IP	ICM-CSIC, España
Concedido ES	125.000 €

PROYECTO 2 SIMPATICO. Contribucion española a MOSAiC: transporte primario de aerosoles en la atmosfera artica

Northern regions are at forefront of changes in climatic forcing and biogeochemical-ecological interactions. In these particular areas, without delay, we must (1) understand the rate and magnitude of ocean-atmosphere interactions changes likely to occur, and their impact on local and global ecosystems and (2) disseminate it to the scientific community and to the general public. Spain contribution to mosaic: primary aerosol transport in the arctic atmosphere (simpatico) aims to study the polar aerosols dynamics in changing arctic environments during mosaic. In the high arctic, local marine biogenic emissions are an important source of cloud condensation nuclei (ccn) - those aerosol particles that can form into cloud droplets; thereby modulating cloud properties. Within simpatico, we will use instrumentation to determine the size and chemical composition of the particles. The main objective will be - using experimental and field approaches - to link aerosol emission processes with biological activities in surface polar waters, and disseminate results. The simpatico uses a novel state-of-the-art primary aerosol (pa) chamber developed at the icm-csic in Spain, able to study the role of air-water-sea ice interactions in the formation of primary aerosols, and to be deployed in the British antarctic survey (bas) container during mosaic. We aim to collect polar open ocean water, melt pond water and melted ice water - then bubbled these water samples in the pa chamber. In a nutshell, characterization of artificially generated primary polar aerosols with ad-hoc particulate matter

pm1 sampling system, and characterization of (a) water, (b) primary aerosol generated within the chamber and (c) ambient aerosols. The results will be compared with the microbial communities, including micro-, nano- and pico-plankton photosynthetic organisms and bacteria, and viruses, with the mosaic collaborators.

IP	ICM-CSIC, España
Socios	Alemania, Reino Unido, Suiza, Suecia, Italia, Estados Unidos, Dinamarca
Concedido ES	125.000 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2021

Países participantes	Francia, Reino Unido, Países Bajos, Alemania, Austria, Brasil, Finlandia, Italia, Portugal, Suecia, Suiza, Estados Unidos
Temáticas	MOSAIC - ELT
Presupuesto total	893.964 €
Concedido ES	893.964 €
Proyectos aprobados	1
Proyectos AEI	1

Nº	Acrónimo y título del proyecto	Países participantes
1	PREP4MOSAIC. MOSAIC - ELT	Francia, Reino Unido, Países Bajos, Alemania, Austria, Brasil, Finlandia, Italia, Portugal, Suecia, Suiza, Estados Unidos, España

CONVOCATORIA NACIONAL PCI 2022

PROYECTO 1 PREP4MOSAIC. MOSAIC - ELT

The multi-object spectrograph will be the workhorse instrument for the E-ELT, being the biggest telescope in the world with its 39m diameter primary mirror. MOSAIC will be the world-leading MOS facility, contributing to all fields of contemporary astronomy, from extra-solar planets, to the study of the halo of the Milky Way and its satellites, and from resolved stellar populations in nearby galaxies out to observations of the earliest 'first-light' structures in the Universe.

IP	Centre National de la Recherche Scientifique (CNRS). Francia
Socios	Francia, Reino Unido, Países Bajos, Alemania, Austria, Brasil, Finlandia, Italia, Portugal, Suecia, Suiza, Estados Unidos
Concedido ES	893.964 €



Reto 6

**Cambios e innovaciones
sociales**





RETO 6: CAMBIOS E INNOVACIONES SOCIALES

JPI Cultural Heritage - Joint Programming Initiative on Cultural Heritage	350
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CHANSE - Collaboration of Humanities and Social Sciences In Europe	378

JPI Cultural Heritage - Joint Programming Initiative on Cultural Heritage

La Iniciativa de Programación Conjunta para el Patrimonio Cultural (JPI CH) se creó en 2010. Agrupa a agencias financiadoras, ministerios y Consejos de Investigación de diversos países de Europa y su objetivo principal es fomentar la investigación y la innovación centrada en el patrimonio cultural, tanto tangible como intangible, digital y natural.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales: 5 (2014, 2015, 2017, 2018, 2019, 2020)

Participación de MINECO en convocatorias conjuntas: 3 (2014, 2017; 2019)

CONVOCATORIA CONJUNTA INTERNACIONAL HERITAGE PLUS CALL 2014 (COFINANCIADA POR LA CE)

Proyectos aprobados	16
Proyectos aprobados con participación española	8 (2 proyectos coordinados)

Nº	Acrónimo y título del proyecto	Países participantes
1	Changes. Changes in cultural Heritage Activities: New Goals and benefits for Economy and Society	Italia, Bélgica, Suecia, Países Bajos
2	Chime. Cultural Heritage and Improvised Music in European Festivals	Reino Unido, Suecia, Países Bajos
3	CHT2. Cultural Heritage Through Time	Italia , Reino Unido, España, Polonia
4	Clima: Cultural Landscape risk Identification, Management and Assessment	Italia, Reino Unido, Dinamarca, Chipre
5	Cmop. Cleaning Modern Oil Paintings	Países Bajos, Reino Unido, Italia
6	Euro Magic. A Million Pictures: Magic Lantern Slide Heritage as Artefacts in the Common European History of Learning	Países Bajos , Reino Unido, Bélgica, España
7	Euwater. European Waterways Heritage: Re-evaluating European Minor Rivers and Canals as Cultural Landscapes	Italia , Reino Unido, Países Bajos, España
8	Endow. Enhancing access to 20th Century cultural heritage through Distributed Orphan Work	Reino Unido , Países Bajos, Italia
9	Heat. Heritage and Threat	Dinamarca , Rumanía, Polonia, Italia

10	Heritamus. (In)Tangible: a research on the relationship between tangible and intangible heritage	Portugal, España, Francia
11	Heuright. The Right to Cultural Heritage – Its Protection and Enforcement through Cooperation in the European Union	Polonia, Reino Unido, Italia
12	Himanis. HISTorical MANuscript Indexing for user-controlled Search	Francia, España, Países Bajos
13	Gastrocert. Gastronomy and Creative Entrepreneurship in Rural Tourism	Suecia, Italia, Reino Unido, España
14	Pich. The impact of urban planning and governance reform on the historic built environment and intangible cultural heritage	Países Bajos, Reino Unido, Italia, Noruega
15	Prothego. PROTEction of European Cultural HERitage from GeO - hazards	Italia, Reino Unido, Chipre, España
16	REFIT. Resituating Europe's first towns: A case study in enhancing knowledge transfer and developing sustainable management of cultural landscapes.	Reino Unido, Francia, España

CONVOCATORIA NACIONAL APCIN 2015

PROYECTO 3 CHT2. Cultural Heritage Through Time

The aim of the CHT2 project is to fully integrate the fourth dimension (4D) into Cultural Heritage studies for analysing structures and landscapes through time. CHT2 will collect heterogeneous material (multi-temporal aerial and terrestrial photographs, maps, drawings, etc.) and combine it with contemporary 3D models.

IP	Politecnico di Milano, Italia
Socios	Reino Unido (Newcastle University), España (Universidad de Salamanca) , Polonia (Stanislaw Staszic Scientific Association)
Concedido ES	60.000 €

PROYECTO 6 EURO-MAGIC. A Million Pictures: Magic Lantern Slide Heritage as Artefacts in the Common European History of Learning

Resumen:

IP	Utrecht University, Países Bajos.
Socios	España (Universidad de Salamanca, Universidad de Girona) , Bélgica (University of Antwerp), Reino Unido (University of Exeter).
Concedido ES	30.000 € + 30.000 € = 60.000 €

PROYECTO 7 EUWATHER. European Waterways Heritage: Re-evaluating European Minor Rivers and Canals as Cultural Landscapes

The aim is to promote the knowledge and rehabilitation of the unique cultural heritage of minor waterways and historic canals in 4 European pilot regions. The project is aimed at co-designing with people (local and visitor, stakeholder and public sector etc) to generate a body of data that can reveal the cultural and artistic heritage of minor waterways, in order to make a Spatial Data Infrastructure (SDI), interactive maps, and promote associated ways of communicating this heritage to a range of audiences.

IP	Università Ca' Foscari, Italia
Socios	Reino Unido (University of Brighton), Países Bajos (Universiteit Leiden), España (Universidad de Girona) .
Concedido ES	60.000 €

PROYECTO 10 HERITAMUS. (In)Tangible: a research on the relationship between tangible and intangible heritage

The aim is to develop an innovative approach through a cooperative research programme with the stakeholders of Fado in Portugal and Flamenco in Spain. In that sense, this project will meet the main priorities of the strategic agenda for JPI Cultural Heritage and Global Change, namely by developing a reflective society involving at the same level academic work and community practitioners.

IP	Universidade Nova de Lisboa, Portugal
Socios	España (Universidad de Sevilla) , Francia (CNRS)
Concedido ES	57.308 €

PROYECTO 12 HIMANIS. Historical MANuscript Indexing for user-controlled Search

HIMANIS aims at developing cost-effective solutions for querying large sets of handwritten document images. To this end, innovative keyword spotting, indexing and search methods will be developed, tested, adapted and, or scaled up to meet the realworld conditions required.

IP	CNRS, Francia
Socios	Francia (CNRS, A2iA), España (Universidad Politécnica de Valencia) , Países Bajos (Rijksuniversiteit Groningen).
Concedido ES	60.000 €

PROYECTO 13 GASTROCERT. Gastronomy and Creative Entrepreneurship in Rural Tourism

This project has two aims, to explore (i) how the development of local gastronomy can help to protect rural heritage values, and (ii) how entrepreneurial culture can enhance locally produced food as a value-added touristic experience.

IP	University of Gothenburg, Suecia
Socios	Suecia (University of Mid Sweden), Italia (Mediterranean University of Reggio Calabria), Reino Unido (University of the Highlands and Islands), España (Universidad de Girona)
Concedido ES	59.419 €

PROYECTO 15 PROTHEGO. PROtection of European Cultural HERitage from GeO – hazards

New space technology based on radar interferometry is now capable to monitor, since 1992 and with mm precision, surface deformation for reflective targets named persistent scatters (PS), which consistently return stable signals to the radar satellites. The present proposal will apply this new technique to monuments and sites that are potentially unstable due to landslides, sinkholes, settlement, subsidence, active tectonics as well as structural deformation, all of which could be effected of climate change and human interaction. To magnify the impact of the project, the approach will be implemented in more than 450 sites on the UNESCO World Heritage List in geographical Europe.

IP	Istituto Superiore per la Protezione e Ricerca Ambientale, Italia
Socios	Italia (University of Milano), Reino Unido (Natural Environment Research Council), Chipre (Cyprus University of Technology), España (Instituto Geológico y Minero de España (IGME)) .
Concedido ES	53.000 €

PROYECTO 16 REFIT. Resituating Europe's first towns: A case study in enhancing knowledge transfer and developing sustainable management of cultural landscapes

Through research focusing on some of the most significant monuments in European history (Late Iron Age oppida: c.200BC-AD60), this project will focus on understanding and engaging under-represented users (SMEs, wildlife organisations, farmers) unaware of the value of this pan-European phenomenon.

IP	Durham University, Reino Unido
Socios	Francia (Bibracte EPCC), España (Universidad Complutense de Madrid)
Concedido ES	59.000 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2017

Países participantes	Bielorrusia, Chipre, República Checa, Francia, Noruega, Polonia, España, Suecia, Países Bajos, Reino Unido.
Temáticas	Topic 1 The Critical: Engagements with Digital Heritage Topic 2 The Curatorial: Communities and Digital Heritage Topic 3 Safeguarding Digital Heritage
Presupuesto total	4.500.000€

Concedido ES	149.981€
Proyectos aprobados	8
Proyectos con financiación AEI	2

Nº	Acrónimo y título del proyecto	Países participantes
1	Digitizing. Dogon heritage The legacy of Abirè, the Dogon prophet	Países Bajos, Reino Unido, Francia
2	DigiCONFLICT. Digital Heritage in Cultural Conflicts	Reino Unido, Polonia, Suecia
3	CADEAH. European History Reloaded: Curation and Appropriation of Digital Audiovisual Heritage	Países Bajos, República Checa, Suecia
4	The Dictionary/Grammar Reading Machine: Computational Tools for Accessing the World's Linguistic Heritage	Suecia, Países Bajos, Francia
5	ARCH. Ancient Coinage as Related Cultural Heritage	Reino Unido, España, Francia
6	Safeguarding the Cultural HERitage of Dance through Augmented Reality	Chipre, Reino Unido, Francia
7	HOME. History of Medieval Europe	Francia, España, República Checa
8	READ IT. READING EUROPE ADVANCED DATA INVESTIGATION TOOL	Francia, Reino Unido, Países Bajos, República Checa

CONVOCATORIA NACIONAL APCIN 2018

PROYECTO 5 ARCH. Ancient Coinage as Related Cultural Heritage

The ARCH project uses Linked Open Data technology to establish, for the first time, an overarching platform for the study, curation, archiving and preservation of the monetary heritage of the ancient world. Using the newly developed nomisma.org knowledge organisation system it will create a framework consisting at the highest level of a single, unified portal across multiple online typological resources currently under development. These resources will in turn be linked to a body of data drawn from two major European collections, as well as a large corpus of material drawn from commercial contexts (auction catalogues). The overarching portal will serve as a central point of access to this data for multiple audiences, as well as a demonstration of the extensibility of this approach to other geographic areas. Associate Partner-projects based in Germany and the United States will contribute typologies for this purpose. As a proof of concept of the research applicability of this framework, ARCH will develop one geographical focus – Pre-Roman Spain and southern Gaul – in the form of a specific online reference tool that will draw upon both categories of data (public collections and objects in commerce), as well as a program of research designed to exploit the opportunities offered by such a systematic and Linked Open Data infrastructure. This will examine questions of monetary and cultural connectivity and interaction across the borders of Spain and France in antiquity, in collaboration with leading scholars in the field of this geographical area, and monetary and cultural history, working as Associate Partners based in Paris, Orléans, and Valencia.

IP	University of Oxford, Reino Unido
Socios	España (Universidad de Valencia), Francia (Bibliothèque nationale de France)
Presupuesto total	501.766 €
Concedido ES	74.981 €

PROYECTO 7 HOME. History of Medieval Europe

Capitalizing on the success of the JPI-CH Heritage Plus funded HIMANIS project, HOME will associate Computer Science (UPVLC, A2iA, Teklia), Humanities (IRHT) and Cultural Heritage (NACR) institutions, plus a network of Research and cultural heritage institutions (ICARUS as Associate Partner) in order to not only produce technology to generate new, research-based knowledge from historical manuscripts, but also implement a user and researcher friendly environment for fostering a meaningful experience for scholarly research and discovery.

HOME aims at (1) further developing searching approaches specifically designed for querying large sets of text images digitized from historical handwritten documents, (2) linking Digital Cultural Heritage and associated metadata (abstract, indexes and text editions) and authority data (indexes, gazeteers), which are disconnected from the digitized primary sources and stored in separate silos, (3) establishing a knowledge framework and a semantic information retrieval system, to understand the multilingual medieval sources, (4) presenting, visualizing and interpreting the sources on the History of Medieval Europe, (5) leveraging meaningful discovery and research experience in an user-centered and ergonomic environment.

IP	Centre National de la Recherche Scientifique, Francia
Socios	España (Universitat Politècnica de València), República Checa (Národní archiv České republiky), Francia (A2iA)
Presupuesto total	422.011 €
Concedido ES	75.000 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2019

Países participantes	Chipre, Italia, Portugal, España, Francia, República Checa, Reino Unido, Noruega, Países Bajos
Temáticas	Topic 1: Analysing and modelling change Topic 2: Sustainable protection and enhancement of values Topic 3: Management of cultural heritage at risk Topic 4: Layered conservation
Presupuesto total	6.660.000 €
Concedido ES	524.850 €
Proyectos aprobados	10
Proyectos con financiación AEI	5 (1 proyecto coordinado por ES)

Nº Acrónimo y título del proyecto		Países participantes
1	SHIELD. Safeguard Heritage in Endangered Looted Districts	Chipre, Italia, Portugal
2	WOODPLAKE. Archaeological Wooden Pile-Dwelling in Mediterranean European lakes: strategies for their exploitation, monitoring and conservation	España, Francia, Italia
3	F-ATLAS. Franciscan Landscapes: the Observance between Italy, Portugal and Spain	Italia, Portugal, España
4	PROCRAFT. PROtection and Conservation of Heritage AirCRAFT	República Checa, Francia, Italia
5	PHE. The Past has Ears	Francia, Italia, Reino Unido
6	CURBATHERI. Curating Sustainable URBAn Transformations through HERItage	Italia, Noruega, España, Reino Unido
7	EHEM. Enhancement of Heritage Experiences: the Middle Ages. Digital Layered Models of Architecture and Mural Painting over Times.	Chipre, Italia, España
8	StAr. Development of Storage and Assessment of methods suited for organic Archaeological artefacts	Francia, Italia, Noruega, Polonia
9	IRIS. Inspiring rural heritage: sustainable practices to protect and conserve upland landscapes and memories	Francia, Italia, España, Reino Unido
10	CRYSTINART. Crystallization damage at the interface of artworks.	Francia, Italia, Países Bajos

CONVOCATORIA NACIONAL APCIN 2020

PROYECTO 2 WOODPLAKE. Archaeological Wooden Pile-Dwelling in Mediterranean European lakes: strategies for their exploitation, monitoring and conservation

Wooden pile dwellings (WPD) are an inexhaustible and precious source of information on landscape evolution and contingent cultural activities. There have been significant investigations on WPD submerged in Alpine areas, but important knowledge gaps are evident regarding Mediterranean volcanic and karstic lakes. The conservation of the latter archaeological remnants is endangered by the climatic change impacts and anthropogenic pressure, further exacerbated by the sensitive and circumscribed lake environments. Wood from pile dwellings is waterlogged, and its conservation mostly depends on the surrounding environment i.e. sediments and water quality. This project aims to study all the aspects of WPD in volcanic and karstic lakes through studies ranging from their potential exploitation, investigation into their conservation and restoration, monitoring lake environment and forecasting scenarios through an aquarium reproducing the most significant abiotic conditions occurring in the lake. This last study will be achieved by means of an aquarium model. Three case-studies have been selected in which agricultural practices influence climatic stress and pollution impact: Lake Banyoles in Spain and

Lakes Bolsena and Mezzano in Italy. The foreseen investigations will employ an extraordinarily wide spectrum of skills and disciplines (palynology, dendrochronology, micromorphology, soil science and innovative tools like isotopic analysis). The characterization of wooden materials will involve gravimetric measurements, solid NMR, microbiological analysis, XRD, FTIR-imaging, Py-GC/MS and thermogravimetry. Samples will derive from different sources to include immersed, reburied finds and restored wood. The main activities will be devoted to fields campaigns and UAV, high resolution methods for monitoring environmental conditions, capitalization of results (network of bigdata about lake sites), involvement of local actors and population on the historical, cultural and environmental value of WPDs to establish decision-making processes and to foster high quality tourism. The project fits the topic Management of Cultural Heritage at Risk.

IP	University of Tuscia, Italia
Socios	España, Francia, Italia
Concedido	100.000 €
Concedido ES	333.297 €

PROYECTO 3 F-ATLAS. Franciscan Landscapes: the Observance between Italy, Portugal and Spain

The spiritual legacy of St. Francis of Assisi (1181/82-1226) characterises European culture and survives through his rules, spiritual texts and mendicant orders, despite this, many architectural complexes have lost their original function and values. The importance of mendicant friars in the transformation of urban and rural landscapes has been recognized only recently. The project aims to study the Italian-Spanish-Portuguese Franciscan Observance network, in order to define a “Atlas” of documentation and knowledge for conservation, protection and promotion of this scattered Cultural Heritage (CH). The remote location of these buildings and their connection with the surrounding landscape and territory instances the issue of peripheral and abandoned areas and contributes to defining a map of criticalities. The proposal aims at combining traditional and innovative techniques in order to develop risk assessment methodologies, protocols, and tools and to create user-friendly interfaces for the management and the enhancement of CH (T1). The poor conditions of some buildings, due to hydrogeological instability, abandonment or earthquakes, require the definition of strategies for the conservation, protection and management of this vulnerable heritage (T3). Furthermore, the project aims at developing new strategies for layered experiences through ICT (T4) and innovative methods to reuse, through the interaction, the CH, by designing hiking and cycling routes (T2). The expected outcomes will facilitate awareness of European citizenship based on the sharing of common values and achievements and will promote an understanding of Europe's history based on its physical, intangible and natural heritage. Noting that the identification of a common European cultural heritage may be achieved via cultural routes tracing the history of peoples, migrations, and the spread of the major European currents of civilization in the fields of philosophy, religion, culture, arts, science, technology, and trade.

IP	Università degli Studi di Firenze. Italia
Socios	Università degli Studi di Firenze (ITALY), Instituto Universitario de Lisboa (PORTUGAL), Universitat de Barcelona (SPAIN), Universidade Católica Portuguesa (PORTUGAL)
Concedido ES	99.850 €

PROYECTO 6 CURBATHERI. Curating Sustainable URBAn Transformations through HERItage

It is well known that cities are constantly changing. As such, cities are composed of added historic layers that, over time, transform into heritage which merits conservation. Within the conservation process, heritage constitutes an inherent dynamic and transformative urban element. However, fragmented heritage structures targeted by urban strategies, often lose the opportunity to offer urban planning a sustainable source for cultural values as these pose difficulties for practitioners and users to agree on what is to be protected. To address this challenge, CURBATHERI proposes an approach in which historical transformation is a value which we need to sustain. In this way, the needs for change and new cultural imprints in the city are addressed through its own deep historic continuity. To achieve this, CURBATHERI's main objective is to develop a management toolbox that considers historical urban transformation as a source of heritage values that will enable decision makers to better understand the deep history of the place. This toolkit is based on cross-cutting research for comparable analysis in Norway, UK, Italy and Spain that integrates conceptual solutions defined by participatory approaches, online and offline, through innovative digital heritage modelling. The toolbox is expected to facilitate the conceptualization of heritage values among stakeholders for the prioritization of best planning solutions. Both the theoretical and practical contributions of the project aim to stimulate reflection on the choices on how to use urban heritage affected by the historical transformation in urban planning. All in all, using these choices as a tool for enabling dialogue will stimulate reflection on how to make room for different ways of implementing time and temporality in future cities.

IP	University of Tuscia, Noruega
Socios	Reino Unido, España, Italia
Concedido	98.000 €
Concedido ES	299.965 €

PROYECTO 7 EHEM. Enhancement of Heritage Experiences: the Middle Ages. Digital Layered Models of Architecture and Mural Painting over Times

The project aims to obtain virtual reconstructions of medieval artistic heritage -architecture with mural paintings- that are as close as possible to the original at different times, incorporating historical-artistic knowledge and the diachronic perspective of heritage, as an instrument for researchers, restorers and heritage curators and to improve the visitor's perceptions and experiences. In the digital models elaborated we intend to develop, as concrete objectives: 1. The understanding of architectural complexity, which is usually regularized geometrically. The collaboration of architects reveals the enormous interest of multidisciplinary dialogue in order to reach a real understanding of the construction of the building and its structural "anomalies". 2. Solving chromatic problems. The different restoration criteria followed over the years have resulted in notable differences in the current chromatic perception, sometimes of different fragments of the same ensemble. The analysis of pigments, the arrangement of the pictorial layers and the successive restorations suffered, with the help of conservation and restoration technicians, will allow us to digitally specify the original colouring of the paintings. 3. Raise and propose the resolution of lighting problems. To date, trials have been carried out for the restitution of these problems in digital models based on the analysis of natural lighting, which we intend to improve. We also propose to deal with artificial lighting by chandeliers or oil lamps, which produced effects

of painting vibration at the moment when, for liturgical reasons, the images “acted”.⁴ To approach digitally the different perspectives of the medieval building and its paintings according to the categories of users. The laity did not have the same visual access as the clergy to the most decorated parts of the church, the iconographic programs did not have a universal addressee.

IP	Universitat de Barcelona, España
Socios	Chipre, Italia
Concedido	120.000 €
Concedido ES	125.000 €

PROYECTO 9 IRIS. Inspiring rural heritage: sustainable practices to protect and conserve upland landscapes and memories

Europe’s upland landscapes are a rich and complex heritage, born of the interaction of nature and culture over millennia. Local communities can play an active and essential role in conserving and protecting this heritage, benefitting wider society. However, current conservation measures and land use decisions consistently fail to consider the historic dimension of upland landscapes and underestimate the contribution of local practitioners in sustaining their environment through active use. IRIS is a response to these circumstances, and to the threats to upland landscapes from depopulation, abandonment, the loss of traditional skills and land use change driven by the climate emergency and economic trends.

IRIS aims to advance the socially and environmentally sustainable conservation, protection and use of upland landscapes. The project will research and develop a ‘living heritage’ approach to conservation, promoting the ‘protection through use’ of upland environments and adjacent rural areas. Through intensive and participatory research in five countries (Spain, France, Italy, Montenegro, the UK) and wider European research and knowledge exchange, IRIS will: Demonstrate how knowledge of historical processes and land use practices supports the conservation and sustainable development of upland landscapes; Define a ‘living heritage’ approach to conservation and best practices through which local stakeholders can embed their cultural values, expertise and traditions; Support collaboration among local institutions and communities and realise effective and diverse participation in the conservation, protection, sustainable development and use of upland landscapes; Provide local and European policy makers with new tools that will enable them to: (a) take into account the historical dimension of rural places, and; (b) implement a ‘living heritage’ approach to decisionmaking; Create a new research framework that advances knowledge of upland cultural heritage and its wider social and environmental values and benefits; Communicate and disseminate research results at local, European and wider international levels.

IP	University of Genoa, Italia
Socios	University of Genoa (UNIGE), Genoa (ITALY), University of Durham, Durham, (UK), University of Granada, Granada (SPAIN), Université Toulouse II Jean Jaurès (GEODE), Toulouse (FRANCE)
Concedido	100.000 €
Concedido ES	325.310 €

HERA-JRP-PS - HERA Joint Research Programme European Public Space, Culture and Integration

El objetivo del programa HERA JRP PS propuesto será investigar los problemas y desafíos de la integración con referencia específica a los roles de la cultura y del espacio público en los procesos de integración (y potencialmente en fallas de integración, como experiencias o prácticas de exclusión). El programa ha sido diseñado para facilitar una amplia gama de enfoques para conceptualizar el “espacio público”, incluidos los espacios físicos donde se expresan ideas, valores y creencias, pero también espacios para la actuación, el entorno construido y los espacios virtuales. La “cultura” también se entenderá ampliamente e incluirá idiomas, así como formas de herencia y práctica creativa como vehículos para la comprensión cultural en el espacio público. Este enfoque inclusivo facilitará respuestas amplias, innovadoras e interdisciplinarias al JRP. Veinticuatro organizaciones de 24 países de la UE han agrupado una cantidad sustancial de sus fondos de investigación en humanidades para este nuevo HERA JRP, lo que aumenta la eficiencia y el impacto de la financiación pública. El consorcio HERA JRP PS también apoyará activamente las actividades de intercambio de conocimientos y estimulará una difusión más amplia sobre las valiosas contribuciones de la investigación en nuevas humanidades. Además, HERA JRP PS llevará a cabo actividades adicionales destinadas a la creación de capacidad internacional en la investigación de humanidades y explorará y preparará nuevas acciones conjuntas.

Socios: **Coordinador: Países Bajos** (Netherlands Organisation for Scientific Research (NWO), Austria (Austrian Science Fund (FWF), Bélgica (Belgium National Fund for Scientific Research (FNRS), Croacia (Croatian Academy of Sciences and Arts (HAZU), República Checa (Academy of Sciences of the Czech Republic (ASCR), Dinamarca (The Danish Agency for Science, Technology and Innovation (DASTI DCTI), Estonia (Estonian Science Foundation (ETAG), Finlandia (Academy of Finland (AKA), Francia (National Research Agency (ANR), Alemania (German Aerospace Center (DLR), Islandia (Icelandic Centre for Research (RANNIS), Irlanda (Higher Education Authority (HEA), Italia (Ministry of Education, University and Research (MIUR), Letonia (State Education Development Agency (VIAA), Lituania (Research Council of Lithuania (LSC/LMT/RCL), Luxemburgo (National Fund for Research (FNR), Noruega (Research Council of Norway (RCN), Polonia (National Science Centre (NCN), Eslovaquia (Slovak Academy of Science (SAS/SAV), Eslovenia (Ministry of Education, Science, Culture and Sport (MESCS/MIZS), **España (Agencia Estatal de Investigación (AEI)**, Suecia (Swedish Research Council (VR/SRC), Suiza (Swiss National Science Foundation (SNSF/SNF), Reino Unido (Arts and Humanities Research Council (AHRC).

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales: 1 (2018)

Participación del MINECO y la AEI en convocatorias conjuntas: 1 (2018)

CONVOCATORIA CONJUNTA 2018

Países participantes	Austria, Bélgica, Croacia, República Checa, Dinamarca, Finlandia, Francia, Alemania, Islandia, Irlanda, Italia, Lituania, Letonia, Luxemburgo, Países Bajos, Noruega, Polonia, Eslovaquia, Eslovenia, España, Suecia, Suiza, Reino Unido
Temáticas	Public Spaces: Culture and Integration in Europe

Presupuesto total	20.000.000 €
Concedido ES	649.109 €
Proyectos aprobados	20
Proyectos financiados por AEI	6 (proyecto coordinado por ES)

Nº	Acrónimo y título del proyecto	Países participantes
1	BESTROM. Beyond Stereotypes: Cultural Exchanges and the Romani Contribution to European Public Spaces	España , Polonia, Reino Unido, Finlandia
2	Cemeteries and Crematoria as public spaces of belonging in Europe: a study of migrant and minority cultural inclusion, exclusion and integration	Reino Unido , Países Bajos, Suecia, Luxemburgo, Noruega,
3	en/counter/points: (re)negotiating belonging through culture and contact in public space and place	Reino Unido , Polonia, Italia, Países Bajos, Alemania
4	European Music Festivals, Public Spaces, and Cultural Diversity	Dinamarca , Países Bajos, Irlanda, Polonia, Reino Unido
5	FESTSPACE. Festivals, events and inclusive urban public spaces in Europe	Reino Unido , Irlanda, Suecia, España
6	FOOD2GATHER. Exploring foodscapes as public spaces for integration	Noruega , Alemania, Francia, Italia, Países Bajos, Bélgica
7	Governing the Narcotic City. Imaginaries, Practices and Discourses of Public Drug Cultures in European Cities from 1970 until Today	Alemania , Países Bajos, Dinamarca, Francia
8	Healthcare as a Public Space: Social Integration and Social Diversity in the Context of Access to Healthcare in Europe	Alemania , Eslovenia, Croacia, Polonia
9	MMP. Moving Marketplaces: Following the Everyday Production of Inclusive Public Spaces	Reino Unido , Países Bajos, Suiza, España
10	PLURISPACE. Negotiating diversity in Expanded European Public Spaces	Francia , Reino Unido, Noruega, España
11	NITE. Night spaces: migration, culture and IntegraTion in Europe	Países Bajos , Reino Unido, Alemania, Dinamarca, Irlanda
12	Pleasurescapes. Port Cities' Transnational Forces of Integration	Alemania , Países Bajos, España, Suecia
13	PURE. PUBlic RENaissance: Urban Cultures of Public Space between Early Modern Europe and the Present	Reino Unido , Alemania, España, Países Bajos, Italia
14	Public Space in European Social Housing	Dinamarca , Noruega, Suiza, Italia
15	Public Spaces and Psychoactive Revolution. The Impact of New Intoxicants on Public Spaces, Consumption, and Sociability in North-Western Europe, c. 1600 – c. 1850	Reino Unido , Países Bajos, Alemania, Suecia

16	Public transport as public space in European cities: Narrating, experiencing, contesting	Estonia , Bélgica, Alemania, Finlandia
17	The European Spa as a Transnational Public Space and Social Metaphor	Países Bajos , Suecia, Reino Unido, Alemania
18	The everyday experiences of young refugees and asylum seekers in public spaces	Reino Unido , Alemania, Países Bajos, Bélgica
19	The Scientific Conference. A Social, Cultural, and Political History	Suecia , Reino Unido, Francia, Países Bajos
20	VICTOR-E. Visual Culture of Trauma, Obliteration and Reconstruction in Post-WW II Europe	Alemania , Italia, República Checa, Francia

CONVOCATORIA NACIONAL APCIN 2019

PROYECTO 1 BESTROM. Beyond Stereotypes: Cultural Exchanges and the Romani Contribution to European Public Spaces

BESTROM goes beyond the historical scholarship which focuses on state practices, instead emphasising Romani agency, and this implies a critique of “integration”: Romanies’ ambivalent historical experience confounds the familiar inclusion-exclusion binomial, while their practices of challenging normative integration processes, deploying skills of adaptability, mobility and multilingualism, constitute a cultural matrix rich in possibilities for re-visioning European identity. We examine the Romani contribution in four exemplary public spaces, deploying historical, ethnographic and musicological methods. The past and present dynamics of those spaces are explored, with a shared aim of illuminating processes of exchange without ignoring underlying conflicts and asymmetries of power. The case studies have regional foci but are conceived in transnational terms, sensitive to comparisons and transfers.

IP	Universidad de Sevilla, España
Socios	Polonia (Jagiellonian University of Kraków), Reino Unido (University of Liverpool), Finlandia (University of Helsinki)
Presupuesto total	729.847,10 €
Concedido ES	149.760 €

PROYECTO 5 FESTSPACE. Festivals, events and inclusive urban public spaces in Europe

The FESTSPACE project focuses on how festivals and events enable or restrict access to, and use of, public spaces, including the extent to which they might effectively host interactions and exchanges between people from different cultural, ethnic, socio-economic and socio-demographic backgrounds. We are interested in how the design and operation of urban festivals and events might help to dismantle existing divisions. However, we acknowledge that festivals and events have the potential to symbolically, financially and physically exclude marginal populations from conventional public spaces, hence making spaces less public or less diverse. This provides even more justification for a study that seeks to establish if and how festivals and events affect the inclusivity of urban public spaces. There is the potential for cities to go beyond multi-culturalism towards inter-culturalism by harnessing the “the dialogue and exchange between people of different cultural

backgrounds to facilitate the transformation of public space, civic culture and institutions”. Therefore, FESTSPACE will also examine the extent to which diversity is embedded in the conception, organisation and delivery of festivals and events and the wider effects of this involvement.

IP	University of the West of Scotland, Reino Unido
Socios	Reino Unido (University of Westminster), Irlanda (Dublin Institute of Technology), Suecia (University of Gothenburg), España (Universitat Oberta de Catalunya)
Presupuesto total	627.954,09 €
Concedido ES	100.000 €

PROYECTO 9 MMP. Moving Marketplaces: Following the Everyday Production of Inclusive Public Spaces

While most research focuses on how marketplaces are consumed, MMP concentrates on the actors that make markets work: the merchants. Investigating both rural and urban marketplaces across four countries (Spain/Switzerland/the Netherlands/UK), MMP not only pays attention to merchants’ place-making capacities, but also to their mobility practices. Following merchants from market to market, this translocal perspective helps to deepen theoretical and empirical understandings of how marketplaces are produced as inclusive spaces.

IP	Open University, Reino Unido
Socios	Países Bajos (Radboud Universiteit), Suiza (Université de Neuchâtel), España (Universitat Pompeu Fabra)
Presupuesto total	878.464 €
Concedido ES	99.866 €

PROYECTO 10 PLURISPACE. Negotiating diversity in Expanded European Public Spaces

In Europe, an important issue pertains to the settlement of post-immigrant ethno-religious groups, along with the expression and organization of collective identities, claims for participation/representation and recognition, the role of religion in public space, and the increasing influence of diaspora and transnational politics. PLURISPACE’s point of departure is that these questions cannot be properly addressed without at the same time taking into account the multilevel character of the European public space they unfold within, the multiple characters of the groups (some identified by national origins, others by religion etc.) and the multiple modes of integration. Within such a complex European space, we identify four policy and theoretical approaches to diversity management and understanding of public space: multiculturalism, interculturalism, transnationalism and cosmopolitanism.

IP	Fondation Nationale des Sciences Politiques, Francia
Socios	Reino Unido (University of Bristol), Noruega (University of Oslo), España (Universitat Pompeu Fabra)
Presupuesto total	912.935 €
Concedido ES	100.000 €

PROYECTO 12 Pleasurescapes. Port Cities' Transnational Forces of Integration

Pleasurescapes is a Humanities-led collaborative research project that explores the relations between public spaces, culture and integration by means of popular culture. We ask for the ways how public pleasurescapes in European port cities have unfolded cultural and social forces of integration in the past and present and thereby fostered traits of modern European urban practices.

IP	HafenCity University Hamburg, Alemania
Socios	Países Bajos (Erasmus University Rotterdam), España (Fundació Privada Joan Bosch), Suecia (Stockholm University)
Presupuesto total	908.858,74 €
Concedido ES	99.549 €

PROYECTO 13 PURE. Public Renaissance: Urban Cultures of Public Space between Early Modern Europe and the Present

The central concept of the project is that of a “Public Renaissance”, by which we intend to examine both the urban cultures of public space in the early modern era, and to set this into dynamic dialogue with the recently invigorated discourse around the agency of public space in shaping contemporary events. By proposing a cross-chronological enquiry that sets the relatively remote formative period of many European cities into dialogue with the contemporary world, we explore and reveal how the past is inscribed in the material culture of the public spaces we still inhabit, and how these contribute to shaping actions and events in the present. Our project considers the early modern period (c. 1450–1700) in the urbanised heart of Europe, with particular attention to case examples between the Netherlands (Deventer, Leiden, Amsterdam), Germany (Hamburg), Spain (Valencia, Madrid), Italy (Trento, Venice, Bologna, Florence) and England (Exeter and Bristol).

IP	University of Exeter, Reino Unido
Socios	Alemania (Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), España (Universitat de València), Países Bajos (University of Groningen), Italia (Italian-German Historical)
Presupuesto total	934.140 €
Concedido ES	99.934 €

GENDER NET Plus - ERA-NET Cofund Promoting Gender Equality in H2020 and the ERA

A pesar de los esfuerzos para reducir la fragmentación en el Espacio Europeo de Investigación (ERA), el sistema científico europeo todavía se enfrenta a desafíos para lograr la igualdad de género y la integración de la perspectiva de género en la investigación y la innovación. En este contexto, y de acuerdo con los objetivos de la política de ERA y los contextos nacionales, el cofund GENDER-NET Plus ERA-NET tiene como objetivo fortalecer las colaboraciones transnacionales entre los ministerios y las agencias financiadoras, brindar apoyo para la promoción de la igualdad de género a través del cambio institucional y fomentar la integración del análisis de sexo y género en los programas de investigación y financiación.

Socios: Coordinador: Francia (National Center for Scientific Research (CNRS), Austria (Austrian Science Fund (FWF), Bélgica (National Fund for Scientific Research (FNRS), Canadá (Canadian Institutes of Health Research (CIHR), NATURAL SCIENCES AND ENGINEERING RESEARCH COUNCIL (NSERC CRSNG), Chipre (Research Promotion Foundation (RPF/IPE), República Checa (TECHNOLOGY AGENCY OF THE CZECH REPUBLIC (TACR), Estonia (Estonian Science Foundation (ETAG), Francia (National Research Agency (ANR), Irlanda (Higher Education Authority (HEA), Irish Research Council (IRC), Israel (Ministry of Science, Technology and Space), Italia (Ministry of Health (MOH/MDS), Noruega (Research Council of Norway (RCN), **España (La Caixa Banking Foundation (FBLC), Ministerio de Economía y Competitividad (MINECO), Agencia Estatal de Investigación (AEI);** Suecia (Swedish Research Council (VR/SRC)

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas: 1 (2018)

Participación del MINECO y la AEI en convocatorias conjuntas: 1 (2018)

CONVOCATORIA CONJUNTA INTERNACIONAL 2018

Países participantes	Austria, Bélgica, Canadá, Chipre, República Checa, Estonia, Francia, Irlanda, Israel, Italia, Noruega, España, Suecia
Temáticas	SDG 5 Gender Equality and one or more of the following SDGs: - SDG 3 Good health and well-being - SDG 9 Infrastructure, Industrialization and Innovation - SDG 13 Climate Action
Presupuesto total	10.615.700 €
Concedido ES	404.000 €
Proyectos aprobados	13
Proyectos financiados por AEI	4 (1 proyecto coordinado por ES)

Nº Acrónimo y título del proyecto		Países participantes
1	FUTUREGEN. Evolving gender differences in health & care across cohorts	Austria, Suecia, Canadá
2	G-DEFINER. Gender difference in side effects of immunotherapy: a possible clue to optimize cancer treatment	Italia, Irlanda, Noruega, Suecia
3	GBV-MIG. Violence against women migrants and refugees: Analysing causes and effective policy response	Francia, Canadá, República Checa, Irlanda, Austria, Noruega, Israel
4	GENDER-ARP. Addiction, Health Risks and Recovery in Context of Social Precarity: How to Better Address Complex Needs Taking into Account Gender and Life Stages	Canadá, Francia, Bélgica
5	GENPATH. A life course perspective on the GENDERed PATHways of social exclusion in later life, and its consequences for health and wellbeing	República Checa, Noruega, España, Suecia, Irlanda, Austria, Israel
6	GENRE. Overcoming the Entrepreneurial Ecosystem Gender Divide: A Cross-Cultural Perspective	Irlanda, Noruega, Suecia, Israel
7	GOING-FWD. Gender Outcomes International Group: to Further Well-being Development	Canadá, Austria, Suecia, Chipre, España
8	MASCAGE. Gendering Age: Representations of Masculinities and Ageing in Contemporary European Literatures and Cinemas	España, Israel, Austria, Estonia, Suecia, Irlanda
9	PositivMas. Masculinities and violence against women among young people- Identifying discourses and developing strategies for change using a mixed method approach	Suecia, Israel, España, Irlanda
10	RHCforFGC. Sharing Actions and Strategies for Respectful and Equitable Health Care for Women with FGC/M	Canadá, Francia, Suecia, Bélgica
11	SEQUAL. Social-ecological relations and gender equality: Dynamics and processes for transformational change across scales.	Suecia, Noruega, España
12	TIGER. The combined role of genetic and environmental risk factors in the gender-specific development of severe tinnitus	Suecia, Italia, España, Noruega
13	iKASCADE. Identifying Key Prescribing CASCADEs in the Elderly: A Transnational Initiative on Drug Safety	Canadá, Irlanda, Italia, Israel

CONVOCATORIA NACIONAL APCIN 2019

PROYECTO 5 GENPATH. A life course perspective on the GENDERed PATHways of social exclusion in later life, and its consequences for health and wellbeing

Social exclusion is a multifaceted social problem with substantial disruptive consequences for individuals and society. One aspect of social exclusion is the exclusion from social relations, which

is the key focus of this proposal. Being socially connected is a universal basic human need, but a substantial number of people lack the essential social resources necessary for a healthy and happy life. GENPATH focusses on post-retirement age, a life phase where social inclusion becomes a crucial factor for health and wellbeing. Men and in particular women have an increased risk to be socially excluded after retirement. Women are more often frail, more often widowed, have lower levels of education, have more often disrupted working careers, lower pensions, and less economic resources. The large variation in social exclusion and the varying impact of gender across welfare states indicates a key role of the macro-social context. However, little is known about how precise the welfare state context influences the construction and outcomes of social exclusion. The proposed project aims at analysing the origin of gender differences in the prevalence and generation of exclusion from social relations across European countries, and consequences of this exclusion for health and wellbeing. Findings will inform the scientific debate about gender differences in and social exclusion and instruct policies towards a reduction in social exclusion among older men and women.

IP	Masaryk University, República Checa
Socios	Noruega (Norwegian Social Research, OsloMet-Oslo Metropolitan University), España (Universidad de Barcelona) , Suecia (Linköping University), Irlanda (National University of Ireland Galway), Austria (University of Vienna), Israel (University of Haifa)
Presupuesto total	955.642 €
Concedido ES	74.500 €

PROYECTO 8 MASCAGE. Gendering Age: Representations of Masculinities and Ageing in Contemporary European Literatures and Cinemas

The primary objective of this research is to analyse social constructions of ageing masculinities and/through their cultural representations in contemporary European literatures and cinemas. The study specifically seeks: (a) to understand more fully the interrelationship of masculinities with a variety of social issues specifically associated with men's ageing: older men's health, social inclusion and exclusion, sexualities and affective relationships, and ageist stereotypes, (b) to explore men's experiences of, and attitudes to, ageing across different European cultures, exploring their commonalities and differences, at both national and transnational levels, (c) to gain a deeper understanding of ageing masculinities in and through cultural representations, and (d) to share the results of this project with other researchers, practitioners and policy-makers to help them devise strategies and policies designed to promote greater gender and age equity. If age studies focus on youth and gerontology studies of either older women or "ungendered" portraits of ageing (Saxton and Cole 2012), this project will explore the gendered specificities of men's ageing. Applying to the cultural analysis an interdisciplinary corpus of masculinity and age studies, the project seeks to make an impact by crossing the traditional Social Sciences-Humanities boundary and by proving that not only do social notions of masculinity shape their cultural representations, but they simultaneously affect the social (de-)construction of both gender and age.

IP	Universidad de Castilla-La Mancha, España
Socios	Israel (Bar-Ilan University), Austria (University of Graz), Estonia (Tallinn University), Suecia (Södertörn University), Irlanda (National University of Ireland)
Presupuesto total	997.392 €
Concedido ES	130.000 €

PROYECTO 9 PositivMas. Masculinities and violence against women among young people- Identifying discourses and developing strategies for change using a mixed method approach

The aims of this project are four-fold: 1) to explore and position the discourses that young people (men and women, 18-24 years) in Sweden, Spain, Ireland and Israel use in their understanding of masculinities, 2) to explore how these discourses influence young people's attitudes, behaviors and responses to violence against women (VAW), (3) to explore individual and societal factors supporting and promoting anti-VAW masculinities discourses and 4) to develop strategies and resources to support and promote anti-VAW masculinities in these settings. We will achieve aims by conducting innovative, participatory research using a multi-country, mixed-methods approach. In the first phase, data will be gathered using semi-structured interviews and focus groups discussions. In this phase, we aim to identify the discourses that young people use to conceptualize masculinities and VAW. Phase two will consist of a concept mapping study that will quantify the coherence, priorities and perceived relationship between the strategies for supporting and promoting anti-VAW masculinities identified in phase one. Phase 3 involves the dissemination of our results and the development of resources to promote and protect anti-VAW masculinities. Building on an inter-disciplinary team and engaging participants in implementation of the study (through interactive workshops and advisory groups), we will provide an evidence-base for the design and implementation of gender-sensitive policies aimed at promoting anti-VAW masculinities and challenging and reducing VAW and patriarchy.

IP	Karolinska Institutet, Suecia
Socios	Israel (Ben-Gurion University of the Negev), España (Universidad de Alicante), Irlanda (University College Cork)
Presupuesto total	868.170 €
Concedido ES	99.500 €

PROYECTO 11 SEQUAL. Social-ecological relations and gender equality: Dynamics and processes for transformational change across scales

The SEQUAL research project addresses the call topic 3.1 Gender Dimension In Climate Behaviour and Decision-Making. Focusing on the sector of natural resource management we investigate gender differences in participation and leadership in climate related processes - everyday practices, decision-making and adaptation strategies - at all levels in society. We extend the frontiers of research in this field to a focus on why gender differences occur, how they are produced and reproduced and their social location (where). We conduct top-down discourse analysis of policy on climate change and gender equality in natural resource management across three countries, Norway, Sweden and Spain. We ground truth our policy analysis through qualitative

case studies across national borders in reindeer herding in the Arctic, community farming in the Pyrenees and dry forest communities in Burkina Faso. We then focus on interactions between levels through comparative analysis across case studies and policy. The overall vision of the SEQUAL research project is understanding connections and flows of power to dig deep into processes of climate change and gender relations, and address these issues as social, ecological and political processes across borders and across scales. Our research is framed conceptually as investigations of discourse (politics and power), and processes (the dynamics and effects of flows of power) between and across scales, operating in social-ecological systems.

IP	Stockholm University, Suecia
Socios	Noruega (Nordland Research Institute), España (Universitat de Vic-Universitat Central de Catalunya)
Presupuesto total	898.962 €
Concedido ES	100.000 €

NORFACE network - New Opportunities for Research Funding Agency Cooperation in Europe

NORFACE es un proyecto financiado por la CE que agrupa a agencias nacionales de financiación de la investigación en Europa, dedicada a liderar y desarrollar oportunidades para científicos en el área de las ciencias sociales y del comportamiento. NORFACE desempeña un papel importante en la respuesta a los grandes desafíos sociales promoviendo la investigación de la más alta calidad, compartiendo las mejores prácticas entre los financiadores de la investigación y, especialmente, haciendo posible la colaboración internacional entre científicos sociales en Europa. Desde los desafíos provocados por la migración y la desigualdad, hasta la preparación para el impacto de una sociedad que envejece, los investigadores de las ciencias sociales en Europa están analizando el comportamiento de individuos y grupos y la dinámica de las instituciones y sociedades dentro de Europa para comprender y abordar estos problemas sociales.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales: 2 (2018; 2019)

Participación de la AEI en convocatorias conjuntas: 1 (2019)

CONVOCATORIA CONJUNTA INTERNACIONAL 2019

Países participantes	
Temáticas	1. Inequality and redistribution 2. The evolving politics of threat 3. The democratisation of information 4. Shifting identities and representation 5. The changing authority of institutions
Presupuesto total	17,6 M€
Concedido ES	463.000€
Proyectos aprobados	14
Proyectos con MINECO/AEI	8

Nº	Acrónimo y título del proyecto	Países participantes
1	CrimScapes. Navigating citizenship through European landscapes of criminalization	Alemania, Francia, Finlandia, Polonia
2	DATADRIVEN. Data-driven campaigns: intended and unintended consequences for democracy	Países Bajos, Reino Unido, Austria
3	DEEPEN. Democratic Governance of Funded Pension Schemes	Austria, Países Bajos, España
4	EUINACTION. Willingness and Capacity for EU Policy Action in Times of Crises: Conflicts, Positions and Outcomes	Países Bajos, Alemania, Reino Unido

5	ExId. Extreme Identities: A Linguistic and Visual Analysis of European Far-Right Online Communities' Politics of Identity	Reino Unido , Dinamarca, Irlanda
6	INDIGO. Information in the EU's Digitalised Governance	Finlandia , España, Alemania
7	POPBACK. Populist Backlash, Democratic Backsliding, and the Crisis of the Rule of Law in the European Union	Reino Unido , Polonia, Austria, Eslovenia, Alemania
8	QUEST. Qualify Unification in Europe for Shifting Trust	Noruega , Reino Unido, España
9	RECONNECT. RECONNECTING CITIZENS TO THE ADMINISTRATIVE STATE	Reino Unido , España, Holanda, Noruega
10	RUDE. The Rural-Urban Divide in Europe	Reino Unido , España, Francia, Suiza
11	SepaRope. Separation of powers for 21st century Europ	Países Bajos , Suecia, Finlandia
12	TECHNO. How Technological Change Reshapes Politics: Technology, Elections, and Policies	Reino Unido , España, Suiza
13	THREATPIE. The Threats and Potentials of a Changing Political Information Environment	Bélgica , España, Francia, Alemania, Países Bajos, Polonia, Reino Unido
14	UNDPOLAR. Threat, identity, and dissent: Understanding and addressing political polarisation in European democracies	Bélgica , Francia, Polonia, Reino Unido, España

CONVOCATORIA NACIONAL APCIN 2020

PROYECTO 3 DEEPEN. Democratic Governance of Funded Pension Schemes

DEEPEN explores the democratic governance of capital-funded occupational pension schemes. We adopt Scharpf's distinction between input legitimacy (are collectively binding decisions in line with citizens' democratically expressed preferences?) and output legitimacy (do collectively binding decisions serve the common interests of the citizens?) to investigate how governments, regulators and labour market actors govern funded pensions (input legitimacy) and whether participants are satisfied with pension fund performance (output legitimacy). The project focuses on Denmark, the Netherlands, Germany, Austria, Ireland and Spain because the structure of funded pension provision varies along key dimensions relevant to input and output legitimacy. The project combines quantitative analysis of survey data with comparative case studies based on elite and expert interviews and analysis of primary and secondary documents.

Four work packages investigate the following research questions: How does national policy define participant influence on funded pension provision? How do stakeholders use pension fund governance to influence investment policy? How have capital-funded pension schemes performed in terms of pension outcomes across European welfare states? To what extent are individual attitudes on pension investment aligned with these inputs and outputs?

The project team includes researchers from the fields of Political Science, Social Policy, and Sociology, whose combined expertise includes pension politics and policy, financialization, and

the politics and sociology of the welfare state. The project will contribute to academic and policy debates through journal articles, a special issue, conference presentations, and outreach activities aimed at national and European policymakers and other stakeholders.

IP	University College Dublin, Irlanda
Socios	Dr T. Wiss, Johannes Kepler Universität Linz, Austria - Dr N.A.J. van der Zwan, Leiden University, Países Bajos - Professor J.J. Fernández, Universidad Carlos III de Madrid, España
Presupuesto Total	812.687 €
Concedido ES	98.214 €

PROYECTO 6 INDIGO. Information in the EU's Digitalised Governance

INDIGO addresses pressing issues affecting the future of democratic governance in Europe and the relation between the individual and the public sphere. Its objective is to develop a framework for the use of advanced machine learning algorithms in the multi-jurisdictional implementation of European policies.

INDIGO cuts across themes 3, 4 and 5 having as subjects inter alia democracy and information, expertise and the locus of engagement influencing public decision-making and questions of the nature of their authority and accountability.

The objectives and outcome are, first, to map the deep and potentially profoundly transformative impact of innovative information technologies on rule-making and decision-making procedures for the implementation of EU policies and their impact on values, principles and rights in EU public law. Second, to develop future-proof regulatory approaches to technological innovation on the basis of structured analysis of policy case studies and phases of a decision-making in cycle-models.

The impact will be the development of a core piece of knowledge regarding decision-making, the interface between citizens, science and law and the notions of discretion in view of AI. INDIGO will thereby develop pathways to ensure that the use of information technology will both enhance the rule of law, democracy, transparency and the protection of fundamental individual rights as well as efficiency in problem solving and provision of public goods.

The consortium will closely work together in working groups with legal scholars, STS social scientists and Cognitive Science experts, led by the originator and coordinator of the ReNEUAL project as PI.

IP	University of Luxembourg, Luxemburgo
Socios	Professor F. Boehm, FIZ Karlsruhe (Alemania) - Professor O. Mir, Universitat Pompeu Fabra (España) - Professor J.P. Schneider, University of Freiburg (Alemania) - Professor P. Leino-Sandberg, University of Helsinki (Finlandia)
Presupuesto Total	1.488.082 €
Concedido ES	99.500 €

PROYECTO 8 QUEST. Qualify Unification in Europe for Shifting Trust

This project addresses two themes of the call – the emerging politics of threat and shifting identities and representations – in relation to the question of Muslims in European public spheres. Through two phases of research, followed by an action phase involving civil society and policy actors, the project aims first to consider the common discourses of threat that are associated with the growing presence of Muslims in four European societies with different political culture. It will then seek to move beyond such ‘problem oriented’ approaches by examining the shifting identities and representations of Muslims as these are emerging and evolving in a turbulent era of ‘democratic deficit’.

The aim is to identify individual and collective discourses, practices and strategies in the re-elaboration process of what it means to ‘be Muslim’ in a polarized Europe, by focusing on discourses, practices and strategies to overcome stigmatization and exclusion in the daily life of citizens. A final action phase will seek to transfer innovative practices of engagement and dialogue across the different European contexts. The project will make use of an ethnographic approach that involves mapping cultural production and activism through extended engagement with Muslims in urban settings, with special focus on youth. While acknowledging the discourses of threat that pervade representations of Muslims in European public spheres, the project distinguishes itself from much of the research by focusing on new forms of engagements and dialogue to promote a more inclusive society in a period of growing anxiety and mistrust.

IP	Ecole des Hautes Etudes en Sciences Sociales (Francia)
Socios	Dr A. Ma Cea D’Ancona, Complutense University of Madrid (España) - Dr A. Hussain, University of Manchester (Reino Unido) - Dr V. Vestel, Oslo Metropolitan University (Noruega)
Presupuesto Total	1.115.640 €
Concedido ES	100.000 €

PROYECTO 9 RECONNECT. RECONNECTING CITIZENS TO THE ADMINISTRATIVE STATE

The administrative state is central to democratic governance – it connects citizens to the state. The current age of political turbulence – expressed through citizen dissatisfaction and populist politics – represents a fundamental challenge to the authority of institutions of the administrative state and requires inquiry into processes of citizen dis- and reconnection with the state.

The RECONNECT study investigates how the age of ‘administrative turbulence’, a result of changes in the political environment, cumulative side-effects of decades of public sector reform and changing citizen demands, have led to calls for more ‘responsive’ administrative state institutions. In particular, RECONNECT investigates variation in attitudes and demands by citizens and politicians towards the administrative state and explores how the administrative state has sought to become more responsive to citizens and politicians. RECONNECT focuses on five distinct dimensions of the administrative state covering constitutional, regulatory, enabling, consumer-protecting and consulting dimensions. These dimensions express different, but reinforcing elements of citizenship in democratic governance. Using focus groups and polling data to understand citizen attitudes towards the administrative state and documentary and interviews research regarding political and administrative actors, RECONNECT generates new knowledge to

compare and explain variation across dimensions of the administrative state and EU member state jurisdictions. RECONNECT contributes to academic and practitioner knowledge and debates regarding the future of the administrative state in the current age of turbulence. In doing so, RECONNECT points to ways how citizens can be reconnected to the administrative state in particular and wider democratic governance more generally.

IP	London School of Economics and Political Science (UK)
Socios	Dr N. Sitter, Norwegian Business School (Noruega) - Dr C. Koop, University of London (Reino Unido) - Professor J. Jordana, Institut Barcelona d'Estudis Internacionals (España) - Dr C.H.J.M Braun, Leiden University (Países Bajos)
Presupuesto Total	1.166.970 €
Concedido ES	91.000 €

PROYECTO 10 RUDE. The Rural-Urban Divide in Europe

Rising populism and polarization, coupled with declining democratic legitimacy, all point toward a crisis in European democracies. This crisis has a regional dimension: a political and perhaps cultural divide between rural and urban areas. The project examines whether and how urban-rural residency is related to divides in legitimacy beliefs, social identities, perceptions of injustice and threat, political and social attitudes and political behavior of European citizens. It explores “Democratic governance in a turbulent age” from different thematic angles. First, it deals with shifting identities and their consequences for democratic governance and political representation (theme 4). Stable cleavages only emerge when struggles for identity are accompanied by perceptions of social inequality and unfair resource distribution (theme 1). Second, it examines the role played by globalization: increasing rural-urban economic divides create social status threats which exacerbate rural-urban political divides (theme 2). The project will combine a broad comparative study of all European countries with an in-depth analysis of five established European democracies. The project will result in the provision of significant new evidence on rural-urban disparities in European politics, which will allow us to examine the consequences of – and cures for – the current crisis of democracy, thereby engaging both academic and policymaking audiences.

The coordination of the project, setting of the agenda, and the timely delivery of work packages will be the responsibility of the Frankfurt team. In particular, the project will be coordinated by holding six internal workshops and using a shared cloud server.

IP	Goethe University Frankfurt/Main (Germany)
Socios	Professor S. Zmerli, Université Grenoble Alpes (Francia) - Dr G. Rico, Autonomous University of Barcelona (España) - Dr C. Claassen, University of Glasgow (Reino Unido) - Professor M. Freitag, Universität Bern (Suiza)
Presupuesto Total	1.347.500 €
Concedido ES	100.000 €

PROYECTO 12 TECHNO. How Technological Change Reshapes Politics: Technology, Elections, and Policies

Technological change is disrupting labor markets in advanced democracies and rekindling fears about technological unemployment. While there is little doubt that rapid technological progress has far-reaching economic effects, its political consequences remain largely unexplored. The goal of this project is to study how technological change in the workplace is contributing to the ongoing deep political transformations (including the surge of populist movements), the adoption of policies to address change, and the effectiveness of specific policies at reducing political turmoil.

The empirical plans are organized in four work packages (WP). WP1 develops a novel approach to examine how workers' economic trajectories and political behavior change when their industries digitalize. WP2 studies how the introduction of technology affects electoral outcomes using rich administrative data. WP3 collects, for the first time, cross-national survey data about the preferences of citizens for policies related to technological change and automation. WP4 analyses whether regional policies can mitigate the disruptive political consequences.

The project will contribute to a deeper understanding of how the grievances generated by profound technological change manifest politically and will be able to provide recommendations on which policies to help workers and communities adapt to a fast-changing economic landscape are politically viable and effective. By examining the economic threat posed by automation and providing a novel account of current political turmoil, the project helps understand "The evolving politics of threat" (theme 2 of the call) and the underlying structural causes of "Shifting identities and representation" (theme 4).

IP	Institute for Social Research (Norway)
Socios	Dr A. Kuo, University of Oxford (Reino Unido) - Dr A. Gallego, Institut Barcelona d'Estudis Internacionals (España) - Professor S. Häusermann, University of Zurich (Suiza)
Presupuesto Total	1.407.468 €
Concedido ES	100.000 €

PROYECTO 13 THREATPIE. The Threats and Potentials of a Changing Political Information Environment

This project examines how the current changes in the political information environments in European democracies affect the conditions for a healthy democracy and civil society. As a theoretical background we employ the concept of 'political information environment' that includes both the supply and demand of political news and information. Supply refers to the quantity and quality of news and public affairs content provided through traditional and new media sources, demand deals with the amount and type of news and information the public wants or is able to consume. In particular, the study aims at investigating the following:

- (1) how do citizens gain political information in the complex media environment, what are their attitudes toward information sources, and what is the relationship between these attitudes and political attitudes and behaviour,
- (2) what is the content and quality of information citizens are exposed to,

(3) where do divides between being informed and not being informed exist, across and within European societies, and (4) how can citizens be equipped to navigate and find new and valuable information. We will do this through a series of comparative, innovatively designed studies, including web tracking, comparative surveys, focus groups and survey-imbedded experiments in 15 countries: Germany, Spain, Poland, UK, Denmark, Sweden, Belgium, the Netherlands, Austria, France, Italy, Greece, Czech Republic, Romania, and the US. These countries vary on a number of key contextual factors relevant for the study, covering “young” and “new” democracies with different political heritages, democratic traditions, media systems, and news consumption habits.

IP	University of Southern Denmark (Denmark)
Socios	Professor C.H. de Vreese, University of Amsterdam (Países Bajos) - Professor P. Van Aelst, Universiteit Antwerpen (Bélgica) - Professor C. Schemer, Johannes Gutenberg University (Alemania) - Professor J. Stanyer, Loughborough University (Reino Unido) - Professor A.S. Cardenal, Fundació per a la Universitat Oberta de Catalunya (España) - Professor A. Stepinska, Adam Mickiewicz University (Polonia) - Dr K. Koc-Michalska, Audencia Business School (Francia)
Presupuesto Total	1.464.405 €
Concedido ES	99.540 €

PROYECTO 14 UNDPOLAR. Threat, identity, and dissent: Understanding and addressing political polarisation in European democracies

In many European countries public opinion is polarized on issues such as immigration, inequality, populism, and trust in institutions. All of these have been investigated separately but they lack integration. Are opinions on these issues related and, if so, what is the glue that binds them? Do different groups of people polarize on different issues and/or for different reasons?

Our first objective is to determine how identities and threat combine to generate multiple polarized attitudes. First, we use the novel technique of correlational class analysis to identify subpopulations with unique belief systems, consisting of threat, identities, and polarized attitudes. These analyses are followed by experiments that test causal effects of identity and threats on attitudes and polarization, and how these may differ between subpopulations with different belief systems.

Our second objective is to compare subpopulations of belief systems across countries and over time. Therefore, cross-country differences in belief systems will be related to differences in party manifestos and political polarization, and differences in country-level indices such as inequality and meritocratic beliefs. Longitudinally we will examine the impact of the financial crisis on belief systems.

Crucially, identifying subpopulations with different belief systems will help not only in understanding polarization, but also in identifying solutions, because these might differ depending on the nature of the belief system. Democratic innovations such as citizen forums have been developed to overcome polarization. We will test whether using our insights on threats and identity can make such forums more effective.

IP	University of Groningen (the Netherlands)
Socios	Dr M.J. Easterbrook, University of Sussex (Reino Unido) - Dr R. Rodríguez-Bailon, Universidad de Granada (España) - Professor C. Darnon, University of Clermont-Ferrand (Francia) - Dr M. Marchlewska, Polish Academy of Sciences (Polonia) - Dr M.J. Brandt, Tilburg University (Países Bajos) - Dr D. Caluwaerts, Vrije Universiteit Brussel (Bélgica)
Presupuesto Total	1.383.746 €
Concedido ES	100.000 €

CHANSE - Collaboration of Humanities and Social Sciences In Europe

El objetivo de lanzar la Convocatoria CHANSE era financiar investigaciones de alta calidad que respondan a los desafíos sociales y culturales actuales e inspirar la colaboración entre investigadores y diversos grupos de partes interesadas, como ONG, instituciones culturales, escuelas y muchos otros. La convocatoria recibió una respuesta entusiasta de la comunidad investigadora en ciencias sociales y humanidades. Se presentaron 366 propuestas de esquemas por equipos de investigación compuestos por al menos 4 Investigadores Principales de al menos 4 países diferentes, de los cuales 90 fueron invitados a la segunda etapa de evaluación. Finalmente se seleccionaron 26 proyectos para su financiación. Con el apoyo de la Comisión Europea, CHANSE invertirá 36 millones de euros en proyectos que exploren temas que van desde las teorías de la conspiración, los medios de comunicación de servicio público y la salud pública en los siglos XX y XXI hasta la muerte digital. CHANSE apoyará investigaciones nuevas e innovadoras sobre el funcionamiento, el significado y las consecuencias de las transformaciones e innovaciones en la era digital actual, vistas a través de la lente de la dinámica social y cultural. Si bien el texto de la convocatoria no excluye la comparación o la investigación de otras regiones, cada propuesta debe demostrar una fuerte dimensión europea, es decir, investigar los cambios que se están produciendo o afectan a Europa en su conjunto, o a nivel de un país, ciudad, comunidad, etc.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales: 1 (2021)

Participación de la AEI en convocatorias conjuntas: 1 (2021)

CONVOCATORIA CONJUNTA INTERNACIONAL 2021

Países participantes	Austria, Bélgica, Bulgaria, Croacia, República Checa, Dinamarca, Estonia, Finlandia, Alemania, Hungría, Islandia, Letonia, Lituania, Luxemburgo, Noruega, Polonia, Rumania, Eslovenia, Eslovaquia, España, Suecia, Suiza, Reino Unido.
Temáticas	Transformations: Social and Cultural Dynamics in the Digital Age • TOPIC 1: Cultural Transformations in the Digital Age • TOPIC 2: Digitalisation and Social Transformation
Presupuesto total	36.564.451 €
Concedido ES	1.752.504 €
Proyectos aprobados	26
Proyectos con MINECO/AEI	9

Nº	Acrónimo y título del proyecto	Países participantes
1	AUTO-WELF. Automating Welfare – Algorithmic Infrastructures for Human Flourishing in Europe	Suecia, Dinamarca, Alemania, Polonia, Austria,
2	DiDe. Digital Death – Transforming History, Rituals and Afterlife	Finlandia, Reino Unido, Rumania, Dinamarca

3	DIGeMERGE. Digital Emergency Communication	Noruega, Suecia, Dinamarca, Finlandia
4	DigiFREN. Digital Aestheticization of Fragile Environments	Eslovenia, Polonia, Finlandia, Croacia, Noruega
5	DigiPatch. Moving From A Networked To A Patchworked Society: Motivational Underpinnings And Societal Consequences	Polonia, Suecia, Alemania, España, Reino Unido
6	DIGISCREENS. Identities and Democratic values on European digital screens: Distribution, reception and representation	Noruega, Lituania, Suecia, España
7	DIGITISLAM. Digital Islam across Europe: Understanding Muslims' Participation in Online Islamic Environments	Reino Unido, Polonia, Suecia, España, Lituania
8	GEiO. Gender Equitable Interactions Online – Supporting gender equity in work-based videoconferencing	Reino Unido, Alemania, Islandia, España
9	GIG-OSH. New challenges for occupational safety and health in times of the digital transformation in Europe: the role of digital labour platforms	Suecia, Dinamarca, Bélgica, Reino Unido, Polonia, Finlandia, España
10	HuLog. Humans in Digital Logistics	Bélgica, Polonia, Alemania, Reino Unido
11	JUSTHEAT. Looking back, moving forwards: a social and cultural history of home heating	Reino Unido, Suecia, Finlandia Rumania
12	MEDEP. Media and Epidemics: Technologies of Science Communication and Public Health in the 20th and 21st Centuries	Alemania, Reino Unido, Polonia, Rumania
13	PlatFAMs. Platforming Families – tracing digital transformations in everyday life across generations	Noruega, Estonia, Reino Unido, Rumania, España
14	PolarVis. Visual Persuasion in a Transforming Europe – the affective and polarising power of visual content in online political discourse	Suecia, Dinamarca, Hungría, Austria
15	PSM-AP. Public Service Media in the Age of Platforms	Reino Unido, Bélgica, Dinamarca, Polonia
16	QSHIFT. Decision-Making in the Age of Quantum AI	Suiza, Dinamarca, Suecia, Alemania
17	ReCoVirA. Religious Communities in the Virtual Age	Reino Unido, Alemania, Suecia, Polonia, Eslovenia, Dinamarca, Finlandia
18	REDACT. Researching Europe, Digitalisation and Conspiracy Theories	Reino Unido, Alemania, Eslovaquia, Estonia, Croacia
19	ReDigIm. Redistributive Imaginaries: Digitalisation, culture, and prosocial contribution	Reino Unido, Suecia, España, Finlandia, Alemania
20	REIMAGINE ADM. Reimagining public values in algorithmic futures	Finlandia, Dinamarca, Eslovenia, Bélgica, Suecia

21	REMEDIS. REthinking MEdia literacy and DIgital Skills in Europe	Bélgica, Reino Unido, Estonia, España, Finlandia, Polonia
22	SMARTUP. Smart (ening up the modern) home – Redesigning power dynamics through domestic space digitalisation	República Checa, Finlandia, Alemania, Polonia, Reino Unido
23	SoLiXG. The Social Life of XG – Digital infrastructures and the reconfiguration of sovereignty and imagined communities	Alemania, Austria, Reino Unido, Suecia
24	TEtrARCHs. Transforming data rE-use in ARCHaeology	Reino Unido, Lituania, Eslovenia, Suecia, Bélgica
25	TIMED. TIme experience in Europe’s Digital age	Reino Unido, República Checa, España, Suiza, Alemania, Polonia
26	TRAVIS. Trust And Visuality – Everyday digital practices	Estonia, Austria, Finlandia, Reino Unido

CONVOCATORIA NACIONAL PCI 2022

PROYECTO 5 DigiPatch: Moving From A Networked To A Patchworked Society: Motivational Underpinnings And Societal Consequences

With the rise in usage of digital media, people now have myriad ways to inform and express themselves and share their opinions with a global audience. This digitalisation of communication leads to new and multiple social ties which, while strengthening democracy, also has a dark side. For instance, digital media has sapped traditional media and hollowed out the “common space” where the vast majority of people used to get their news. Misinformation (whether intentionally false or not) now abounds online and can be targeted to cause maximum impact. Digital media also makes it easier than ever for people to find information that confirms their pre-existing beliefs, and people may use them to bolster their current identities rather than properly informing themselves. As a result, closed (micro)groups may arise with clear identities and strong internal ties, with their own knowledge bubbles, and full internal validation of their ideas and behaviours. Such (micro)groups, based on narrow micro-identities and clear boundaries between us and them, create pockets of self-determining networks, at the expense of society and social cohesion at large. They may also hobble efforts to deal effectively with societal challenges and even undermine democracy itself. Despite all research on how digitalisation shapes, for example, security and marketing, much less is known about the interaction between psychological needs and digital media use in the social sphere and processes of identity formation and protection. In fact, the role of the socio-cognitive and cultural underpinnings of digitalisation-related phenomena is rarely broached. So, since the role of digital media use in social and cultural transformation is far from being fully described or adequately understood, the main aim of the project is threefold. First, we will investigate how digital media creates conditions for cultural and societal change from a traditionally networked society to a rigidly ‘patchwork’ one. Second, we will find out why this occurs, with a focus on cultural factors and the socio-cognitive processes of individuals. Lastly, we will outline what the potential societal consequences of these processes are.

IP	Jagiellonian University, Department of Philosophy, Institute of Psychology. Polonia
Socios	University of Gothenburg, Department of Journalism, Media and Communication (Suecia). Freie Universität Berlin, Education Studies and Psychology, (Alemania). University of Cordoba, Department of Psychology, (España). University College London, Experimental Psychology, (Reino Unido)
Presupuesto Total	1.713.113 €
Concedido ES	163.590 €

PROYECTO 6 DIGISCREENS: Identities and Democratic values on European digital screens: Distribution, reception and representation

At a time when streaming platforms provide access to film and television from all over the world, DIGISCREENS focuses on how these platforms contribute to transform social and cultural dynamics in Europe. The project asks how the increased possibilities for audiences to watch audio-visual content from a great geographical diversity affect our construction of identity and understanding of the other, as well as our negotiation of democratic values such as equality, inclusion and solidarity. DIGISCREENS is a transdisciplinary project that studies film and TV distribution, reception and representation in the light of the last decades' policies for increased diversity and inclusivity on screen. In particular, we problematize how European distribution policies and individualised algorithms govern public and commercial platforms, creating both "filter bubbles" and a promise of common democratic values and models of identity. By investigating digital film and TV distribution, representation, and reception in Norway, Sweden, France, Spain and Lithuania, this project discusses how transnational distribution and consumption of audio-visual content may create social encounters and a sense of global integration. By combining methodologies from media studies, anthropology, literature, cultural and political analysis, we compare how members of different social and cultural groups perceive their roles, rights and democratic participation in contemporary Europe.

IP	University of Bergen, Department of Information Science and Media Studies. Noruega
Socios	Lithuanian Academy of Music and Theatre, Art History and Theory, (Lituania). School of Humanities, Education and Social Sciences, (Suecia). University of Granada, Instituto Universitario de Estudios de las Mujeres y de Género, (España)
Presupuesto Total	1.495.518 €
Concedido ES	166.050 €

PROYECTO 7 DIGITISLAM: Digital Islam across Europe – Understanding Muslims' Participation in Online Islamic Environments

European Muslim communities (and indeed all communities) have been transformed by the digital revolution and new processes of knowledge creation, acquisition and dissemination that erode traditional structures of authority. While many Muslims remain marginalised from European hierarchies of knowledge, digital platforms provide novel ways to create and share information about themselves and their roles in plural European society. These platforms have intensified

diasporic ties, as well as connections among diverse European Muslim communities. This, in turn, has widened inter-generational differences within Muslim populations throughout Europe. For example, ‘digital native’ European Muslims are more likely than older generations to value YouTube as a source of Islamic knowledge over the local mosque or other traditional sites of religious learning. Yet, our understanding of the creation, use and influence of Online Islamic Environments (OIEs) in European Contexts is limited. This project investigates the characteristics of contemporary OIEs, and their consequences for the social and religious practices of different Muslim populations within and across distinct European contexts. Focusing on the interactions between producers and users of OIEs, it examines how, when and why individuals and groups seek advice on the internet about a range of social and religious issues, as well as how online and offline experiences and practices shape one another across diverse platforms and contexts. The project entails in-depth research in five European countries: Lithuania, Poland, Spain, Sweden and the United Kingdom. At its core, the project will examine how diverse Muslim populations engage with the online ecosystem, seeking and providing formal or informal advice on issues related to Islam. It will show how these interactions shape, and are shaped by, the success of specific online producers. It will also analyse how OIE usage influences individual behaviours and beliefs in different national settings. The project combines qualitative and quantitative methods including: semi-structured interviews of producers and users of OIEs, a ‘netnographic’ tracing of online habits, and a transnational survey of producers of online Islamic guidance and their followers. The research will provide concise explanations of the dynamics and social implications of OIEs to specific stakeholders, including Muslim organisations and networks, policy makers and third sector organisations.

IP	University of Edinburgh, Alwaleed Centre for the Study of Islam in the Contemporary World. Reino Unido
Socios	SGH Warsaw School of Economics, Institute of International Studies, (Polonia). University of Gothenburg, Department of Literature, History of Ideas, and Religion, (Suecia). Universitat Autònoma de Barcelona, Sociology, (España). Vytautas Magnus University, Cultural Studies, (Lituania)
Presupuesto Total	1.357.551 €
Concedido ES	215.004 €

PROYECTO 8 GEiO: Gender Equitable Interactions Online – Supporting gender equity in work-based videoconferencing

The GEiO project investigates the role of gender in online work meetings across four nations (Germany, Iceland, Spain and the UK). Research exploring how gender becomes relevant to videoconferencing at work remains in its infancy. Existing investigations suggest that with the exponential rise in digitally mediated working patterns and new reliance on videoconferencing platforms, organisations are unready to address gender inequality online. A key aim of this project is to build new transnational evidence on the currently unexplored ways in which digital videoconferencing innovations maintain or can be used to resist gender inequity at work. We will be working with international corporations in each of the partner countries. Participating corporations will support data collection and provide feedback on the research process and findings. Three different and complementary methods will be used to explore gendered processes in this context. The first study will use video-recordings of online work meetings to analyse conversational patterns. The second study will explore shared understandings of digital working

through rank orderings of relevant statements by participants that will be both statistically and thematically analysed. A Story Completion task will be used in the third study. This method can be used to capture social perceptions of videoconference meetings through storytelling. By approaching the data both by study and by country, this methodological design will enable cross-national comparisons at different levels of analysis. The research findings will provide a firm basis for knowledge exchange with private sector organisations to develop evidence-based training on digital gender equity. An accredited micro credential training course on gender equitable interactions online will be produced. It will be translated into the languages used in each of the partner locations to support good organisational practice.

IP	Open University. Reino Unido
Socios	Technische Hochschule Deggendorf (Alemania), University of Iceland (Islandia), Universitat Autònoma de Barcelona (España), Universitat Rovira i Virgili (España)
Presupuesto Total	1.436.742 €
Concedido ES	266.664 € (Universitat Rovira i Virgili 130.995 €), (Universidad Autónoma de Barcelona 135.669 €)

PROYECTO 9 GIG-OSH: New challenges for occupational safety and health in times of the digital transformation in Europe: the role of digital labour platforms

Digitalisation is transforming labour markets and altering labour relations. This has laid the foundations for the rise of digital labour platforms, which connect the supply and demand for labour. The growth of digital labour platforms has created additional income-generating opportunities for workers around the world but has also given rise to several challenges for work and health. Multiple features of digital labour platforms, such as algorithmic management (automated processes that assign, monitor and evaluate work), working hours or income have the potential to impact the health of workers engaged in platforms. Surprisingly, the Occupational Safety and Health (OSH) implications of platform work have remained largely under the radar. Therefore, this project has two aims: 1. to examine the occupational safety and health risks and regulations of platform work, and 2. to provide recommendations to foster a safe and healthy occupational environment for platform workers in Europe. The project uses a study design which include (both) interview methods and statistics involving platform workers living in Belgium, Denmark, Finland, Poland, Spain, Sweden and the United Kingdom. The expected results of this project will provide new and original scientific understanding of this understudied and evolving challenge for the future world of work. The new understandings from the project will offer new guidance for policymakers, companies and trade unions to protect the health of the European workforce.

IP	Karolinska Institutet, The Institute of Environmental Medicine. Suecia
Socios	University of Copenhagen, Department of Sociology, (Dinamarca). Vrije Universiteit Brussel, Interface Demography, Department of Sociology, (Bélgica). University of Warwick, Institute for Employment Research, (Reino Unido). Université libre de Bruxelles, Faculté de Philosophie et des sciences sociales, (Bélgica). University of Lodz, Institute of Psychology, (Polonia). Tampere University, Faculty of Social Sciences, (Finlandia). Fundació Institut Hospital del Mar d'Investigacions Mèdiques (IMIM), Social Determinants and Education on

	Health, (España). Pompeu Fabra University, Research Group on Health Inequalities, Environment, and Employment Conditions (GREDS), (España)
Presupuesto Total	1.646.837 €
Concedido ES	234.684 € (Fundacio Institut Hospital del Mar D`Investigacions Mediques 124.968 €), (Universitat Pompeu Fabra 109.716 €)

PROYECTO 13 PlatFAMs: Platforming Families – tracing digital transformations in everyday life across generations

Digital platforms have penetrated deeply our everyday life, affecting people's informal interactions, ways of living and understanding of the world, as well as the institutional structures that underpin these. Increasingly, digital platforms provide an infrastructure for learning, social connections, gaming, commerce and engagement with news, and their impact on homes and families was amplified by the COVID-19 pandemic. Despite growing research interest in the fundamental social, institutional and individual consequences of platformisation, we know less about how families are transforming with the everyday use of today's heavily commercialised and globally networked platforms and their algorithms. The PlatFAMs project focuses distinctively on intergenerational experiences in relation to the platformisation of family life. The core of the project is the study of up to one hundred three-generation families in five European countries (Norway, Estonia, UK, Romania and Spain) over a two-year period, across different spaces online and offline, using a broad range of qualitative and participatory methods. In addition, we will do secondary analysis of longitudinal quantitative data across European countries. The PlatFAMs project aims to understand how digital platforms are embedded in the lives and practices of modern families, raising key questions about conditions for informal learning, care and agency in family life today and consequences for the future. Three thematic strands will be studied across families and generations. First, digital navigation and domestication; understood as the ways people interact with different platforms in order to identify inter-generational differences and similarities within diverse family structures. Second, digital negotiation and co-construction; understood as relational aspects within diverse family structures regarding connections and networking using digital platforms. Third, digital futuremaking as the process of anticipating and creating imaginaries of digital futures, both personal and societal, that shape present practices in ways that are consequential for families. At the intersection of perspectives from intergenerational research, family and youth studies, learning and literacy research, the project will bring cutting edge perspectives on the domestication and social impact of digital platforms to the field.

IP	University of Oslo, Department of Education, Noruega
Socios	University of Tartu, Institute of Social Studies, (Estonia). London School of Economics and Political Science (LSE), Department of Media and Communications, (Reino Unido). Universitatea Babes Bolyai/Babes-Bolyai University, Department of Psychology, (Rumania). University of Girona, Institute of Educational Research, (España). University of Barcelona, Department of Didactics and Educational Organization, (España)
Presupuesto Total	1.497.042 €
Concedido ES	226.935 € (Universidad de Barcelona 99.138 €), (Universitat de Girona 127.797 €)

PROYECTO 19 ReDigIm: Redistributive Imaginaries: Digitalisation, culture, and prosocial contribution

Redigim examines the impact of digitalisation on European citizens' understanding of what it means to contribute to society. Taxation, philanthropy, charity and mutual aid are redistributive forms that enable individuals to 'pay in' to their societies. They invite or compel citizens to make payments with a view to sustaining their social worlds, supporting others, or transforming their societies. Digitalisation processes are rapidly reconfiguring access to and engagement with these redistributive forms, initiating more social forms of payment and contribution. The emergence of new forms of contribution fostered by digital platforms point to novel modes of participation, solidarity, and care for others, but they are also disruptive of established state-mandated forms of social provisioning, raising questions about the future of taxation systems in European welfare states. Redistributive imaginaries are semiotic systems that give meaning and shape to the structures which enable prosocial contribution. They provide collective, common-sense ways of understanding the relationship between economic contribution and social solidarity. Redigim investigates the role of the digital in emergent redistributive imaginaries. It will develop case studies in five national contexts – the United Kingdom, Switzerland, Finland, Spain and Montenegro – representing different welfare state models and philanthropic traditions. Redigim will identify local, national and transnational tendencies at a European level, and will use project findings to build scenarios for the future of prosocial contribution in Europe. Located in cultural sociology, media and cultural studies and social and cultural anthropology, the project team is uniquely placed to deliver qualitative research that foregrounds the role of cultural, signifying practices in economic processes and practices. Redigim will pursue an innovative mixed-methods approach to the study of digitalisation, incorporating discourse analysis, affordance analysis of digital platforms and ethnography of everyday prosocial practices. Redigim will significantly advance the study of redistributive imaginaries, and it will deliver qualitative case studies and scenarios which will be of value to a range of stakeholder audiences in civil society, government and business.

IP	University of the Arts London, School of Media – London College of Communication. Reino Unido
Socios	University of Zürich, Department of Social Anthropology and Cultural Studies, (Suiza). Universitat Pompeu Fabra, Department of Communication, (España). University of Lapland, Faculty of Social Sciences, (Finlandia). University of Goettingen, Institute for Cultural Anthropology and European Ethnology, (Alemania).
Presupuesto Total	1.328.347 €
Concedido ES	157.440 €

PROYECTO 21 REMEDIS: RETHinking MEdia literacy and DIgital Skills in Europe

Adopting an evidence-based approach to RETHinking MEdia Literacy and DIgital Skills in Europe, REMEDIS seeks to provide a framework for evidence-based evaluative research of media literacy and digital skills. REMEDIS aims to inform practitioners and policymakers about so far severely underdeveloped evidence that links interventions around different types of media literacy and digital skills in different life domains (such as education, identity development, social relations) to different types of positive outcomes in terms of (digital) inclusion and wellbeing. REMEDIS makes a leap across disciplines to realise its four objectives: 1. to improve existing theoretical

knowledge about the actual outcomes of interventions, paying special attention to target groups (such as disadvantaged youth, refugees, people with lower SES); 2. to improve and enhance existing media literacy and digital skills intervention strategies based on the existing and emerging evidence generated across the different geographical and cultural contexts represented by the REMEDIS partners; 3. to adopt advanced methods, develop and validate instruments for evaluating interventions by using a range of outcome measures; 4. to produce evidence-based policy recommendations and develop a user-friendly, customisable evaluation toolkit. REMEDIS adopts an evidence-based flow in which each WP provides the inputs for each subsequent WP. WP1: The development of a systematic evidence review will enable us to identify the driving forces and outcomes of media literacy and digital skills and characteristics of potentially effective interventions that lead to positive outcomes. WP2: Co-development of enhancements and improvements of interventions considered promising for fostering (digital) inclusion and wellbeing. WP3: Evaluation and validation of a selected interventions informed by the findings of WP1&2, using randomised experimental evaluations and innovative quasi-experimental methods. WP4: Integration of results with key policymakers/practitioners, leading to the development of evidence-based policy recommendations and an evaluation toolkit.

IP	Institute for Media Studies. Bélgica
Socios	London School of Economics and Political Science (LSE), Media and Communications, (Reino Unido). University of Tartu, Institute of Education, (Estonia). University of the Basque Country, Audiovisual Communication and Advertising, (España). University of Helsinki, Educational Sciences, (Finlandia). Uniwersytet Jagielloński, Faculty of Philosophy / Institute of Pedagogy, (Polonia). University of Jyväskylä, Department of Social Sciences and Philosophy, (Finlandia)
Presupuesto Total	1.135.744 €
Concedido ES	136.899 €

PROYECTO 25 TIMED: TIME experience in Europe's Digital age

During the last two decades, there has been a significant increase in the use of digital technology in our work, social and personal lives. As a result, many people now live in a state of “permanent connectivity” which enables them to be contacted at anytime, anywhere, and to seek information and stimulation with greater ease and immediacy than ever before. As a result, the traditional boundaries between work-time and personal-time can appear evermore blurred and the pace of life can feel increasingly fast. This is in part because the rhythm of daily life is now dictated by digital devices. Exactly how increasing digital technology use is affecting the availability of time, our use of time and experience of temporality is currently unknown. At an individual level, it is unclear whether digitalisation is enhancing time availability and wellbeing or reducing free time and quality of life. At a societal level, it is unclear whether increased digitalisation is having a unifying or divisive effect on the European sense of time. The TIMED project will establish how and why the perception, use and allocation of time are affected by personal levels of digitalisation and cultural norms, and how this then impacts on quality of life. This will be achieved through a series of studies using interviews, online questionnaires, psychophysiological recording and real-time behaviour analysis. Data will be collected in the Czech Republic, Germany, Poland, Spain, Switzerland and the UK to enable cross-cultural comparisons within Europe. The information

generated in the TIMED project will enable us to, for the first time, establish how digitalisation affects individual and societal temporal experience. In doing so, the project will identify who is experiencing a temporal benefit from digitalisation, and who experiences a temporal cost. This information will have significant implications for the health, wellbeing and economic activity in the digital age. It will also help to shape a future in which we are better to maximise the benefits of increased digitalisation on temporal experience whilst mitigating against the costs of an ever more connected life.

IP	Liverpool John Moores University, School of Psychology. Reino Unido
Socios	University of Barcelona, Social Psychology and Quantitative Psychology, (España). Institute of Philosophy of the Czech Academy of Sciences, Centre for Science, Technology, and Society Studies, (República Checa). University Fribourg, Psychology, (Suiza). Institute for Frontier Areas of Psychology and Mental Health, (Alemania). University of Warsaw, Faculty of Psychology, (Polonia). HumanTech Institute, (Suiza)
Presupuesto Total	1.561.444 €
Concedido ES	185.238 €



**TECNOLOGÍAS
FACILITADORAS ESENCIALES**
Materiales, Nanotecnología, TICS





TECNOLOGÍAS FACILITADORAS ESENCIALES

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CHIST-ERA - European coordinated research on long-term ICT and ICT-based scientific challenges

CHIST-ERA es una red de agencias financiadoras de la I+i, nacionales y regionales, en Europa. El objetivo es reforzar la colaboración transnacional entre los Estados participantes para desafiar la investigación multidisciplinaria en las TIC, y las áreas basadas en las TIC, con el potencial de conducir a avances significativos. Anualmente, las entidades participantes en CHISTERA III identifican áreas científicas emergentes que permiten a los investigadores participar en proyectos de alto riesgo e impacto mediante el lanzamiento de convocatorias transnacionales de propuestas de investigación.

Coordinador: **Francia (National Research Agency (ANR))**

Socios: Austria (Austrian Science Fund (FWF)), Bélgica (National Fund for Scientific Research (FNRS)), Bulgaria (National Science Fund of Bulgaria (BNSF)), República Checa (Technology Agency of the Czech Republic (TACR)), Estonia (Estonian Science Foundation (ETAG)), Finlandia (Academy of Finland (AKA)), Irlanda (Higher Education Authority (HEA)), Italia (Ministry of Education, University and Research (MIUR)), Lituania (Research Council of Lithuania (LSC/LMT/RCL)), Polonia (National Science Centre (NCN)), Portugal (Foundation for Science and Technology (FCT)), Rumanía (Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI)), Eslovaquia (Slovak Academy of Science (SAS/SAV)), **España (Ministerio de Economía y Competitividad (MINECO))**, Suiza (Swiss National Science Foundation (SNSF/SNF)), Turquía (The Scientific and Technological Research Council of Turkey (TUBITAK)), Reino Unido (Engineering and Physical Sciences Research Council (EPSRC)). Observador: Canadá (Quebec Research Fund - Nature and Technology (FRQ-NT)).

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales: 6 (2017, 2018, 2019, 2020, 2021, 2022)

Participación de AEI en convocatorias conjuntas: 6 (2017, 2018, 2019, 2020, 2021, 2022)

CONVOCATORIA CONJUNTA INTERNACIONAL 2017

Países participantes	Austria, Bélgica (Wallonia-Bruselas), Bulgaria, Canadá (Québec), República Checa, Estonia, Finlandia, Francia, Grecia, Irlanda, Italia, Lituania, Polonia, Rumanía, España, Suecia, Eslovaquia, Suiza, Turquía, Reino Unido
Temáticas	1. Object recognition and manipulation by robots: Data sharing and experiment reproducibility – ORMR 2. Big data and process modelling for smart industry – BDSI
Presupuesto total	12.800.000 €
Concedido ES	652.000 €
Proyectos aprobados	14
Proyectos con financiación AEI	7

Nº	Acrónimo y título del proyecto	Países participantes
1	BURG. Benchmarks for UndeRstanding Grasping	Austria , España, Italia, Reino Unido
2	CORSMAL. Collaborative object recognition, shared manipulation and learning	Suiza, Francia, Reino Unido
3	Heap. Human-Guided Learning and Benchmarking of Robotic Heap Sorting	Austria, Suiza, Francia, Italia, Reino Unido
4	InDex. Robot In-hand Dexterous manipulation by extracting data from human manipulation of objects to improve robotic autonomy and dexterity	Austria, Estonia, Francia, Italia, Reino Unido
5	IPALM. Interactive Perception-Action-Learning for Modelling Objects	República Checa, España, Finlandia, Francia, Reino Unido
6	LEARN-REAL. Improving reproducibility in LEARNing physical manipulation skills with simulators using REAListic variations	Suiza , Francia, Italia
7	PeGRoGaM. Perception-guided robust and reproducible robotic grasping and manipulation	Canadá , Italia, Reino Unido
8	ABIDI. Context-aware and Veracious Big Data Analytics for Industrial IoT	Bélgica, Suiza, España, Finlandia
9	BIG-SMART-LOG. The Use of Big Data Analytics for Process Modelling in Smart Logistics Operations Ebru	Grecia, Polonia, Rumanía, Turquía
10	FIREMAN. Framework for the Identification of Rare Events via MACHine learning and IoT Networks	España, Finlandia , Grecia, Irlanda
11	PACMEL. Process-aware Analytics Support based on Conceptual Models for Event Logs	España, Italia, Polonia
12	RadioSense. Wireless Big Data Augmented Smart Industry	Finlandia , Francia, Italia
13	SOON. Social Network of Machines	Suiza , España, Rumanía, Eslovaquia
14	SPuMONI. Smart Pharmaceutical MaNufacturIng	España, Grecia, Irlanda, Italia

CONVOCATORIA NACIONAL APCIN 2018

PROYECTO 1 BURG. Benchmarks for UndeRstanding Grasping

With the BURG benchmark we propose to focus on community building through enabling and sharing tools for reproducible performance evaluation, including collecting data and feedback from different laboratories for studying manipulation across different robot embodiments. We will

develop a set of repeatable scenarios spanning different levels of quantifiable complexity that involve the choice of the objects, tasks and environments. Examples include fully quantified settings with layers of objects, adding deformable objects and environmental constraints. The benchmark will include metrics defined to assess the performance of both low-level primitives (object pose, grasp point and type, collision-free motion) as well as manipulation tasks (stacking, aligning, assembling, packing, handover, folding) requiring ordering as well as common sense knowledge for semantic reasoning.

IP	Technische Universität Wien, Austria
Socios	España (Agencia Estatal Consejo Superior de Investigaciones Científicas), Italia (Italian Institute of Technology), Reino Unido (University of Birmingham)
Presupuesto total	964.933 €
Concedido ES	111.000 €

PROYECTO 5 IPALM. Interactive Perception-Action-Learning for Modelling Objects

In IPALM, we will develop methods for the automatic digitization of objects and their physical properties by exploratory manipulations. These methods will be used to build a large collection of object models required for realistic grasping and manipulation experiments in robotics. Household objects such as tools, kitchenware, clothes, and food items are not only widely accessible and in focus of many practical applications but also pose great challenges for robot object perception and manipulation in realistic scenarios. We propose to advance the state of the art by including household objects that can be deformable, articulated, interactive, specular or transparent, as well as shapeless such as cloth and food items.

IP	Imperial College London, Reino Unido
Socios	República Checa (Czech Technical University), España (Institut de Robòtica i Informàtica Industrial), Finlandia (Aalto university), Francia (Universite de Bordeaux)
Presupuesto total	1.273.738 €
Concedido ES	111.000 €

PROYECTO 8 ABIDI. Context-aware and Veracious Big Data Analytics for Industrial IoT

ABIDI addresses key challenges of reliable industrial IoT networks, big data analytics, edge computing, contextualization, veracity and knowledge discovery, which are fundamental issues for industrial IoT and big data analytics to be successful in industry. The project carries out fundamental research and the technical results will support a more principled transition towards fully automated processes realized by autonomous and context-aware devices. Moreover, ABIDI applies the technical results in the context of realistic industry use cases and performs systematic studies with professional experts about the usability and reliability of the produced technologies.

IP	Oulun Energia Oy, Finlandia
Socios	Finlandia (University of Oulu), Bélgica (Universite Libre de Bruxelles), Suiza (HES-SO University, Depiopharm), España (Universidad Politécnica de Madrid)
Presupuesto total	751.332 €
Concedido ES	150.000 €

PROYECTO 10 FIREMAN. Framework for the Identification of Rare Events via MACHine learning and IoT Networks

We will focus on how to optimize the prediction, detection and respective interventions of rare events in industrial processes based on these three steps. Our proposed general framework, which relies on an IoT network, aims at ultra-reliable detection / prevention of rare events related to a pre-determined industrial physical process (modelled by a particular signal). The framework will be process-independent, but the actual solution will be designed case-by-case. We will consider the CPS working as a complex system so that these three steps, which operate with relative autonomy, are strongly interrelated. For example, the way the sensors measure the signal related to the physical process will affect what is the best data fusion algorithm, which in turn will generate a certain awareness of the physical process that will form the basis of the proposed data analytics procedure. As proof-of-concept, our approach will be applied to predictive maintenance in an automotive industrial plant from SEAT in Spain, in the Nokia base-station factory at Oulu and in the LUT laboratory of control engineering and digital systems.

IP	Lappeenranta University of Technology, Finlandia
Socios	España (Centre Tecnològic Telecomunicacions Catalunya, Sociedad Española de Automóviles de Turismo), Finlandia (University of Oulu), Grecia (Research and Education Laboratory in Information Technologies (Athens Information Technology)), Irlanda (Trinity College Dublin)
Presupuesto total	1.070.293 €
Concedido ES	110.000 €

PROYECTO 11 PACMEL. Process-aware Analytics Support based on Conceptual Models for Event Logs

The main objective of PACMEL is to develop a process-aware analytics framework for analyzing data from sensors and devices to enable the use of this data for process modeling and analysis, with the aim of improving the business processes according to the BPM cycle. The framework can be applied to the data system of smart factories to support the business process management activities in the scope of process modeling and analysis. On the one hand, it will allow the creation of conceptual models of particular industrial processes being executed in the factory, taking into account the various abstraction levels of the collected data, by combining knowledge extraction techniques with semantic technologies such as ontology-based data access and integration. On the other hand, it will support model mapping methods and visualization techniques that allow one to relate the interpreted sensor data to the process models for process analysis. We will use a real dataset, related to a very complex and specific process, from an industrial domain (mining).

IP	AGH University of Science and Technology, Polonia
Socios	España (Universidad Autónoma de Madrid), Italia (Free University of Bozen-Bolzano)
Presupuesto total	346.445 €
Concedido ES	74.000 €

PROYECTO 13 SOON. Social Network of Machines

The project Social Network of Machines (SOON) proposes to investigate the impact of the use of autonomous social agents to optimise manufacturing process in the framework of Industry 4.0. In this context, “agents” are process, data, things, and people. "Social" means that cyber-physical entities will act autonomously in order to optimize an industrial process following behaviours models inspired by human social networks. Currently, in Industry 4.0, smart entities do exist. However, intelligence is localised and intelligent heterogeneous entities cannot communicate together even inside the same shop-floor. Our motivation comes from the observation that, if we want to create a real Internet of Everything that brings together processes, data, things, and people, all these entities have to be connected and follow a shared, easy to understand paradigm.

IP	University of Applied Sciences and Arts Western Switzerland, Suiza
Socios	Suiza (TORNOS SA), España (Universidad de Oviedo, ArcelorMittal Innovación Investigación e Inversiones S.L.), Rumanía (Petru Maior University), Eslovaquia (Slovak Academy of Sciences, Mat-obaly s.r.o.)
Presupuesto total	739.503 €
Concedido ES	95.000 €

PROYECTO 14 SPuMONI. Smart Pharmaceutical MaNufacturing

The main idea of this project is to systematically assess all data produced by computerised production systems in representative pharma environments: (i) design data quality assessment models based on the Data Quality dimensions agreed by the European Institute for Innovation Through Health Data, including rules derived from regulatory documents, and, (ii) identify behaviour patterns of data probability distributions over time and among the manufacturing sources to identify outliers, i.e. data behavioural patterns which can violate ALCOA premises. To this end, there will be a semi-autonomous data quality control decision support system aiding pharma manufacturing companies to reduce the effort of analysing compliance data. Finally, a system prototype demonstration in an operational environment (Technology Readiness Level 7) will be evaluated using industry-grade real pharmaceutical manufacturing data sets and streams coupled with best pharma industry practices.

IP	Pharma Quality Europe, Italia
Socios	Italia (Istituto De Angeli srl), España (Universitat Politècnica de Valencia), Grecia (Technological Educational Institute of Thessaly), Irlanda (National College of Ireland)
Presupuesto total	589.923 €
Concedido ES	111.000 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2018

Países participantes	Austria, Bélgica, Bulgaria, Canada, República Checa, Estonia, Finlandia, Francia, Grecia, Irlanda, Italia, Lituania, Polonia, Rumanía, España, Suecia, Eslovaquia, Suiza, Turquía, Reino Unido
Temáticas	1. Object recognition and manipulation by robots: Data sharing and experiment reproducibility – ORMR 2. Big data and process modelling for smart industry – BDSI
Presupuesto total	13.00.000 €
Concedido ES	602.000 €
Proyectos aprobados	10
Proyectos con financiación AEI	4

Nº	Acrónimo y título del proyecto	Países participantes
1	APROVIS3D. Analog PROcessing of bioinspired Vision Sensors for 3D reconstruction	Francia, Grecia y España, Suiza
2	AIR. Analogue Intelligent chip for short and middle range Radar signal processing	Finlandia, Francia y Polonia
3	CONNECT. COmmunicatioN-aware dyNamic Edge CompuTing	Turquía, Finlandia y Reino Unido
4	DRUID-NET. Edge Computing Resource Allocation for Dynamic Networks	Grecia, Bélgica, Canada, Francia y Reino Unido
5	SMALL. Spiking Memristive Architectures for Learning to Learn	Austria, Suiza, España
6	JEDAI. Event Driven Artificial Intelligence Hardware for Biomedical Sensors	Francia, Estonia e Irlanda
7	SCORING. Smart Collaborative cOmputing, caching and netwoRking paradIgm for next Generation communication infrastructures	Francia, Canadá, Turquía

8	DIPET. Distributed Stream processing on Fog and Edge Systems via Transprecise Computing	Reino Unido, España, Francia, Grecia y Rumania
9	UNICO. Unsupervised spiking neural networks with analog memristive devices for edge computing	Canadá, Francia, Polonia y Suiza
10	LEADINGEDGE. Holistic and foundational resource allocation framework for optimized and impactful edge computing services	Grecia, España y Francia

CONVOCATORIA NACIONAL APCIN 2019-2

PROYECTO 1 APROVIS3D. Analog PROcessing of bioinspired Vision Sensors for 3D reconstruction

APROVIS3D project targets analog computing for artificial intelligence in the form of Spiking Neural Networks (SNNs) on a mixed analog and digital architecture. The project includes including field programmable analog array (FPAA) and SpiNNaker applied to a stereopsis system dedicated to coastal surveillance using an aerial robot. Computer vision systems widely rely on artificial intelligence and especially neural network based machine learning, which recently gained huge visibility.

IP	I3S - Université Côte d'Azur – France
Socios	CRISTAL Lille - Université de Lille (France), Institut de Neurosciences de la Timone (France), Instituto de Microelectrónica de Sevilla IMSE-CNM (Spain), University of West Attica (Greece), National Technical University of Athens (Greece), y ETH Zürich (Switzerland)
Presupuesto total	867 560 €
Concedido ES	149.772 €

PROYECTO 5 SMALL. Spiking Memristive Architectures for Learning to Learn

Contemporary AI applications often rely on deep learning, which implies heavy computational loads with current technology. However, there is a growing demand for low-power autonomously learning AI systems that are employed “in the field”. We will investigate in this project options for learning in low-power unconventional hardware that is based on spiking neural networks (SNNs) implemented in analog neuromorphic hardware combined with nano-scale memristive synaptic devices.

IP	Graz University of Technology – Austria
Socios	Graz University of Technology (Austria), University of Seville (Spain), University of Southampton - United Kingdom, ETH Zurich – (Switzerland), IBM Research Zurich (Switzerland)
Presupuesto total	1.267.900 €
Concedido ES	150.000 €

PROYECTO 8 DIPET Distributed Stream processing on Fog and Edge Systems via Transprecise Computing.

The DiPET project investigates models and techniques that enable distributed stream processing applications to seamlessly span and redistribute across fog and edge computing systems. The goal is to utilize devices dispersed through the network that are geographically closer to users to reduce network latency and to increase the available network bandwidth. However, the network that user devices are connected to is dynamic.

IP	The Queen's University of Belfast - United Kingdom
Socios	Universitat Politècnica de Catalunya – Spain, Institut de Recherche en Informatique et Systèmes Aléatoires – France, Foundation for Research and Technology – Hellas – Greece, West university of Timisoara - Romania
Presupuesto total	1.023.736 €
Concedido ES	151.200 €

PROYECTO 10 LEADINGEDGE. Holistic and foundational resource allocation framework for optimized and impactful edge computing services

The LeadingEdge project will deliver a novel and holistic framework to efficiently cope with unresolved challenges in edge computing ecosystems, regarding dynamic resource provisioning to multiple coexisting services amidst unknown service- and system-level dynamics. The project approach is three-faceted; it will optimize intra-service resource provisioning, inter-service resource coordination, and user perceived quality of experience (QoE).

IP	Athens University of Economics and Business - Research Center (Greece)
Socios	StreamOwl (Greece), Universitat Politècnica de Catalunya (Spain), University of Oulu (Finland), EURECOM (France), Huawei Mathematical and Algorithmic Sciences Lab (France)
Presupuesto total	1.019.106 €
Concedido ES	151.200 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2019

Países participantes	Austria, Bélgica, Bulgaria, Canada, República Checa, Estonia, Finlandia, Francia, Grecia, Hungría, Irlanda, Italia, Israel, Lituania, Letonia, Polonia, Rumanía, España, Suecia, Eslovaquia, Suiza, Turquía, Reino Unido
Temáticas	Proyectos del 1 al 12: Explainable Machine Learning-based Artificial Intelligence (XAI) Proyecto del 13 al 16: Novel Computational Approaches for Environmental Sustainability (CES)
Presupuesto total	13.00.000 €

Concedido ES	970.000 €
Proyectos aprobados	18
Proyectos con financiación AEI	6 (2 Coordinado)

Nº	Acronimo y título del proyecto	Países participantes
1	ANTIDOTE. ArgumeNtaTion-Driven explainable artificial intelligence fOr digiTal mEdicine	Bélgica, España, Francia , Italia, Portugal
2	CausalXRL. Causal eXplanations in Reinforcement Learning	Austria, Turquía, Francia, Reino Unido
3	CIMPLE. Countering Creative Information Manipulation with Explainable AI	Austria, Turquía, República Checa, Suiza, Francia , Portugal, Reino Unido
4	COHERENT. COllaborative HiErarchical Robotic ExplaNaTions	España , Italia, Reino Unido
5	EXPECTATION. Personalized Explainable Artificial Intelligence for decentralized agents with heterogeneous knowledge	Suiza , Italia, Lituania, Turquía
6	GraphNEx. Graph Neural Networks for Explainable Artificial Intelligence	Suiza, Francia, Reino Unido
7	INFORM. Interpretability of Deep Neural Networks for Radiomics	Francia, Grecia , Polonia
8	iSee. Intelligent Sharing of Explanation Experience by users for users	España , Francia, Irlanda, Reino Unido
9	MUCCA. Multi-disciplinary Use Cases for Convergent new Approaches to AI explainability	Bulgaria, Italia , Rumanía, Reino Unido
10	SAI. Social Explainable Artificial Intelligence	Austria, Turquía, Bulgaria, Estonia, Italia , Polonia, Reino Unido
11	XAIface. Measuring and Improving Explainability for AI-based Face Recognition	Austria, Turquía, Suiza, Francia , Portugal
12	XPM. Explainable Predictive Maintenance	Francia, Polonia, Portugal, Suecia
13	4Map4Health. Mapping of forest health, species and forest fire risks using Novel ICT Data and Approaches	Austria, Turquía, República Checa, Suiza, España, Finlandia , Portugal
14	ANDROMEDA. Advanced and novel hydrology models based on enhanced data collection, analysis, and prediction	España, Finlandia, Italia
15	SEC-OREA. Supporting Energy Communities- Operational Research and Energy Analytics	Bélgica, Francia, Irlanda , Letonia

16	SEEDS. Stakeholder-Based Environmentally-Sustainable and Economically Doable Scenarios for the Energy Transition	Suiza, Estonia, España, Portugal
17	SWAIN. Sustainable Watershed Management Through IoT-Driven Artificial Intelligence	Austria, Turquía, Suiza, Finlandia
18	WATERLINE. New Solutions for Data Assimilation and Communication to Improve Hydrological Modelling and Forecasting	Austria, Turquía, Suiza, Finlandia, Grecia, Polonia

CONVOCATORIA NACIONAL APCIN 2020-2

PROYECTO 1 ANTIDOTE. ArgumeNtaTlon-Driven explainable artificial intelligence f0r digiTal mEdicine

Providing high quality explanations for AI predictions based on machine learning requires combining several interrelated aspects, including, among the others: selecting a proper level of generality/specificity of the explanation, considering assumptions about the familiarity of the explanation beneficiary with the AI task under consideration, referring to specific elements that have contributed to the decision, making use of additional knowledge (e.g. metadata) which might not be part of the prediction process, selecting appropriate examples, providing evidences supporting negative hypothesis, and the capacity to formulate the explanation in a clearly interpretable, and possibly convincing, way. According to the above considerations, ANTIDOTE fosters an integrated vision of explainable AI, where low level characteristics of the deep learning process are combined with higher level schemas proper of the human argumentation capacity. The ANTIDOTE integrated vision is supported by three considerations: (i) there is a consensus that neural architectures exhibit a weak correlation between internal states of the network (e.g. weights assumed by single nodes) and the network classification outcome; (ii) high quality explanations are crucially based on argumentation mechanisms (e.g. provide supporting examples and rejected alternatives), that are, to a large extent, task independent; (iii) in real settings, providing explanations is inherently an interactive process, where an explanatory dialogue takes place between the system and the user. Accordingly, ANTIDOTE will exploit cross-disciplinary competences in three areas, i.e. deep learning, argumentation and interactivity, to support a broader and innovative view of explainable AI. Although we envision a general integrated approach to explainable AI, we will focus on a number of deep learning tasks in the medical domain, where the need for high quality explanations, both to clinicians and to patients, is perhaps more critical than in other domains.

IP	UCA I3S– Francia
Socios	Bélgica, España (Universidad del País Vasco Euskal Herriko Unibertsitatea), Italia, Portugal
Presupuesto total	957.478 €
Concedido ES	148.500 €

PROYECTO 4 COHERENT. COLlaborative HiErarchical Robotic ExplaNaTions

For robots to build trustable interactions with users two aspects will be crucial during the next decade. First, the ability to produce explainable decisions combining reasons from all the levels of the robotic architecture from low to high level; and second, to be able to effectively communicate such decisions and re-plan according to new user inputs in real-time along with the execution. COHERENT will develop a novel framework to coordinate explanations originated at the different robotic levels and to be able to deliver these explanations during the execution of the task. To have effective interactions, an interface of communication with the user will be developed to both explain and receive inputs in the form of user preferences, requirements or suggestions to execute a task, at different levels of human expertise. Validation will entail a new benchmark to assess acceptance and effectiveness of explanations based on experiments with subjects.

We will demonstrate our framework for hierarchical explanation components through a manipulation task of assisting a human to fold clothes. Cloth manipulation requires considering bi-manual manipulations, environmental constraints, and perception of textiles for its state estimation. We will build on previous results on cloth manipulation to develop explainable machine learning techniques from the perception, learned movements, task planning and interaction layers, based on a generic state-and-transitions representation that is shared across the layers. The COHERENT framework will be integrated into the standard planning system ROSplan. Finally, one of the objectives of the COHERENT project is to establish measures for the effectiveness of explanations through user studies and define assistive tasks to test our explainable methods creating clear and reproducible protocols.

IP	Consejo Superior de Investigaciones Científicas, CSIC, España
Socios	Italia, Reino Unido
Presupuesto total	562.736 €
Concedido ES	199.377€

PROYECTO 8 iSee. Intelligent Sharing of Explanation Experience by users for users

A right to obtain an explanation of the decision reached by a machine learning (ML) model is now an EU regulation. Different stakeholders (e.g. patients, clinicians, developers, auditors, etc.) may have different background knowledge, competencies and goals, thus requiring different kinds of explanations. Fortunately, there is a growing armoury of ways of interpreting ML models and explaining decisions. Let us use the phrase ‘explanation strategy’ to refer collectively to interpretable models, methods for visualisation, and algorithms for explaining the predictions of models that have been built by Machine Learning (ML). As these explanation strategies mature, practitioners will gain experience that helps them know which strategies to use in different circumstances. Whilst existing XAI libraries provide interfaces to a limited number of explanation strategies, these efforts remain disconnected and provide no easy route to reusability at scale. Our aim goes well beyond the development of a library. We aim to transform the XAI landscape through an open platform that can assist a spectrum of users (knowledge engineers, domain experts, novice users) in the selection and application of appropriate explanation strategies given an AI problem-solving task. The iSee Project will show how end-users of AI can capture, share and re-use their explanation experiences with other

users who have similar explanation needs. We hypothesise that episodes of explanation strategy experience can be captured and reused in similar future task settings.

IP	Universidad Complutense de Madrid
Socios	Francia, Irlanda, Reino Unido
Presupuesto total	846.318 €
Concedido ES	199.950 €

PROYECTO 13 4Map4Health. Mapping of forest health, species and forest risks using Novel ICT Data and Approaches

"Forest is the largest terrestrial ecosystem in the European Union (EU) covering around 40% of its areal territory. Forests provide economical, ecological and social benefits to humans, such as timber, biofuel, climate regulation, water supply and regulation, air purification, erosion control, habitats for biodiversity, and many others. EU forests account for 1) € 2 trillion in annual turnover and more than 22 million jobs in bioeconomy; 2) 10% of the global's annual carbon sinks; and 3) is a home to a significant amount of the bloc's terrestrial biodiversity. Increasing causes of forest damages include forest fires and insects, often in combination with or intensified by abiotic stresses such as drought or storm. Tree species information is not accurate enough and is highly needed in any commercial use of the forest resources. What is common to mapping of forest health, tree species, and forest fire risk, is that they are correlated to moisture of canopies. On the other hand, lidar backscatter is strongly dependent on the moisture and recent studies indicate that it can be derived using e.g. bispectral airborne lidar. Collection of such data is possible even at country level at a few years interval. FGI has the world-first multispectral, mobile laser scanner that can be used for such research studies complemented with other data sources to support future laser scanning programs taking place all around Europe.

The major research question of the project is: How should the future multitemporal, multispectral laser scanning data be processed in order to provide information for environmental sustainability and especially for mapping of the forest health, tree species, and forest fire risk.

IP	FGI/NLS, Finlandia
Socios	Austria, Turquía, República Checa, Suiza, España (Universidad de Vigo), Portugal
Presupuesto total	958.509 €
Concedido ES	148.800 €

PROYECTO 14 ANDROMEDA. Advanced and novel hydrology models based on enhanced data collection, analysis, and prediction

In the last years, many European countries have experienced the effects of climate change, in the form of a scarcity of drinking water resources, prolonged periods of drought, and extremely heavy rainfall, with unprecedented dramatic environmental, economic, and social costs. Therefore, understanding, modelling, and predicting the movement and distribution of water on Earth, and

effectively managing water resources is of paramount importance. Unfortunately, hydrology involves atmospheric, surface, and underground water systems, which are difficult to model on their own, and even more so when considered as a whole. As a result, modern hydrology often relies on a number of mathematical and empirical models that focus on isolated portions of the whole water cycle, thus providing only partial, defective and often times inconsistent information. Furthermore, such models are either based on complex physical theories that involve a large number of variables, which are often difficult to observe in practice, or empirically obtained from observations, thus lacking generality and adaptability and interpretability.

IP	University of Padova, Italia
Socios	España (Escuela Técnica Superior de Ingenieros Agrónomos), Finlandia
Presupuesto total	411.190 €
Concedido ES	123.700 €

PROYECTO 16 SEEDS. Stakeholder-Based Environmentally-Sustainable and Economically Doable Scenarios for the Energy Transition

Los esfuerzos urgentes que se llevan a cabo para recortar las emisiones de gases de efecto invernadero en la que están limitados por los métodos para diseñar vías de transición energética. la visión tecno-económica que esta **detrás** de estos métodos resulta en escenarios que están desconectados del resto de los numerosos retos que conlleva su implementación y que preocupan tanto a stakeholders como a tomadores de decisiones. estos retos son frecuentemente ambientales (como el uso del suelo o del agua) o sociales (como la aceptación de las infraestructuras por parte de los residentes locales). Hasta ahora no hay una solución que integre los dos parámetros en los métodos de modelado tecno-económico de sistemas energéticos que se usan para diseñar escenarios energéticos futuros. en seeds hacemos una propuesta que desarrolla y testea un flujo de trabajo computacional innovador que incorpora a los humanos en el diseño de escenarios a la vez que modela de forma precisa las limitaciones técnicas, económicas y ambientales. Para ello:

- 1) integramos en un marco analítico de acceso abierto bien establecido una aproximación automatizada para generar un amplio rango de alternativas para los sistemas energéticos que va más allá de la solución económica optima;
- 2) incorporamos factores de impacto ambiental y social en estas alternativas;
- 3) diseñamos y desarrollamos una interface de usuario interactiva y vía web donde expertos y el público general pueden participar en el diseño del sistema visualizando los resultados y comunicando sus preferencias; y
- 4) generamos un espacio de decisión nuevo incorporando las preferencias de los participantes en un algoritmo de optimización del sistema energético. Todos los componentes del proyecto desarrollan nuevos métodos computacionales pero la innovación global del proyecto es un método para integrar preferencias humanas en la computación de la infraestructura energética futura. para testear la hipótesis de que integrar por completo las preferencias humanas en el diseño de la infraestructura energética resulta en una infraestructura diferente y más aceptada socialmente, desarrollamos estudios piloto en colaboración con organizaciones e individuos en Portugal.

IP	ETH Zürich, Suiza
Socios	Estonia, España (Institut De Ciència I Tecnologia Ambientals – ICTA), Portugal
Presupuesto total	518.593 €
Concedido ES	149.986 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2020

Países participantes	Bélgica, Bulgaria, República Checa, Finlandia, Francia, Hungría, Irlanda, Israel, Letonia, Lituania, Luxemburgo, Polonia, Canadá, Rumania, Eslovaquia, España, Suiza, Turquía, Reino Unido
Temáticas	Proyectos 1,2,4,6: “Advanced Brain Computer Interfaces for Novel Interactions (BCI)” Proyectos 3,5,7,8,9,10: “Towards Sustainable ICT (S-ICT)”
Presupuesto total	9.602.448 €
Concedido ES	1.004.000 €
Proyectos aprobados	10
Proyectos con financiación AEI	5 (2 coordinados)

Nº	Acrónimo y título del proyecto	Países participantes
1	BANANA. Brainsourcing for Affective Attention Estimation	Luxemburgo, España, Finlandia, Polonia
2	BITSCOPE. Brain Integrated Tagging for Socially Curated Online Personalised Experiences	Irlanda, España, Francia, Polonia
3	ECOMOME. Energy consumption measurements and optimization in mobile networks	Francia, Canadá, España, Rumania
4	GENESIS. LeveragingN Euromarkers for Next-gen immersive Systems	Francia, Suiza, Turquía
5	MetaMagIC. Magnetic Metasurfaces for sustainable Information and Communication technologies	España, Bélgica, Reino Unido, República Checa
6	ReHaB. Towards an ecologically valid symbiosis of BCI and head-mounted VR displays: focus on collaborative post-stroke neurorehabilitation	Eslovaquia, Israel, Letonia, Polonia, Suiza
7	SAMBAS. Sustainable and Adaptive Ultra-High Capacity Micro Base Station	Bélgica, Francia, Hungría, Reino Unido
8	SONATA. Sustainable Computing and Communication at the Edge	España, Hungría, Reino Unido, Turquía

9	SUNRISE. Towards Sustainable ICT: Sparse Ubiquitous Networks based on Reconfigurable Intelligent SurfacEs	Irlanda, Bélgica, Reino Unido, Suiza
10	TESLA. Transient Electronics for Sustainable ICT in Digital Agriculture	Reino Unido, Canadá Finlandia, Polonia, Suiza

CONVOCATORIA NACIONAL PCI 2021

PROYECTO 1 **BANANA - Brainsourcing for Affective Attention Estimation**

Attention estimation and annotation are tasks aimed at revealing which parts of some content are likely to draw the users' interest. Previous approaches have tackled these incredibly challenging tasks using a variety of behavioral signals, from dwell-time to clickthrough data, and computational models of visual correspondence to these behavioral signals. Today, these signals are leveraged by a myriad of online services to personalize social media, search engine results, recommender systems, and even in supporting critical decision making, such as financial or medical data. However, the signals that all these services are based on are rough estimations of the real underlying attention and affective preferences of the users. Indeed, users may attend to some content simply because it is salient, but not because it is really interesting, or simply because it is outrageous. In contrast, project BANANA will use brain-computer interfaces (BCIs) to infer users' preferences and their attentional correlates towards visual content, as measured directly from the human brain. We aim for a scientific breakthrough by proposing the first-of-its-kind affective visual attention annotation via brainsourcing, i.e. crowdsourced BCI signal acquisition. First, our approach will allow accurate estimation of user preferences, attention allocation, and -critically- the affective component of attention, directly measured from the natural and implicit brain potentials evoked in response to users experiencing digital contents. Then, we will utilize the resulting data in a crowdsourcing setting to reveal how multiple users react to different stimuli and how their attention and affective responses are distributed. These collective responses will produce unified, consistent measures as a result. Our technology will be used in several downstream tasks such as segmentation of users' attention while looking at images, identification of key events, and video summarisation. We will pilot BANANA with different user groups to test and prove its effectiveness, using objective benchmarks and evaluation strategies.

IP	University of Luxembourg. Luxemburgo
Socios	University of Helsinki (Finlandia), Politechnika Opolska (Polonia), Universidad Jaime I (España)
Presupuesto total	1.039.636,37 €
Concedido ES	178.500 €

PROYECTO 2 **BITSCOPE. Brain Integrated Tagging for Socially Curated Online Personalised Experiences**

This project presents a vision for brain computer interfaces (BCI) which can enhance social relationships in the context of sharing virtual experiences. In particular we propose BITSCOPE, that is, Brain-Integrated Tagging for Socially Curated Online Personalised Experiences. We envisage a future in which attention, memorability and curiosity elicited in virtual worlds will be measured without the requirement of "likes" and other explicit forms of feedback. Instead, users

of our improved BCI technology can explore online experiences leaving behind an invisible trail of neural data-derived signatures of interest. This data, passively collected without interrupting the user, and refined in quality through machine learning, can be used by standard social sharing algorithms such as recommender systems to create better experiences. Technically the work concerns the development of a passive hybrid BCI (phBCI). It is hybrid because it augments electroencephalography with eye tracking data, galvanic skin response, heart rate and movement in order to better estimate the mental state of the user. It is passive because it operates covertly without distracting the user from their immersion in their online experience and uses this information to adapt the application. It represents a significant improvement in BCI due to the emphasis on improved denoising facilitating operation in home environments and the development of robust classifiers capable of taking inter- and intra-subject variations into account. We leverage our preliminary work in the use of deep learning and geometrical approaches to achieve this improvement in signal quality. The user state classification problem is ambitiously advanced to include recognition of attention, curiosity, and memorability which we will address through advanced machine learning, Riemannian approaches and the collection of large representative datasets in co-designed user centred experiments.

IP	Dublin City University. Irlanda
Socios	Universidad Politécnica de Valencia (España), Centre de Recherche Inria Bordeaux - Sud-Ouest (Francia), Nicolaus Copernicus University (Polonia)
Presupuesto total	878.897 €
Concedido ES	149.000 €

PROYECTO 3 ECOMOME. Energy consumption measurements and optimization in mobile networks

The energy consumption of mobile networks has been the source of animated debates in the recent period, with the deployment of 5G technologies. However, the energy consumption estimations put forward by the different parties in the debate showed significant differences, up to two orders of magnitude. This is a result of a lack of accurate models and meaningful metrics in this field. More precisely, the control plane of a mobile network represents a significant share of the traffic exchanged between the user and the network infrastructure, much more than in any other network technology, and this role will become even more important with the development of network function virtualisation and orchestration. Models focusing on the application-level traffic are bound to make harsh approximations, leading to results that can not really help the involved parties. Project ECOMOME addresses this problem of accurately modelling and optimising the energy consumption of a mobile network, with a focus on 4G and 5G technologies. This will be achieved through three main research axes. The first contribution will be represented by the first independent measurement study of energy consumption in a mobile network. We will address both user equipment and the radio access network, conducting a network metrology study on real operational networks and on experimental testbeds. The measurement data collected in this campaign will represent the input for other contributions in the project, but it will also be made openly available to the research community. The second objective of the project is to use this measurement data in order to design accurate energy consumption models for mobile networks. In this sense, we take an original approach with respect to the literature, by focusing on modelling the impact of the building blocks of the mobile network, a series of "atomic" network mechanisms and functions which practically compose any service scenario and any user context. Modelling these atomic network

mechanisms requires a detailed knowledge of the way a mobile network functions, but then allows the accurate modelling of any general scenario. Finally, the project also targets the proposal of energy efficient networking solutions. Indeed, the measurement data and the energy consumption models will allow us to detect the most energy-hungry phases in a mobile network. To reduce their impact, we will propose network intelligence solutions, which are based on observing the traffic transported by the network, detecting whenever the network settings are over-consuming, and adapting the network configuration with energy efficiency metrics in mind.

IP	Centre d'Innovation en Télécommunications et Intégration de Services. Francia
Socios	École de Technologie Supérieur– Québec (Canadá), Universitatea Politehnica Timisoara (Rumania), Fundación IMDEA Networks (España)
Presupuesto total	630.130,40 €
Concedido ES	179.400 €

PROYECTO 5 MetaMagIC Magnetic Metasurfaces for sustainable Information and Communication technologies

MetaMagIC offers a low cost and highly effective way to address current technological concerns regarding the efficiency and sustainability of magnetic devices in Information and Communication Technologies. Driven by an increasing need to achieve the precise control of magnetic fields on progressively smaller length scales – down to the nanoscale - improving the current performance of magnetic devices by the homogeneous concentration of magnetic fields in small and targeted volumes can drastically enhance the device energy efficiency. In this project, we will address the two key challenges of device efficiency and sustainability simultaneously. Our project introduces a novel and ground-breaking approach targeting the conception, design, development, and implementation of magnetic metasurfaces for controlling lowfrequency magnetic fields at the meso/microscale. Combining cutting-edge theory and modelling with state-of-the-art techniques for fabricating and characterizing magnetic thin-film devices, we will address important technological challenges: enhancing the sensitivity of magnetic sensors by incorporating them in specially designed planar metamaterials; reducing the negative effects of demagnetizing fields that limit device performance by using metasurfaces, exploiting the non-linear properties of magnetic materials to introduce novel functionalities into magnetic devices such as self-protection of sensitive equipment to damaging high magnetic fields; exploiting the developed metasurfaces to improve the efficiency of small-scale energy harvesting materials with the goal of generating enough energy to operate low-power electronic devices, combining the field expulsion and concentration properties of metasurfaces to optimize a source and receiver pair for high efficiency wireless energy transfer.

IP	Consejo Nacional de Investigaciones Científicas. España
Socios	Universitat Autònoma de Barcelona (España), Universié de Liège (Bélgica), University of Bath (Reino Unido), Brno University of Technology (República Checa)
Presupuesto total	1.066.822 €
Concedido ES	296.900€ (Agencia Estatal Consejo Superior de Investigaciones Científicas 205.000 €) (Universidad Autónoma de Barcelona 91.900 €)

PROYECTO 8 SONATA. Sustainable Computing and Communication at the Edge

Modern communication networks are rapidly evolving into sophisticated systems combining communication and computing capabilities. Computation at the network edge is the key to supporting many emerging applications, from extended reality to smart health, smart cities, smart factories and autonomous driving. SONATA is motivated by the fact that the large scale adoption of edge intelligence technology, while benefiting human productivity and efficiency, will result in a surge of data and computation in mobile networks, which, in turn, will exacerbate their already significant energy consumption. SONATA is an interdisciplinary effort to tame this growing energy demand by combining memristive hardware and energy harvesting technologies with novel machine learning algorithms and physical layer communication techniques. In particular, we want to combine the energy efficient in-memory computing and learning potential of memristive devices with an “over-the-air computation (OAC)” approach to edge learning, which turns the air from a purely communication medium to a computation unit. Our project not only aims at reducing the energy requirements of edge learning systems drastically, but also focuses on making them robust against stochastic failures, due to unreliable hardware or energy sources. We will exploit tools from circuit design, coding theory, wireless communications, machine learning and network science to achieve these goals. Results from SONATA will open up new directions for research and development of technologies that will allow mobile systems to offer the much anticipated communication and computing services in a sustainable manner.

IP	Centro Tecnológico de Telecomunicaciones de Cataluña. España
Socios	Pázmány Péter Catholic University (Hungría), Imperial College London (Reino Unido), Bilkent University (Turquía)
Presupuesto total	811.998,40 €
Concedido ES	200.200 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2021

Países participantes	Bélgica, Bulgaria, República Checa, Estonia, Finlandia, Hungría, Francia, Irlanda, Israel, Lituania, Letonia, Luxemburgo, Polonia, Eslovaquia, España, Suiza, Taiwan, Turquía, Reino Unido
Temáticas	Proyectos 1,2,4,5: “Foundations for Misbehaviour Detection and Mitigation Strategies in Online Social Networks and Media (OSNEM)” Proyectos 3,6,7,8,9: “Nano-Opto-Electro-Mechanical Systems (NOEMS) for ICT”
Presupuesto total	8.925.120 €
Concedido ES	1.208.106 €
Proyectos aprobados	9
Proyectos con financiación AEI	4 (3 coordinados)

Nº	Acrónimo y título del proyecto	Países participantes
1	CON-NET. Integrating CONTENT and NETWORK structure for detecting, understanding, and mitigating online misbehaviour	Luxemburgo , Bélgica, Finlandia, Irlanda, Turquía
2	HAMISON. Holistic Analysis of Organised Misinformation Activity in Social Networks	España , Estonia, Francia, Suiza
3	HetPIL. Heterogeneously integrated piezo-electro-mechanical lasers for LiDAR and 6G cellular networks	Francia , Bélgica, Suiza
4	Itrust. Interventions against Polarisation in Society for Trustworthy Social Media: From Diagnosis to Therapy	Polonia , Bélgica, España, Suiza
5	MARTINI. Malicious actors profiling and detection in Online Social Networks through Artificial Intelligence	España , Estonia, Francia, Lituania, Turquía
6	META-LIFI. MEMS-metasurface Based Tunable Optical Vortex Lasers for smart free - space communication	Finlandia , Reino Unido, Turquía
7	MUSICIAN. MULTifunctional SiliCon Integrated NOEMS for broadband Access Networks	España , Finlandia, Francia
8	NOEMIA. Nano-Opto-Electro-Mechanical Integrated Oscillator Arrays for Energy-Efficient Physical Reservoir Computing	Reino Unido , Francia, Letonia, Taiwan, República Checa
9	SNOW. Wearable Nano-Opto-electro-mechanic Systems	Francia , Suiza, Turquía, Reino Unido

CONVOCATORIA PCI 2022

PROYECTO 2 **HAMISON. Holistic Analysis of Organised Misinformation Activity in Social Networks**

Given a scenario of organised intentional misinformation campaigns, often termed as disinformation, we as a society must be aware not only about fake news, but also about the agents that introduce false or misleading information, their supporting media, the nodes they use in the social networks, the propaganda techniques they use, their narratives and their intentions. Therefore, we must address this challenge in a holistic way, considering the different dimensions involved in the spreading of disinformation and bring them together to really identify, characterise and describe the orchestrated disinformation campaigns. At the message level, we will explore: claim worthiness checking, stance detection and multilingual verified claim retrieval; at the social network level, we will model disinformation propagation and apply social network analysis techniques to identify sources and main players. Then, the challenge is how to integrate both levels. To address this challenge, we must be aware about the intentionality of disinformation: agents that create and introduce disinformation in the social media networks carefully select narratives aimed to have a concrete impact such as polarise, destabilise, generate distrust, destroy reputation, etc. This adversarial game has, at the end, benefited and injured agents.

Therefore, we must also address the identification of these malicious intents and bring everything together to collect all the evidence and give it to final analysts and users in explainable ways. Identifying misleading messages, knowing their narratives and hidden intentions, modelling the diffusion in social networks, and monitoring the sources of disinformation will also give us the chance to react faster to the spreading of disinformation. Thus, the project is articulated around these goals: (i) Identify disinformation (claim worthiness checking, stance detection and verified claim retrieval); (ii) Analyse the sources of disinformation and their narratives; (iii) Model the propagation of disinformation; (iv) Develop demonstration applications on video shorts and clips, regular YouTube videos and Tweets; (v) Create evaluation datasets of Tweets and videos in English, Spanish, German, French and Estonian; and (vi) Organize shared tasks for competitive evaluation on stance detection in twitter and claim-checking worthiness on videos.

IP	Universidad Nacional de Educación a Distancia. España
Socios	University of Tartu (Estonia), Synapse Développement (Francia), Zurich University of Applied Sciences (Suiza)
Presupuesto total	814.422 €
Concedido ES	260.145 €

PROYECTO 4 iTRUST. Interventions against Polarisation in Society for Trustworthy Social Media: From Diagnosis to Therapy

Digitalisation is rapidly transforming our societies, transforming the dynamics of our interactions, transforming the culture of our debates. Trust plays a critical role in establishing intellectual humility and interpersonal civility in argumentation and discourse: without it, credibility is doomed, reputation is endangered, cooperation is compromised. The major threats associated with digitalisation - hate speech and fake news - are violations of the basic conditions for trusting and being trustworthy which are key for constructive, reasonable and responsible communication as well as for the collaborative and ethical organisation of societies. These behaviours eventually lead to polarisation, when users repeatedly attack each other in highly emotional terms, focusing on what divides people, not what unites them.

Focusing on three timely domains of interest – public health, gender equality and global warming – iTRUST will deliver (i) the largest ever dataset of online text, annotated with features relevant for ethos, pathos and reframing; (ii) a new methodology of large-scale comparative trust analytics to detect implicit patterns and trends in hate speech and fake news; (iii) a novel empirical account of how these patterns affect polarisation in online communication and in society at large; and (iv) AI-based applications that will transfer these insights into interventions against hate speech, fake news and polarisation. Given the relevance for the knowledge-based society, the project puts great emphasis on outreach activities and users' awareness in collaboration with media, museums and other partners.

The consortium consists of five experienced PIs with expertise in rhetoric, comparative political science, corpus linguistics, natural language processing, multi-agent systems and computational argumentation. The group is complemented by senior experts (ACP and KEP) in fields that provide valuable extensions, such as media studies and AI-based technologies. Our long-term ambition

is to establish a pan-European network and foundations for trustworthy AI in response to the EC priority of “Europe fit for the Digital Age”.

IP	Warsaw University of Technology. Polonia
Socios	KU Leuven (Bélgica), UC Louvain (Bélgica), UC Louvain(Belgica), Artificial Intelligence Research Institute (España), Università della Svizzera italiana (Lugano, Suiza)
Presupuesto total	943.358 €
Concedido ES	207.870 €

PROYECTO 5 MARTINI. Malicious actors profiling and detection in Online Social Networks through Artificial Intelligence

There is no doubt that Online Social Networks have changed the way people communicate and interact. These platforms have helped to break down barriers and to ease worldwide communication, to share multimedia content or to easily know what is happening in almost any point in the world. Facebook (2004) or Twitter (2006) but also other social media platforms such as Youtube (2005) or messaging services such as WhatsApp (2009) have promoted this new era. However, the meteoric rise of the use of these platforms has also been followed by continuous attempts to subvert their original purposes, using them by the so-called malicious actors for evil purposes. Examples of this can be the generation of mistrust against vaccines, the creation of content supporting climate denial theories, or disinformation campaigns trying to manipulate people's opinion to alter the results of democratic elections. Therefore, there is a wide variety of different types of attempts to undermine social networks and to distort public discourse. In this project, we seek to reveal and detect the presence of malicious actors in Online Social Networks and to profile these actors through a multidisciplinary approach, including experts in the use of novel computational techniques from the Artificial Intelligence and Computer Vision fields and experts from the Behavioural Sciences field. The project will also leverage a multimodality approach, analysing text, images, videos, audio network structures, interactions between users and trust perceptions. From the Behavioural Sciences research field, different approaches, including psychology, discourse analysis, sociology and human-computer interaction will allow us to build a taxonomy of the different malicious actors and to profile them. From the Artificial Intelligence field, tools such as Deep Learning, advanced Natural Language Processing, and Social Network Analysis provide us with the necessary instruments to build a software tool for the analysis and detection of these malicious actors with novel features such as multilingualism, explainability, and a strong focus on an open-source solution.

IP	Universidad Politécnica de Madrid. España
Socios	Universidad Politécnica de Valencia (España), Tallinn University (Estonia), Université Polytechnique Hauts de France (Francia), Mykolas Romeris University (Lituania), Yasar University (Turquía)
Presupuesto total	869.411,04 €
Concedido ES	369.369 € (Universidad Politécnica de Valencia 160.392 €), (Universidad Politécnica de Madrid 208.997 €)

PROYECTO 7 MUSICIAN. Multifunctional SiliCon Integrated NOEMS for broadband Access Networks

Nano-Opto-Electro-Mechanical Systems (NOEMS) are devices in which electrons, photons (optical waves) and phonons (mechanical vibrations) can coexist and interact in the nanoscale. Upon proper engineering, NOEMS may perform functionalities that are essential in ICT systems, in particular in access networks that are characterized by requiring an interface with optical fiber (to connect with metro as well as core networks) as well as by managing microwave channels (in the GHz regime) in which the information aimed at a certain user is encoded. The need for such electro-optical interfaces will be more evident with the advent of the Internet of Things (IoT) paradigm, which will require the massive deployment of access points with microwave and optical interfaces to serve as a link between the network and the object to be connected. In this sense, any technology to be used should be compatible with silicon CMOS microelectronics to ensure mass-scale production at low cost. The long-term vision of MUSICIAN is that next generation access networks, required to implement the IoT paradigm, can include low-cost silicon NOEMS – interfaced with optical fibre and microwave electronics – to perform network functionalities such as photonic local oscillators, frequency conversion or channel filtering. To implement this vision, we will use a nanocrystalline-silicon NOEMS platform containing AlN interdigital transducers and optomechanical nanobeam cavities so that multiple functionalities are available on a single chip. MUSICIAN will improve the current performance by achieving more efficient electro-mechanical interfaces to reduce power consumption and by investigating the fundamentals of frequency fluctuations of mechanical resonators to increase oscillator quality. The aim is to demonstrate that NOEMS technology can be disruptive in 5G as well as in next-generation access networks required by IoT.

IP	Universidad Politécnica de Valencia. España
Socios	Institut Català de Nanotecnologia (España), VTT Technical Research Centre of Finland Ltd (Finlandia), CNRS - Délégation Régionale Hauts-de-France (Francia)
Presupuesto total	838.415,02 €
Concedido ES	370.722€ (Universidad Politécnica de Valencia 213.897 €), (Institut Català de Nanotecnologia 156.825 €)

CONVOCATORIA CONJUNTA INTERNACIONAL 2022

Países participantes	Bélgica, Brasil, República Checa, Francia, Lituania, Luxemburgo, Polonia, Eslovaquia, Suiza, Turquía, Reino Unido
Temáticas	1. Security and Privacy in Decentralised and Distributed Systems (SPiDDS). Proyectos 1, 5 a 11 2. Machine Learning-based Communication Systems, towards Wireless AI (WAI). Proyectos 2 a 4y 12
Presupuesto total	12.764.169 €
Concedido ES	1.460.470 €
Proyectos aprobados	12

**Proyectos con
financiación AEI**

6 (3 coordinados)

Nº	Acrónimo y título del proyecto	Países participantes
1	DIA4SPDS. Distributed Intelligence for Enhancing Security and Privacy of Decentralised and Distributed Systems	Finlandia , España, Francia, Turquía
2	MLDR MLDR: A Machine Learning-Driven Radio Interface	España , Finlandia, Francia, Polonia
3	MUSE-COM^2 AI-enabled MULTimodal SEMantic COMMunications and COMputing	República Checa , Finlandia, Francia
4	PASSIONATE Physics-based wireless AI providing scalability and efficiency	España , Finlandia, Francia, Luxemburgo, Polonia
5	GRAPHS4SEC Graph Neural Networks for Robust Ai/MI-Driven Network Security Applications	Austria , España, Francia, Reino Unido.
6	MoDIC Modern Device Independent Cryptography	Polonia , Suiza, Francia, Hungría
7	PATTERN PrivAcy-preserving disTribuTed cybERthreat aNalytics	Francia , Luxemburgo, Rumania
8	REDONDA A Next-generation State-machine Replication Protocol for Blockchain	Francia , Suiza, España, Reino Unido
9	REMINDER pRivacy-prEserving Machine Learning through secure BmanagemENt of Data's lifecyclE in distRibuted systems	España , Austria, Rumanía, Reino Unido
10	TROCI Towards Resilient Operation of Critical Infrastructures - application to water and energy systems	Reino Unido , Austria, Irlanda, Rumania
11	TruBrain Trustworthy Distributed Brain-inspired Systems: Theoretical Basis and Hardware Implementation	Reino Unido , Suiza, Francia, Turquía
12	CHASER Channel Charting as a Service	Finlandia , Suiza, Francia, Portugal

CONVOCATORIA NACIONAL PCI 2023

PROYECTO 1 DIA4SPDS. Distributed Intelligence for Enhancing Security and Privacy of Decentralised and Distributed Systems

This project will offer a framework that aims to improve the ability to protect the security and privacy of decentralized and distributed systems, providing an interdomain access control scheme, a self-aware system for collaborative intrusion detection and dynamic risk management taking into account takes into account sustainability from the perspective of resource and energy consumption. It will facilitate effective collaboration between different subsystems to prevent widespread outages

due to cyber-attacks and share threat information to create general awareness. Using blockchain, federated learning, and multi-agent architecture, di4spds will develop methods and prototypes to improve access control, intrusion detection, risk management, and collaborative response capabilities.

IP	Lappeenranta-Lahti University of Technology. Finlandia
Socios	Universidad de Castilla La Mancha (España), Université de Nantes (Francia), Firat University (Turquía)
Presupuesto total	874.219 €
Concedido ES	191.180 €

PROYECTO 2 MLDR. A Machine Learning-Driven Radio Interface

This new MLDR interface will learn to communicate by selecting and configuring the set of communication protocols and functionalities that better suit every particular use-case and scenario, thus satisfying the aforementioned hard performance requirements and efficiently using the available spectrum resources. While the project proposal is groundbreaking in terms of focus and goals, we will follow a standard research approach to reach the stated objectives, i.e., we will move from use-cases, concepts/specifications and design, to implementation, evaluation and analysis. The consortium includes four partners, all working at the intersection of wireless networks and AI/ML areas, with complementary expertise. During the MLDR design and evaluation process, we will generate new knowledge in the form of new ideas, theories, practical solutions, ML algorithms, and disruptive communication functions. We expect the results from this project will guide the design of future AI/ML-driven wireless communications and networks, becoming a reference to follow and compare with.

IP	Universidad Pompeu Fabra. España
Socios	University of Oulu (Finlandia), CentraleSupélec (Francia), AGH University of Science and Technology (Polonia)
Presupuesto total	890.055 €
Concedido ES	249.260 €

PROYECTO 4 PASSIONATE. Physics-Based Wireless Ai Providing Scalability And Efficiency

Mobile communications have changed and will continue to change our lives. With 5G under deployment, the interest of the scientific and industrial communities has started focusing on the future 6G communication networks, which will require more advanced capabilities. Achieving new challenging requirements calls for a paradigm shift that PASSIONATE will be advancing. In the architectural domain, there is a need for full integration and interoperation between satellite, aerial and terrestrial network components, merged in a unique dynamic-adaptive network infrastructure denoted as the 3D network. Within this architecture, the evolution of mobile communications needs a combination of several innovative and complementary advances at the physical layer (PHY), medium access control (MAC), and radio resource management (RMM) that may be optimized with the use of Artificial Intelligence (AI) and Machine Learning (ML). With these goals in mind,

PASSIONATE will unlock ML for wireless by customizing and accounting-by-design the unique properties (“physics-based”) of the networks they are applied to. Physics-based ML is, in addition, the suitable approach to ensure the scalability, generalization, reliability, and user trust of ML, enabling ML solutions that are technically robust and possibly explainable-by-design. In PASSIONATE, we will develop the understanding and vision of what the application of AI/ML to the wireless network can provide and design use cases that can take advantage of this technology. For these use cases and with the new physics-based AI/ML tools, we will design new PHY, MAC, and RRM techniques and algorithms that achieve the ambitious goals of future mobile networks regarding coverage, data rate, latency, and energy consumption. We will evaluate experimentally by realistic simulations and measurements the achieved gains and contribute to creating data sets that can be used for the community. By advancing the state of the art and stimulating research and technology-based innovation through dissemination, PASSIONATE will create awareness and facilitate the positive impact of advanced wireless communications on society and the economy.

IP	Universidad Carlos III de Madrid. España
Socios	University of the Basque Country (España), University of Oulu (Finlandia), CentraleSupélec (Francia), University of Luxembourg (Luxemburgo), Technical University of Poznan (Polonia)
Presupuesto total	1.567.745 €
Concedido ES	338.800 € (Universidad del País Vasco 145.200 €), (Universidad Carlos III de Madrid 193.600 €)

PROYECTO 5 GRAPHS4SEC. Graph Neural Networks For Robust Ai/ML-Driven Network Security Applications

The project focuses on the use of Graph Neural Networks (GNNs)-based network security methods against cybercrime. Our contribution is on the evaluation of the robustness of GNN-driven models against tradition AI/ML models to ensure security and privacy in decentralized and distributed systems.

IP	Austrian Institute of Technology. Austria
Socios	Universitat Politècnica de Catalunya – Spain (España), KOR Labs SAS (Francia), Conservatoire national des arts et métiers (Francia), Imperial College London (Reino Unido)
Presupuesto total	1.190.897 €
Concedido ES	199.650 €

PROYECTO 8 REDONDA. A Next-Generation State-Machine Replication Protocol For Blockchain

The redonda project ambitions the design of a next generation replication protocol for blockchain. to achieve this, the project takes advantage of recent advances in networks, secure computing and distributed systems. At the scale of a data center, the protocol is based on two recent technologies: rdma and tee. Both technologies are exploited to create a consensus layer of less than a microsecond that tolerates byzantine failures. The tees are also used in a novel portable and updatable smart contract engine to execute blockchain transactions on a variety of

infrastructures and hardware. Between data centers, the protocol is based on the replication of leaderless state machines. This recent approach decomposes the transaction order into two subtasks that can be executed in parallel, without a central coordinator locking the system. To ensure security at runtime, the redonda project creates the blockchain protocol by composing mechanically verified building blocks. The new blockchain protocol is evaluated using real hardware compared to publicly available benchmarks and traces. Our goal is for it to spread across hundreds of geographically distributed nodes and at the same time offer over 100,000 transactions per second and a latency of a fraction of a second.

IP	Institut Mines-Télécom. Francia
Socios	IMDEA Software Institute (España), University of Surrey (Reino Unido), University of London (Reino Unido), University of Neuchâtel (Suiza)
Presupuesto total	1.072.108 €
Concedido ES	197.230 €

PROYECTO 9 REMINDER. Privacy-Preserving Machine Learning Through Secure Management Of Datas Lifecycle In Distributed Systems

In recent years, artificial intelligence (ai) becomes ubiquitous and is leading to a technological paradigm shift. this trend is driven through an increasing hyperconnectivity based on the integration of distributed systems into the internet infrastructure mainly based on the deployment of internet of things (iot) technologies and 5g/6g infrastructures. the integration of such systems will enable new data-based services, for example, in the context of sustainable cities and communities, or advanced ehealth services. to provide these services effectively and efficiently, a key aspect is the management of security and privacy throughout the data's lifecycle in a way that ensures the services are based on trustworthy information provided by legitimate systems. in this direction, reminder will design a decentralized and secure approach for the access and processing of data produced by distributed systems. in particular, reminder will design and implement an edge-based architecture for applications using federated learning (fl) that will be accessible to resource-constrained systems. unlike most current deployments, the architecture will enable a collaborative model creation without the need to share the data itself. this architecture will consider the dynamism of decentralized and distributed systems by designing a node selection approach for the training process in the fl architecture while considering end systems' features and their evolution during their life cycle. additionally, reminder will address some of the major security and privacy challenges associated with the use of decentralized machine learning (ml) approaches, such as fl by analysing the use of cryptographic techniques, such as differential privacy (dp) and secure multi-party computation (smpc) for the sake of reaching the right balance between the effectiveness provided by ml techniques and the privacy being guaranteed. data privacy will be considered in rest, transit, and while processing. the proposed solutions will be preventive and reactive, and they will also ensure the privacy preserving aspects are being compliant with existing data protection regulations, such as the gdpr over the data lifecycle. reminder will also design and implement an authentication protocol to ensure that only legitimate systems take part in the collaborative creation process of ml models. in addition, reminder will demonstrate the feasibility of the proposed research through two main use cases around health and smart buildings.

IP	Universidad de Murcia. España

Socios	Austrian Institute of Technology GmbH (Austria), SC SIEMENS SRL (Rumania), University of the West of England (Reino Unido)
Presupuesto total	1.048.526 €
Concedido ES	284.350 €

FLAG-ERA II ERA-NET COFUND - The Flagship ERA-NET

FLAG-ERA II, Flagship ERA-NET, reúne a organizaciones de financiación nacionales y regionales con el objetivo de apoyar, junto con la Comisión Europea, las iniciativas FET Flagship y, en general, el programa FET Flagship. La mayoría de las organizaciones de financiación de Europa participan, ya sea directamente o como miembros asociados. FLAG-ERA contribuye a la construcción de las dos iniciativas emblemáticas sobre investigación del Grafeno (Graphene Flagship) y el Cerebro Humano (Human Brain Project), a través de una serie de actividades como el lanzamiento de convocatorias conjuntas de apoyo a proyectos transnacionales en sinergia con los proyectos emblemáticos, la contribución al marco de colaboración emblemático, la identificación de potenciales proyectos de asociación, información sobre oportunidades de financiación para los proyectos emblemáticos y eventos de creación de redes.

Coordinador: Francia (National Research Agency (ANR))

Socios: Austria (Austrian Science Fund (FWF)), Bélgica (National Fund for Scientific Research (FNRS), Research Foundation Flanders (FWO), Bulgaria (National Science Fund of Bulgaria (BNSF), Dinamarca (Innovation Fund Denmark (Innofond), Alemania (German Research Foundation (DFG), Grecia (General Secretariat for Research and Technology (GSRT), Hungría (National Research, Development and Innovation Office (NKFIH), Italia (Ministry of Education, University and Research (MIUR), Letonia (State Education Development Agency (VIAA), Lituania (Research Council of Lithuania (LSC/LMT/RCL), Países Bajos (Foundation for Fundamental Research on Matter (FOM), Netherlands Organisation for Scientific Research (NWO), Polonia (National Centre for Research and Development (NCBiR), Portugal (Foundation for Science and Technology (FCT), Rumanía (Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI), Eslovaquia (Slovak Academy of Science (SAS/SAV), Eslovenia (Ministry of Education, Science, Culture and Sport (MESCS/MIZS), **España (Agencia Estatal de Investigación (AEI)**, Suecia (Swedish Governmental Agency for Innovation Systems (VINNOVA), Swedish Research Council (VR/SRC), Turquía (The Scientific and Technological Research Council of Turkey (TUBITAK), Reino Unido (Engineering and Physical Sciences Research Council (EPSRC).

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales: 4 (2017, 2019, 2020, 2021)

Participación de MINECO-AEI en convocatorias conjuntas: 4 (2017, 2019, 2020, 2021)

CONVOCATORIA CONJUNTA 2017

Países participantes	Bélgica, Bulgaria, Francia, Alemania, Grecia, Hungría, Italia, Letonia, Lituania, Países Bajos, Polonia, Rumanía, España, Eslovaquia, Eslovenia, Suecia, Turquía
Temáticas	Graphene Flagship Human Brain Project
Presupuesto total	14.980.000 €

Concedido ES	1.232.807
Proyectos aprobados	23
Proyectos con financiación AEI	10 (2 coordinados)

Nº	Acrónimo y título del proyecto	Países participantes
HBP (BASIC AND APPLIED RESEARCH)		
1	Brainsynch-Hit. The influence of directional interactions in brain networks in predicting cognitive deficits post-stroke	Italia, Francia, Países Bajos
2	CAUSALTOMICS. Causal connectomics subtending oscillatory spread and information flow in the human brain	Francia, España, Rumanía
3	CORTICITY. Comparative Investigation of the Cortical Circuits in Mouse, NHP and Human	Francia, Alemania, España, Estados Unidos, Rumanía
4	HIPPOPLAST. How rigid and plastic circuits contribute to hippocampal function	Francia, España, Hungría
5	MAC-Brain. Developing a Multi-scale account of Attentional Control as the constraining interface between vision and action: A cross-species investigation of relevant neural circuits in the human and macaque Brain	Italia, Bélgica, Francia
6	SCALES. Studying Cognitive Activity at two Levels with Simultaneous depth and surface recordings	Francia, Rumanía, Suiza
GRAPHENE (BASIC RESEARCH)		
7	2D-SbGe. Preparation and characterization of antimonene and germanium nanolayers	España, Alemania, Eslovenia
8	CERANEA. Multifunctional Ceramic/Graphene Coatings for New Emerging Applications	Hungría, Alemania, Eslovaquia
9	GATES. Nanoporous GrAphene membrane made without TransfEr for gas Separation	Francia, España, Grecia
10	Gransport. Correlations And Defects In Graphene And Related Materials: Chargeand Heat Transport	Países Bajos, Alemania, Francia, Suecia
11	Grasage. Modelling Of The Electrical And Thermal Transport Mechanisms In Graphene Nano-Modified Polymer Compounds And Fibres	Países Bajos, Alemania, Bélgica, España
12	H2o. Heterostructures Of 2d Materials And Organic Semiconductor Nanolayers	Alemania, Países Bajos, Suecia
13	Lames. Layered Structures Of Metal Sulfides	Suecia, Alemania, Francia

14	Mechanic. Modelling Charge And Heat Transport In 2d-Materials Based Composites	Suecia, Bélgica, España, Italia, Turquía
15	More-Mxenes. Magnetically Ordered Rare Earth 2d Mxenes	Francia, Bélgica, Suecia
16	Mx-Osmoped. Mxene–Organic Semiconductor Blends For High-Mobility Printed Organic Electronic Devices	Eslovenia, Bélgica, Alemania, Francia
17	SIMPLANT. Synthesis of few layered transition metal dichalcogenides by ion implantation	Francia, Alemania, Bélgica
18	TopoGraph. Engineering topological superconductivity in graphene	Hungría, España, Países Bajos
GRAPHENE (APPLIED RESEARCH AND INNOVATION)		
19	CO2-DETECT. Waveguide-Integrated Mid-Infrared Graphene Detectors for Optical Gas Sensor Systems	Suecia, Alemania, España
20	EPIGRAPH. GRAPHene biomolecular and electrophysiological sensors integrated in an “all-in-one device” for the prediction and control of EPileptic seizures (towards a general device for most brain disorders)	Suecia, Francia, Grecia
21	GRAFIN. GRAphene-based Flexible neural Interfaces for the control of Neuroprosthetic devices	España, Francia, Suecia, Turquía
22	GRAPH-EYE. In situ, non-invasive quality control of crystalline quality of GRMs via non-linear optical properties imaging	Grecia, Bélgica, Reino Unido
23	MELoDICA. Disclosing the potential of transition metal dichalcogenides for thermoelectric applications through nanostructuring and confinement	Italia, Bélgica, Grecia, Rumanía

CONVOCATORIA NACIONAL APCIN 2018

PROYECTO 2 CAUSALTOMICS: Causal connectomics subtending oscillatory spread and information flow in the human brain

In this project we aim to tackle the challenge to model how structural white matter connectivity shapes and constraints information flow induced through rhythmic patterns of activity tested causally by means of electrical stimulation in implanted human epilepsy patients. We will address the following 2 aims: In AIM 1, we will use iEEG recordings to characterize the causal impact of intracranial rhythmic stimulation patterns on ongoing local brain activity and in interconnected brain areas by means of highresolution intracranial EEG recordings. In AIM 2, we will combine iEEG recordings and diffusion tensor imaging data from each individual patient and using structural connectomics, effective connectivity measures and dynamical network modeling, we will model how the spread of information across brain areas is constrained by white matter connections. Three teams will contribute anonymized patient iEEG data modulated by intracranial stimulation and signal analysis tools for studying the occurrence and distribution of local and network spread of rhythmic activity patterns. We aim to build a causal connectivity atlas (causal connectome) of the human brain that unambiguously characterizes the electrophysiological features, structural

constraints and connection directionality. This compendium will be made available to the scientific and clinical community. It will be used to accelerate the development of largescale models of human brain connectivity and cognition and as a framework for future modeling brain diseases and in particular oscillopathies such as epilepsy.

IP	CNRS UMR 7225 INSERM U 1127 ICM, Francia
Socios	España (Institut Hospital del Mar-IMIM), Rumanía (University of Bucharest Emergency Hospital)
Presupuesto total	483.921 €
Concedido ES	105.000 €

PROYECTO 3 CORTICITY: Comparative Investigation of the Cortical Circuits in Mouse, NHP and Human

The proposal investigates the differences in physiology, anatomy and organization of the cortex in mouse, nonhuman primate (NHP) and human. This work will require tight collaborations between physiologists, anatomists and theoreticians. Our capacity to successfully integrate across these approaches is strongly supported by the numerous joint publications linking these disciplines in leading international journals by the PI's of the consortium.

IP	Institut Cellule Souche et Cerveau (SBRI), Francia
Socios	Francia (CEA Saclay), Alemania (Ernst Strüngmann Institute (ESI) for Neuroscience in Cooperation with Max Planck Society), España (Universitat Pompeu Fabra), Estados Unidos (University of Notre Dame), Rumanía (Babes-Bolyai University)
Presupuesto total	762.511 €
Concedido ES	105.000 €

PROYECTO 4 HIPPOPLAST: How rigid and plastic circuits contribute to hippocampal function

This proposal is organized along 3 objectives. Objective#1 is to determine whether plastic vs. rigid circuits are anatomically separate and analyze their stability across conditions and time. Objective #2 is to understand which cellular/circuit properties critically determine whether a neuron is functionally plastic or rigid. We will examine the developmental origin, intrinsic morpho-physiological properties, and synapto-dendritic physiology and plasticity of rigid vs. plastic cells in vivo as well as in vitro. Lastly, objective #3 is to understand the computational benefits for navigational strategies of mixing rigid and plastic neurons into the same network. We will provide a predictive model that combines all the experimental datasets from the two previous objectives.

IP	Institut de Neurobiologie de la Méditerranée, Francia
Socios	Francia (Institut de Neurobiologie de la Méditerranée), España (Centre de Recerca Matemàtica), Hungría (IEM)
Presupuesto total	630.843 €
Concedido ES	105.000 €

PROYECTO 7 2D-SbGe: Preparation and characterization of antimonene and germanium nanolayers

The main goal of 2D-Sb&Ge is to provide the research community with the understanding of the properties and the basics to fabricate and make use of novel 2D materials based on these two elements. This also includes the study of their physical and chemical properties including supramolecular and/or covalent functionalization to produce a series of band gap tunable devices. The 2D-Sb&Ge project is structured in three different interconnected lines: i) Materials production including their chemical functionalization and structural/morphological characterization. ii) Experimental studies of their physical properties. iii) Theoretical modelling for design and rationalization of experimental results. We plan to evaluate the experimental conditions to produce few-layer (FL) germanium and antimonene at a large scale and the possibility of chemical functionalization of the latter. We foresee applications in the context of energy (supercapacitor, water splitting, oxygen reduction, etc.) as well as in prototypes of optoelectronic devices. Theoretical calculations will be used to rationalize their physical and chemical properties and will aid in future materials design.

IP	Universidad Autónoma de Madrid (UAM), España
Socios	Alemania (Friedrich-Alexander-Universität Erlangen-Nürnberg), Eslovenia (Faculty of Information Studies in Novo mesto)
Presupuesto total	499.000 €
Concedido ES	174.000 €

PROYECTO 9 GATES: nanoporous GrAphene membrane made without TransfEr for gas Separation

GATES project aims at making the proof of concept at a TRL level 3 of a new membrane based on CVD graphene, offering simultaneously both, high selectivity (103) between H₂ (He) and CO₂, N₂, O₂, Ar gases, and a high permeance (10⁻⁵ mol m⁻² s⁻¹ Pa⁻¹). The project's concept lies on technological innovations for both device's and pores' fabrication, which will offer these outstanding membranes' performances. Concerning device fabrication, we propose a ground-breaking approach overcoming roadblock graphene's technology based on transfer methods for single-layer CVD graphene (SLG). Indeed, SLG approaches based on transfer techniques are very limiting for industrialization processes. Furthermore, they induce high amounts of macroscopic defects, decreasing the yield of membranes' production. GATES developments for devices' fabrication will provide suspended SLG membranes of high quality and permeance, without employing any transfer step. In addition, this proposed procedure will be compatible with a CMOS technology, ensuring manufacturability.

IP	Pfeiffer Vacuum SAS, Francia
Socios	Francia (Commissariat à l'énergie atomique et aux énergies alternatives /LITEN/DTNM), España (Universidad de Zaragoza (UNIZAR)/INA), Grecia (National Hellenic Research Foundation, TPCI)
Presupuesto total	353.319 €
Concedido ES	99.807 €

PROYECTO 11 Grasage: Modelling of the electrical and thermal transport mechanisms in graphene Nano-modified polymer compounds and fibres

The main goal of the “GraSage” project is to develop a model describing the orientation and structural interaction of graphene within a surrounding polymer matrix during a fibre melt spinning process able to predict the electrical- and thermal properties of the nanocomposites. When CNTs and carbon black are combined with a polymer matrix, the spinning conditions have great influence on the orientation of nano-materials in a fibre matrix leading to different mechanical, thermal and electrical properties. Such effects are not yet quantified when graphene is used. Consequently, an experimental study on graphene-modified polymeric compounds and fibres will be performed. The parameters to be modified are the aspect ratio of graphene, the mass concentration of graphene in the polymer, the matrix polymer itself, the number of capillary dies in the melt-spinning process, the length-to-diameter ratio of the capillary dies, mesh configuration of spin filters and finally the melt draw ratio as well as the applied solid-state draw ratio. The obtained fibres will be characterized with respect to their structural, mechanical, thermal and electrical properties. Parallel to the experimental study, the melt-spinning process of the nanocomposites will be simulated at the nano- and microscales to provide an in-depth view of the structure and thermo-electrical properties of the polymer/graphene interface. These predictions obtained at small scales will then be transferred to a macroscopic quantitative model based on neuronal nets and fuzzy logics to finally obtain the electrical and thermal properties of a graphene-reinforced polymeric compound and fibre. This project will result in a multiscale qualitative- as well as quantitative understanding of the thermal and electrical properties of graphene modified polymer matrices.

IP	Maastricht University / Aachen-Maastricht Institute for Biobased Materials, Países Bajos
Socios	Alemania (RWTH Aachen / Institut für Textiltechnik), Bélgica (KU Leuven), España (aitex)
Presupuesto total	792.680 €
Concedido ES	145.000 €

PROYECTO 14 MECHANIC: Modelling Charge and Heat Transport in 2D-materials based Composites

The MECHANIC-project targets modelling of charge and heat transport in highly disordered (realistic) GO/rGO thin films, as they appear in composites. We conceive a multi-scale approach spanning from the nano- to the macro-scale, deliberately including any structural/chemical complexity of laboratory samples. We will model charge and heat transport using semiempirical methods, focussing on trends which can only be provided by large-enough computational samples. We will ensure accuracy by using ab-initio, in particular DFT, to extract local quantities and generate input data for the training of interatomic model potentials. Experimental input will be used both for sample-construction and model validation. Hence, the MECHANIC project will move beyond the state-of-the-art by considering transport in large and realistic disordered systems. This will provide meaningful and trustworthy insights on the transport physics and serve as design guides for GRM-composites in the Flagship. The ultimate goal is to accurately predict and control transport in various GO and rGO samples and GO/rGO interfaces with a view to improve efficiency and functionally enrich GO-based composite materials. MECHANIC brings

together expertise from modelling on different scales, from the ab-initio level to the continuum scale and is characterized by a high level of interaction between nodes. CHALMERS will coordinate and provide interatomic force models together with TB-potentials from UCL who has expertise in first-principles modelling of carbon-based nanostructures. The potentials will be used for mesoscale heat and charge transport calculations by ICN2 (tight binding simulations of defected GRM structures), IZ-TECH (influence of nano-structuring and disorder on heat and charge transport) and UNICA (thermal transport calculations in 2D materials using MD).

IP	Chalmers University of Technology, Suecia
Socios	Bélgica (Université catholique de Louvain), España (Catalan Institute of Nanoscience and Nanotechnology-ICN2, AVANZARE INNOVACION TECNOLOGICA S.L.), Italia (University of Cagliari, Italian National Research Council), Turquía (Izmir Institute of Technology)
Presupuesto total	743.880 €
Concedido ES	100.000 €

PROYECTO 18 TopoGraph: Engineering topological superconductivity in graphene

The aim of the TopoGraph project is to engineer topological superconductivity and Majorana zero modes (MZMs) in graphene-based van der Waals heterostructures. While there is extensive research both in the field of graphene and in the field of topological materials, graphene as a platform for topological superconductivity has not yet received much attention. Majorana zero modes (MZM) are special excitations of topological superconductors with non-Abelian exchange statistics. This property, together with their topological protection against unwanted perturbations, make MZMs promising for practical implementations of topological quantum computation. This project will leverage the unique properties of graphene (long-range ballistic transport, clean interfaces with superconductors, tuneable properties through van der Waals engineering) to realize a new platform for topological superconductivity and MZMs. We will follow two different complementary routes to engineer MZMs: (a) enhance spin-orbit interaction in graphene by stacking it on high spin orbit 2D materials, and (b) use the peculiar quantum Hall phases in single or twisted bilayer graphene to induce quantum spin-Hall phases. We will then induce topological superconducting phases by coupling these structures to superconducting electrodes.

IP	Budapest University of Technology and Economics, Hungría
Socios	España (Instituto de Ciencia de Materiales de Madrid-Agencia Estatal Consejo Superior de Investigaciones Científicas (ICMM-CSIC), Países Bajos (Technical University Delft)
Presupuesto total	560.000 €
Concedido ES	105.000 €

PROYECTO 19 CO₂-DETECT: Waveguide-Integrated Mid-Infrared Graphene Detectors for Optical Gas Sensor Systems

We will develop highly integrated waveguide-based optical gas sensor systems based on mid-infrared (mid-IR) graphene detectors. Existing mid-IR photodetectors typically are based on compound semiconductors, which are not capable of being integrated on wafer-scale with silicon photonics, thus precluding the development of low cost optical gas sensors. The purpose of this project is to fill the current technology gap and demonstrate that a nondispersive infrared (NDIR) gas sensor system can be realized, based on mid-IR graphene detectors that are integrated with silicon photonic waveguide circuits. The proposed NDIR gas sensor consists of a broadband IR emitter that couples light to a mid-IR spiral waveguide, which is exposed to the target gas. Thereby, certain wavelength bands of the light are absorbed by the presence of gas molecules while the light travels through the waveguide, and these bands are then split into different waveguides by on-chip filters. The intensity of the signal at the end of the waveguide is detected by a graphenebased mid-IR detector and correlates with the concentration of the targeted gas (CO₂) with high sensitivity and specificity.

IP	Frank Niklaus, KTH Royal Institute of Technology, Suecia
Socios	Suecia (SenseAir AB), Alemania (AMO GmbH), España (Catalan Institute of Nanoscience and Nanotechnology)
Presupuesto total	400.000 €
Concedido ES	100.000 €

PROYECTO 21 GRAFIN: GRAPhene-based Flexible neural Interfaces for the control of Neuroprosthetic devices

This project aims at exploring the potential of graphene-based technologies in neural interfaces for motor neuroprostheses. Taking advantage of intrinsic properties of graphene, such as biocompatibility, electronic performance, and easy integration within flexible substrates, we will develop graphene flexible devices to record and stimulate in the nervous system. Efficient stimulation will be based on novel highly porous reduced graphene thin films exhibiting extreme charge injection capacity. Recording with high signal-to-noise ratio will be provided by low noise CVD-grown single layer graphene field-effect transistors. Different designs will be developed to serve as extraneural and intraneural electrodes in peripheral nerve and in brain cortex. Biocompatibility and functionality will be extensively tested in chronic implants in animal models. The ability of these novel interfaces to record electrical signals from nerve and brain and to stimulate for providing sensory feedback will be determined in experimental models of nerve injury and of somatosensory cortex, in order to generate the proof of concept for the usability of interfaces for the control of neuroprostheses and for the neuromodulation of sensory dysfunctions (pain and touch) after nervous lesions.

IP	Universitat Autònoma de Barcelona, España
Socios	España (Catalan Institute of Nanoscience and Nanotechnology), Francia (AXONIC), Suecia (Chalmers University of Technology), Turquía (Bogazici University)
Presupuesto total	759.359 €

Concedido ES	158.000 € + 36.000 € = 194.000 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2019

Países participantes	Bélgica, Francia, Alemania, Grecia, Hungría, Italia, Letonia, Lituania, Países Bajos, España, Eslovaquia, Eslovenia, Suecia, Turquía, Israel, United Kingdom
Temáticas	1. FLAG-ERA JTC 2019 Graphene 2. Basic research Graphene 3. Applied research and innovation HBP 4. Basic and applied research €
Presupuesto total	16.590.820 €
Concedido ES	1.085.521 €
Proyectos aprobados	25
Proyectos con financiación AEI	6 (5 en la convocatoria APCIN 2019-2 y 1 en APCIN 2020)

No.	Acrónimo y título del proyecto	Países participantes
HBP (BASIC AND APPLIED RESEARCH)		
1	DOMINO. Development of cortical multisensory integration mechanisms at micro- and macro- scales during normal and pathophysiological conditions	Países Bajos, Francia, Grecia, Italia
2	HA-CTion. Hypothalamic histaminergic modulation of brain regions involved in fear memory	Italia, Francia, Países Bajos
3	MILEDI. Multiscale Modelling of Impaired LEarning in Alzheimer's Disease and Innovative Treatments	Lituania, Francia, Italia
4	MoDeM. The "Motor-way" to Decision-Making: how the motor system drives cue-triggered decisions	Italia, Francia, Países Bajos
5	NeuronsReunited. Neurons reunited: data and software to reconstruct long-range projection neurons, place them in a digital reference brain with high precision, and model their interactions	Países Bajos, Alemania, Bélgica, España, Italia
6	PrimCorNet. Layer-specific characterization and modeling of fronto-parietal dynamics in primate cortical networks	Francia, Alemania, Grecia
7	SENSEI. Segmentation of Neurons using Standard and Super-Resolution Microscopy	Italia, Bélgica, Francia
8	SMART BRAIN. Advanced Morphological Reconstruction of Human Brain Tissue	Italia, Francia, Países Bajos

by Multimodal Fusion of Multiscale Optical Imaging Technologies

9	SoundSight. The sight of sound: how vision shapes the development of auditory inputs to the occipital cortex	Países Bajos, Bélgica, España
GRAPHENE (BASIC RESEARCH)		
10	2DHetero. hBN/Graphene 2D Heterostructures: from scalable growth to integration	Alemania, Bélgica, Francia
11	2D-NEMS. 2D-Material Heterostructure NEMS Sensors	Suecia, Alemania, España
12	DeMeGRa. Detection mechanisms in graphene radiation sensors	Suecia, Alemania, Francia
13	DIMAG. Electrically controlled ferromagnetism in 2-dimensional semiconductors	Bélgica, Alemania, Francia, Eslovenia
14	OPERA. Nanographene for quantum technologies	Francia, Alemania, Bélgica
15	PROSPECT. PatteRned cOatings based on 2D materials benzoxazine reSin hybrids for broad range Pressure detection	Bélgica, Francia, Eslovenia, Suecia
16	SOgraphMEM. Spin Orbit functionalized GRAPHene for resistive-magnetic MEMories	España, Alemania, Bélgica, Francia
17	TATTOOS – TunAble Twistronics. local tuning and probing of TOpOLOGical edge states and Superconductivity in bilayer graphene	Bélgica, Alemania, Francia
18	TO2DOX. Transferable two-dimensional correlated oxide layers	España, Alemania, Francia, Letonia
GRAPHENE (APPLIED RESEARCH AND INNOVATION)		
19	ETMOS – Epitaxial Transition Metal dichalcogenides Onto wide bandgap hexagonal Semiconductors for advanced electronics	Italia, Francia, Hungría, Eslovaquia
20	GO-FOR-WATER. Graphene cOmposites FOR advanced drinking WATER treatment	Italia, Grecia, Suecia, Turquía
21	GRAPHAR. Graphene enabled optical phased array for LIDAR applications	Italia, Israel, United Kingdom

CONVOCATORIA CONJUNTA INTERNACIONAL 2020

PROYECTO 5 **Neuronsreunited: Data and software to reconstruct long-range projection neurons, place them in a digital reference brain with high precision, and model their interactions**

Cognitive processes emerge from the properties of individual neurons and their synaptic cell-to-cell interactions, which may be local or long-range. While the first are relatively well understood, long-range synaptic connections remain mostly known at a gross region-to-region “mesoconnectome” level. Lacking cellular resolution, such data are not adequate to model the computations carried out by the brain; this presents the field with a major challenge for understanding at a mechanistic level both the normal and the diseased brain functioning. The mesoconnectome describes the statistics of projections between brain regions based on the

labeling, usually incomplete, of the axons from a large number of cells of different types. A growing number of single-cell labeling studies show that the projections of individual neurons in these projections are remarkably diverse and precise. Most regions can be reached in about two steps rather than one, which means that the overlap between projections and postsynaptic neurons in the intermediate area is critical. In this project we consider the projections from basal ganglia and cerebellum that project to cortex via thalamus. It is extremely difficult to get a grasp on long-range projections, but we believe that labeling and gold-standard reconstruction of axons of individual neurons is one of the most promising approaches. Current reconstruction and measurement tools face the challenge of combining the brain-wide scale of a long-range projection axon with the cellular scale at which its tens of thousands of boutons are distributed within the target regions. During the histological processing required for precise histological delineation of postsynaptic cells and neuropils, the tissue sections become subtly deformed, hence the different axonal branches will not automatically line up with the areas they targeted when the sections are registered to a template brain. We have assembled five partners to address this challenge. The two experimental partners (Clasca, d'Angelo) will produce and reconstruct projecting axons innervating cortex or converging in deep nuclei, the neuroinformatics partner (Tiesinga, Bakker), with help of a consultant (Meijering) will build pipelines to process the raw data and create tools for the precise placement of axonal arbors in a digital reference brain and generate statistics for the two stage connectivity. One computational group (Giugliano) will translate these axonal arbors in multicompartmental neuron models in order to explore the physiological effectiveness of this two-stage feedforward projection, whereas the other (Van Albada) will translate the connection statistics to single-compartment neuron network models to assess the effect on population activity. This project will directly use and contribute tools to the EBRAINS infrastructure produced by the HBP, the data and models produced are also to be published via EBRAINS.

IP	Radboud, Países Bajos
Socios	Forschungszentrum Jülich – Alemania, Universiteit Antwerpen – Bélgica, Universidad Autónoma Madrid – España y University of Pavia – Italia
Concedido	150.000 €
Presupuesto Total	786.772 €

PROYECTO 9 SoundSight – The sight of sound: how vision shapes the development of auditory inputs to the occipital cortex

Despite the fact that what we see, hear, feel, taste and smell is processed separately by our senses, we perceive our environment as a unified and coherent whole. This is because brain regions that process the inputs from different senses are interconnected and provide contextual information to each other, allowing multisensory integration, which creates a better representation of the world than what is achieved by each sense separately. How these crossmodal inputs develop and are fine-tuned by experience has not been studied extensively. Experiments in the Collignon lab with congenitally blind human subjects have revealed that some visual cortical regions start responding to auditory inputs. For example, regions that normally respond to visual motion are selectively activated by auditory motion. In parallel, work from the Nieto lab showed an exuberancy of intracortical developmental axonal projections. We hypothesize that during early postnatal development, an extensive network of crossmodal axonal projections is laid out between related brain regions that is mostly pruned away through activity

of feedforward inputs of the dominant modality. The remaining crossmodal connections allow for multisensory integration in the adult cortex. In the congenitally blind, the crossmodal connections are not pruned, but strengthened, and become drivers of the network. While this plasticity improves the non-deprived senses, it may interfere with the restoration of vision later in life. In this proposal, we will test this hypothesis and its implications for the restoration of vision in the blind from the level of individual synapses in mice to the level of perception in humans. We will study the effects of visual experience during development on functional crossmodal connectivity in visual cortex using newly developed tracing approaches and chronic calcium imaging in mice and functional magnetic resonance imaging (fMRI) studies in human subjects. The functional anatomy of crossmodal connections will be mapped down to the level of dendritic integration in different excitatory and inhibitory neuronal subtypes, using RNAseq and electrophysiological and imaging approaches in mice. We will validate these findings in human subjects with ultra-high-field fMRI and intracranial electrophysiological recordings in humans. We will examine the effects of visual deprivation on the development of the visual system's functional anatomy and use a neuronal modeling approach to understand how crossmodal innervation and visual deprivation affect neuronal dynamics in visual cortex. Finally, we aim to understand the mechanisms underlying the regulation of crossmodal plasticity in mice, and use this information to explain long lasting effects of early visual deprivation in human subjects and mice and take initial steps to improve restoration of vision at a later age.

IP	Netherlands Institute for Neuroscience/Royal Netherlands Academy of Arts and Sciences –Países Bajos
Socios	Université Catholique de Louvain – Bélgica y el Centro Nacional de Biotecnología - España
Concedido ES	150.000 €
Presupuesto Total	600.000 €

PROYECTO 16 SOgraphMEM– Spin Orbit functionalized GRAPHene for resistive-magnetic MEMories

The demand for high density, low power and fast spin logic devices requires the combination of materials that can provide suitable spin transport channels with long spin lifetime and spin propagation, as well as topologically stable spin textures that can act as fast information carriers. These prerequisites for the development of spintronic technology in next years can be fulfilled by exploiting the spin and momentum degrees of freedom of electrons (Spin-Orbitronics, SO) in specific multi-layered structures. In addition, the discovery of a strong Dzyaloshinskii-Moriya Interaction (DMI) at the Graphene (Gr)/Ferromagnetic (FM) interface is a crucial step to promote SO technology enabling the electrical control of the transport and manipulation of (topologically protected) magnetic structures. The integration of graphene as efficient spin transport channel in the technology based on chiral spin textures depends, however, on our ability to fabricate Gr-based perpendicular magnetic anisotropy (PMA) systems with tailored interfacial Spin Orbit Coupling (SOC). The partners of the consortium have already demonstrated the ability to tune the SOC by metal intercalation and the important magnetic interactions including the perpendicular anisotropy, the interlayer dipolar fields or the interfacial DMI by layer engineering, in order to control the chirality of the magnetic domain walls and skyrmions, to detect electrically nanometer spin textures, to realize graphene mediated antiferromagnetic coupling (AFC) between FMs, and finally to engineer ferroelectricity for application in various flavours of ferroelectric memories.

SOgraphMEM project aims to i) functionalize the SOC induced parameters, ii) characterize, and iii) test the graphene based SpinOrbitronic systems/devices operating at room temperature by exploiting the advantages of combining FM ultrathin films underneath of a Gr layer, non-magnetic films of heavy metals (HM), and ferroelectric (FE) compounds (doped-HfO₂, HfZrO₂). We aim at exploiting the polarization of the FE in order to ultimately realize voltage-controlled resistive and magnetic switching devices. We will adopt a specific methodology to fabricate the stacks, which will have the following sequence FE / Gr / FM / HM onto insulating oxides. In order to stabilize the spin textures, we will also explore the use of AFC through Gr in synthetic antiferromagnetic (SAF) stack, i.e. FM₂ / Gr / FM₁. Different issues related to the electric field control of the interface-SOC-induced effects will be addressed: a) effects of the electric field onto the surface magnetic anisotropy and DMI, b) spin orbit torque (SOT) and spin transfer torque (STT) characteristics as function of an external magnetic and/or electric field, c) magnetic anisotropy of the induced magnetic moment in Gr, d) electrical and magnetic resistive switches. In view of practical applications, SOgraphMEM will open the way for the development of the next generation of spintronics devices beyond the Moore's law, exhibiting low power, high velocity and large density, as well as efficient spin injection/detection. The SOgraphMEM consortium is composed by seven research institutions (IMDEA, UMPHY, SOLEIL, ALBA, NAMLAB, JUELICH and UCL) from four EU countries (Spain, France, Germany, Belgium) and comprises a group of experts in the required fabrication and characterization techniques, in multiscale theory, as well as the facilities and engineering expertise to produce the proposed systems/devices. In addition, the Consortium complements the capabilities already available at the Graphene Flagship, making available a list of sophisticated techniques.

IP	Fundación IMDEA Nanociencia, España
Socios	Laboratorio de Luz Sincrotrón ALBA –España, – NaMLab GmbH- Alemania, Forschungszentrum Jülich – Alemania, Université Catholique de Louvain- Bélgica, Unité mixte de physique CNRS/Thalès – Francia y Unité de recherche SOLEIL – Francia
Concedido ES	58.500 € + 154.500 €
Presupuesto Total	1.104.759,96 €

PROYECTO 23 LEGOCHIP – Multifunctional Nanoporous Graphene Integration in Operational Nanophotonic Biosensor Devices

One of the major challenges in the advance of biosensor technology is the reproducible biofunctionalization of the sensing area. The lack of precise control during the formation of the biorecognition interface severely limits the detection selectivity and reliability of actual devices, hampering the mass-production and implementation in the clinical field. By proposing a disruptive concept to manufacture functionalized nanoporous graphene (NPG) architectures with atomic precision, LEGOCHIP will face the challenge to develop a universal sensor biofunctionalization protocol. Beyond its universal character, the protocol will facilitate a bio-recognition molecular patterning control in the nanometer scale. Taking advantage of the unimodal pore size distribution in our graphene sheet, we also aim at significantly enhancing the sample pre-treatment by designing highly selective single-layer graphene membranes for advanced filtration of biological samples (blood, plasma, and serum). LEGOCHIP, by integrating the novel multifunctional NPG into cutting-edge photonic sensing nanotechnology (bimodal waveguide (BiMW) interferometers), is

thereby foreseen as a key innovation to boost the implementation and technological transfer of biosensor devices to the clinical field. Operational biosensor devices will be fabricated, tested, and validated for the direct detection and label-free analysis of novel microRNA biomarkers in clinical samples for the early diagnosis of melanoma (i.e., skin cancer) and continuous monitoring of high-risk patients. The nanostructuration and covalent functionalization, the fabrication of single layer membranes, and the realization of biosensors for early diagnostics are independently identified as central milestones in different WPs of the Graphene Flagship. LEGOCHIP targets each of these challenges within an integral scheme by putting together a transversal Consortium that bridges fundamental research at the atomic scale with technology with a level of readiness over 6. By integrating the nanoporous graphene recently developed by the Consortium into pioneering nanophotonic interferometric devices, we aim at realizing a new lab-on-a-chip biosensor to be positioned well beyond the state of the art. Further, the LEGOCHIP system is foreseen as a general-purpose toolkit, which could be easily adapted and implemented for other purposes, such as basic biology studies or environmental monitoring. The strong multidisciplinary component of this project, together with the collaborations and partnerships that will be fostered, will contribute to a groundbreaking progress in different scientific areas, including materials sciences, nanophotonics, chemistry and biochemistry, and clinical oncology.

IP	Catalan Institute of Nanoscience and Nanotechnology - España
Socios	University of Santiago de Compostela –España, University of Bologna, Italia y University of Manchester – Reino Unido
Concedido ES	150.154 €
Presupuesto Total	359.536,37 €

PROYECTO 25 MARGO – MAXillofacial bone Regeneration by 3D-printed laser-activated Graphene Oxide scaffolds

Reconstruction of maxillofacial defects, with the efficient restoration of tissue morphology, mechanical properties, vascularization, and innervation, is a critical medical challenge, particularly in aging patients. The jaws, with dentoalveolar joints, are crucial sites, in which regeneration is hardly achieved with available approaches, often requiring patient-tailored scaffolds that allow new bone growth and avoid graft retraction. Modern advances in tissue engineering are creating 3D printable scaffolds supporting the growth of bone mesenchymal stromal cells that cope with bone regeneration under suitable environmental stimuli. From computer-aided design (CAD) model obtained by medical imaging of patients, 3D printing technologies allow to accurately replicate the volumetric architecture of defects and improve surgical outcomes. This results in enhanced durability, aesthetics and low inflammatory complications. To ensure the success and widespread application of 3D printed bone scaffolds, biomaterials should be engineered to achieve desired functional, mechanical and supportive properties. However, biomaterials used for 3D printing have yet to be implemented to better control stem cell proliferation and differentiation into bone lineages. The MARGO project aims at constructing implants for stem cells driving on laser-activated 3D-printed CAD-based scaffolds. For this purpose, MARGO will use a Graphene Oxide (GO)-based biomaterial. GO is one of the most valuable graphene-related materials (GRMs) with promising results in bone regeneration and antibacterial activity. GO is a low-cost material, can be embedded in 3D printable polymers and has adjustable mechanical properties. Our strategy is based on the reconstruction of

maxillofacial defects by CAD technology, 3D printing and laser modification of scaffold surfaces to enhance mammalian cell growth and finely tuned bone regeneration. Indeed, laser-printing of GO surfaces causes a local photo-thermal chemical reduction by removal of oxygen functionalities and allows the formation of nano-wrinkles along with precise geometric patterns. These reduced GO patterns increase stem cell adhesion and orientation and induce differentiation.

IP	University Sapienza- Italia
Socios	CSIC–España, Università Cattolica del Sacro Cuore–Italia y DHAL Software–Grecia
Concedido ES	150.00 €
Presupuesto Total	415.000 €

CONVOCATORIA NACIONAL APCIN 2020

PROYECTO 18 T02DOX. Transferable two-dimensional correlated oxide layers

To2Dox aims at fabricating and characterizing a new class of freestanding 2D layers based on correlated transition metal oxides, and their combination in multifunctional heterostructures with conventional 2D van der Waals (vdW) materials. 2D-oxide freestanding layers will harbor novel spontaneous and externally switchable collective states driven by electronic correlations which will tremendously expand the functional capabilities of current vdW materials and generate synergies with the Graphene Flagship. The new type of freestanding correlated oxide 2D layers will be synthesized from epitaxial ultrathin oxide layers grown on sacrificial layers with atomic level control of their chemistry and structure. 2D oxide layers will be transferred and manipulated using deterministic placement methods developed for 2D vdW materials. A strong effort will be dedicated to the characterization of the unique surface reconstructions and defect structure of these 2D oxide layers and their functional response. Heterostructures combining freestanding layers of correlated oxides with vdW 2D layers will inspire a completely new generation of proximity phenomena. These will be exploited to engineer electronic groundstates with tunable responses, absent in the current vdW materials including electrically controlled topological states, spin-orbit induced spin textures or topological superconductivity.

Our project will realize the hybridization of two emerging fields: oxide interfaces and 2D vdW materials. It will synergize a very large palette of complementary expertise covering all the research methods to achieve project objectives. The consortium includes experts in the epitaxial growth of oxides with atomic control of the interfaces and in their functional characterization, in oxides defects characterization and manipulation, in the fabrication of planar perpendicular devices including proximity interactions and in the synthesis, manipulation and characterization of 2D vdW materials.

Regarding the expected impact of To2Dox, the project relies on a transformative effort for expanding functionalities of 2D materials by incorporating the robust collective states of a completely new family of layered freestanding materials: the 2D oxide materials. On the other hand, it is committed to the study and realization of a novel technological platform based on the oxide nanotechnology for exploiting novel quantum states in correlated oxides. Furthermore, from the applied perspective, collective orders switchable by an external field could inspire new

strategies for new device concepts towards future atto-Joule low voltage logic surpassing the (energy) limitations of the current CMOS semiconductor technology.

IP	Universidad Complutense de Madrid, España
Socios	Instituto de Ciencia de Materiales de Madrid – España, – Max Planck Institute Festkoerper Forschung – Alemania, Forschungszentrum Jülich– Alemania, Unité mixte de physique CNRS/Thalès – Francia
Concedido ES	94.967 + 115.000 €
Presupuesto total	1.033.474 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2021

Países participantes	Francia, Bélgica, Bulgaria, Alemania, Grecia, Hungría, Israel, Italia, Letonia, Lituania, Países Bajos, Rumania, Eslovaquia, Eslovenia, España, Suecia, Turquía
Temáticas	Proyectos 1,2,3,4,5,6,7: Graphene- Basic Research and Innovation Proyectos 8,9,10: Graphene-Applied Research and Innovation Proyectos 11,12,13: HBP- Basic& Applied Research and Innovation
Presupuesto total	8.370.041 €
Concedido ES	1.333.100 €
Proyectos aprobados	13
Proyectos con financiación AEI	7 (4 coordinados)

No.	Acrónimo y título del proyecto	Países participantes
GRAPHENE-BASIC RESEARCH AND INNOVATION		
1	2DSOTECH. 2Dimensional van der Waals Spin Orbit Torque Technology	Suecia, Alemania, Hungría, Países Bajos, Eslovaquia
2	DeGraph. Bacterial degradation of GRMs	Francia, Alemania, Bulgaria, España, Italia
3	MINERVA. Making New ElectRonic deVices from Amorphous materials	Francia, Bélgica, España, Suecia
4	MNEMOSYN. 2D magnetic memories: scalable growth and hybrid electrical operation	Francia, Alemania, Bélgica, España, Turquía
5	MULTISPIN. Molecular engineering of layered magnetic materials: towards multifunctional spintronic devices	España, Francia, Hungría, Turquía

6	PhotoTBG. Moire enhanced infrared photodetection and THz emission in twisted graphene superlattices	España, Alemania, Suiza
7	VEGA. Vertical Graphene for Aluminium-Ion Batteries	Eslovenia, Francia, Suecia
GRAPHENE-APPLIED RESEARCH AND INNOVATION		
8	COGRAPH. Broad spectrum antiviral coatings using chemically modified graphene	Francia, Bélgica, Turquía, Reino Unido, Suiza
9	ENPHOCAL. ENhanced Photoresponse of HOt CARriers through Lifetime engineering	España, Alemania, Bélgica
10	RESCUEGRAPH. Functional stimulation system for rehabilitation of gait and driving neural plasticity after spinal cord injury using graphene based nerve electrodes	España, Francia, Turquía
“HBP – BASIC & APPLIED RESEARCH AND INNOVATION”		
11	ModelDXConsciousness. Combining model free and model based biomarkers for the consciousness diagnosis	Francia, Bélgica, España, Rumanía
12	TraP-MEDD. Translational Platform for MSA: Elucidation of Disease-mechanisms and Drug discovery	España, Francia, Bélgica
13	VIPattract. The role of GABAergic neuron subtypes in stabilizing and flexibly resetting head-direction signals in the Presubicular cortex	Francia, Hungría, Países Bajos, Japón (observador)

CONVOCATORIA NACIONAL PCI 2021

PROYECTO 3 MINERVA. Making New ElectRonic deVices from Amorphous materials

2D materials exhibit promising properties for key European industrial areas including high-speed computing and communication technologies. However, mainly focused on crystalline materials, these applications are currently limited by the lack of direct and reproducible low cost-synthesis methods, due to high temperature growth. Recently, structurally disordered 2D materials, produced at much lower temperatures, have been shown to manifest a large degree of uniformity over large areas, and performant properties for device applications. Amorphous boron nitride (aBN) is found to exhibit ultra-low dielectric-constant, and excellent field emission performance, being suitable for interconnects technologies and high-performance electronics, such as flexible dielectric devices or conductive bridging RAM. MINERVA aims to grow aBN thin films over large area on various substrates, and evaluate their properties as coatings for thermal, electronic and spintronic applications. Particular attention will be paid to achieve nanoscale control of the amorphicity, thickness of the films as well as doping rate and substrate interaction. The relationship between processing and atomic structure will be studied by an appropriate combination of analytical techniques. Modelling to understand the structures and properties of the materials will support and validate the experiments at every stage. The expected physical properties of such deposited layers, coupled with the versatility and adaptability in materials processing, as well as the large-area and uniform coverage at low temperature, should

allow their integration as electronic components in ultimate nanoelectronic systems. More concretely, the added value of large scale aBN will be studied for resistive switching devices, magnetic tunnel junctions and spin injection tunnel barriers. The possible dependence of aBN electronic properties in contact to ferromagnetic electrodes will be explored in detail, predicting the possible fruitful potential of spin manipulation by proximity effect at the hybridized aBN/ferromagnet interface. This is expected to generate new scientific knowledge of charge and spin transport across novel 2D hybrid junctions. In addition, these newly tuned aBN materials, on which no studies have yet been conducted within the Graphene Flagship, will be added to the Samples and Materials Database as standard references. MINERVA brings together complementary expertises and is characterized by a high level of interaction between partners. UCBL will coordinate MINERVA and synthesize controlled aBN samples. ICN2 and UU will respectively perform measurements of thermal conductivity and charge and spin transport. UCLouvain and ICN2 will simulate spin-dependent transport throughout aBN films and investigate the coupling between aBN electronic properties and ferromagnetic materials. MINERVA will bring new materials and technological devices to the Flagship consortium, thereby supporting its industrial objectives.

IP	Université Claude Bernard Lyon. Francia
Socios	Catalan Institute of Nanoscience and Nanotechnology (ICN2) (España), Department of Physics and Astronomy / Uppsala University (UU) (Suecia), Université catholique de Louvain (Bélgica)
Concedido ES	142.000 €
Presupuesto total	847.900 €

PROYECTO 4 MNEMOSYN. 2D magnetic memories: scalable growth and hybrid electrical operation

MNEMOSYN will develop and optimize techniques to grow large-scale two-dimensional (2D) magnetic materials, co-integrated with strong spin-orbit coupling materials, graphene and 2D ferroelectrics in high-quality multilayer van der Waals heterostructures. The main objective is to demonstrate a large power reduction for magnetization actuation by spin-orbit-torques (SOT) and by multiferroic proximity effects. The consortium will benefit from state-of-the-art molecular beam epitaxy equipment provided by three different partners to accelerate the study of various selected materials combinations in a concerted fashion. Experimental developments will be supported and guided by simulations combining first-principles calculations with large-scale simulations of SOT figures of merit on properly designed Hamiltonians. The outcomes of the project will consist in establishing the best growth and integration conditions, the corresponding upper limit of SOTs efficiency, and the demonstration of 2D multiferroicity, targeting room-temperature operation and scalable fabrication of memory building blocks. The feasibility of further fab developments will be also ascertained to achieve higher technology readiness levels (TRL).

IP	SPINTEC-CEA (new PI) (Francia)
Socios	Max Planck Institute of Microstructure Physics: Halle (MPIH) (new PI) (Alemania), Catalan Institute of Nanoscience and Nanotechnology (España), Ankara University (Turquía), Centre Interdisciplinaire de Nanoscience de

	Marseille (CINaM) (Francia), Interuniversity Microelectronics Centre (IMEC) (newPI) (Bélgica)
Concedido ES	137.700 €
Presupuesto total	716.314 €

PROYECTO 5 MULTISPIN. Molecular engineering of layered magnetic materials: towards multifunctional spintronic devices

Atomically thin layered magnetic materials (LMMs) constitute an ideal platform to study magnetism in reduced dimensions. One of the key features that distinguish LMMs from conventional bulk magnetic compounds is the tunability of their magnetic properties, which stems from their reduced dimensionality and the extremely high surface-to-volume ratio. So far, the magnetic response of LMMs has been significantly altered only by using conventional approaches such as electrostatic gating. Molecular functionalization, which is an extremely powerful method to tune the optoelectronic properties of non-magnetic 2D materials and to modify the magnetism of conventional metallic surfaces, has not yet been explored on LMMs. MULTISPIN proposes to take advantage of the chemical programmability of (macro)molecules to engineer the physical and chemical properties of LMMs, enabling the precise tuning of their magnetic properties and the demonstration of opto-spintronic devices with new functionalities. MULTISPIN will make active use of specific capabilities offered by different classes of molecules, such as molecular dopants, ferroelectric polymers, photochromic molecules and organometallic compounds with a predictable spin configuration. By interfacing these systems to LMMs, MULTISPIN will provide decisive answers to four relevant questions: can we improve the air stability and increase the Curie temperature of LMMs? Can we impart new functionalities to LMMs, including photo-responsivity and dynamically tunable exchange bias? Can we demonstrate multiresponsive spintronic devices based on LMMs with a tailored light response? Can we induce ferromagnetism in non-magnetic layered materials through molecular functionalization? In answering these questions, MULTISPIN will unravel the fundamental interplay between structural, electronic and magnetic properties in LMMs, making it possible to develop new hybrid materials with dynamically tunable properties. Our multidisciplinary team brings together world-leading groups with complementary skills and expertise, encompassing molecular and 2D spintronics, molecular functionalization of 2D materials, and first principle calculations. Our comprehensive multiscale experimental and theoretical approach will enable an unprecedented control over the LMM magnetic state, providing additional functionalities, which will be integrated in novel proof-of-principle devices. On the long term, the strategies and knowledge developed in MULTISPIN can have a real impact in technologically strategic applications in the IT sector such as data storage, embedded memories, and computer logics, towards the next generation of smart computing.

IP	Asociación - Centro de Investigación Cooperativa en Nanociencias CIC nanoGUNE. España
Socios	Institut de Science et d'Ingénierie Supramoléculaires (ISIS), (Francia), Budapest University of Technology and Economics (Hungría), Izmir Institute of Technology- Photonics (Turquía)
Concedido ES	284.500 €
Presupuesto total	775.585 €

PROYECTO 6 PhotoTBG. Moire enhanced infrared photodetection and THz emission in twisted graphene superlattices

Light-matter interactions underlies the operation of modern optoelectronics. In the past decade, graphene and related 2D materials (GRMs) have shown great promise in the field of optoelectronics including gate-tuneable modulation, ultra-fast detection and THz capabilities. Graphene itself exhibits weak optical absorption (2.3 %) and exploiting its broadband optical response relies on the integration of extrinsic device architectures. By contrast, twisted bilayer graphene (TBG) superlattices exhibit strikingly different properties as the moiré superlattice potential strongly modifies the band structure, creating exceptionally narrow energy bands and spectral gaps in the range 10-100 meV. Consequently, their intrinsic optical conductivity exhibits a strong mid-infrared and terahertz (THz) response thanks to the moiré induced electronic reconstruction. Combined with other unique properties such as exceptionally high density of states and in-situ tuneable topological bands make TBG an promising candidate for a new generation of infrared and THz optoelectronic devices. The project PhotoTBG aims to study the fundamental light-matter interactions of TBG in the linear and non-linear response regime. The first goal is to study the intrinsic infrared and THz photoconductivity of TBG in the linear response regime, uncovering novel mechanisms for electrical tuneability and photoexcitation enhanced by topology. The second effort focuses on the highly biased regime in search for Bloch oscillations – one of the oldest and yet most elusive phenomena in condensed matter physics – paving the way for a new generation of THz sources.

IP	Agro-Instituto de Ciencias Fotónicas (ICFO). España
Socios	Rheinisch-Westfaelische Technische (Alemania), Eidgenoessische Technische Hochschule Zurich (ETHZ) (new PI) (Suiza)
Concedido	247.300 €
Presupuesto total	485.580 €

PROYECTO 9 ENPHOCAL. ENhanced Photoresponse of HOt CArriers through Lifetime engineering

Led by ICN2 in Barcelona, Spain, this project will focus on enhancing the performance of graphene-enabled photonics. Gathering both academic and industrial partners, researchers expect to deliver low-cost, scalable technologies compatible with current semiconductor foundries.

IP	Catalan Institute of Nanoscience and Nanotechnology (ICN2) (new PI). España
Socios	Interuniversity Microelectronics Centre (Imec) (Bélgica), Ghent University (UGent) (Bélgica), Max Planck Institute for Polymer Research (new PI) (Alemania)
Concedido	148.000 €
Presupuesto total	620.311 €

PROYECTO 10 RESCUEGRAPH. Functional stimulation system for rehabilitation of gait and driving neural plasticity after spinal cord injury using graphene-based nerve electrodes

Loss of sensory and motor functions as a result of spinal cord injury (SCI), as well as in stroke or plexus injuries, results in severe limitations for activities of daily living, reducing autonomy and quality of life, and requires enormous costs in terms of health care and personal support, serving as a powerful motivation for the development of new strategies that can partially restore or substitute the lost functions. Rehabilitation therapies play a crucial role to reinforce functional recovery through repetitive exercising or stimulation enhancing function of spared neural circuits. Bypassing the lesion by stimulating the healthy peripheral nervous system (PNS) is an alternative strategy in attempt to achieve effective regain of function. Thus, functional electrical stimulation (FES) systems have become some of the most promising solutions to restore motor functions in SCI patients. The RESCUEGRAPH project aims at using graphene-based flexible electrodes as the neural interface of The workflow of RESCUEGRAPH starts with the design and fabrication of graphene-based electrodes on a flexible substrate. These electrodes will be implanted in rat peripheral nerves to assess the functionality, in terms of effectiveness and selectivity of stimulation and recording neural signals, during chronic implant. A multichannel microstimulator will be provided, together with routines based on gait analysis and modelling, to stimulate peripheral nerves with graphene intraneural electrodes implanted, to activate different muscles in a coordinated bilateral locomotion pattern. This FES system will be integrated and used daily to improve the gait in rats after SCI. We will also investigate how electrical stimulation of efferent and afferent peripheral nerve fibers is able to drive neural plasticity and enhance activity of the spared neural circuits and improve brain-nerve connectivity in the SCI animals. a FES system to reproduce and allow rehabilitation of gait and, at the same time, to drive neuroplasticity at spinal and brain levels to enhance functional recovery of motor and somatosensory processing after SCI, by applying neuromodulatory inputs through afferent sensory stimulation. We aim at increasing the TRL of graphene-based technology for bioelectronic medicine applications for neuromodulation and rehabilitation, by developing and integrating the graphene-based electrodes in a building block with a multichannel stimulator and an adaptable control program to constitute an advanced FES for inducing standing and walking in individuals with paraplegia. The components and the whole FES system for locomotion will be optimized in experimental animal models, ensuring safety, efficiency, and chronic functionality, thus, paving the way to future usability in human patients.

IP	Universidad Autónoma de Barcelona. España
Socios	Instituto Catalán de Nanociencia y Nanotecnología (España), Boğaziçi University (Turquía), NEURINNOV SAS (Francia), Institut National de Recherche en Informatique et Automatique (Francia)
Concedido ES	202.300€ (Universidad Autónoma de Barcelona 158.300 €), (Instituto Catalán de Nanociencia y Nanotecnología 44.000 €)
Presupuesto total	620.311 €

PROYECTO 11 ModelDXConsciousness. Combining model free and model based biomarkers for the consciousness diagnosis

"Studying the brain mechanisms behind consciousness is a major challenge for neuroscience and medicine. Yet so far, there is no such thing as a unique biomarker that can precisely define the state far are theory-based but empirically defined (MFB; model-free biomarkers): the thresholds that separate categories are set in a data-driven way. Overall, researchers have focused on separating patients' categories, sometimes disregarding the heterogeneity of the DOC patients' population. This is the reason why, nowadays, our current knowledge on the brain mechanisms sustaining global states of consciousness is limited. In this project, we propose a novel approach using model-based biomarkers (MBB). This new family of biomarkers will complement the existing MFB and will provide novel quantitative diagnosis tools. In addition, these new tools will also advance our understating of the underlying causal mechanisms of consciousness. The modeling of the structural and functional connectivity will be combined with novel, systematic perturbational approaches that have already provided new insights into the human brain's ability to integrate and segregate information over time. We will develop computational whole-brain models based on single-patient neuroimaging data. We will extract MBB from the adjusted model parameters and from in-silico simulations. We will test the utility of these biomarkers for the diagnosis of patients with chronic DOC. Then, we will contrast the MBB with a set of previously developed MFB. Finally, we will analyze the diagnostic and prognostic capacity of these biomarkers in DOC patients in an acute stage, as well as evaluate these biomarkers in the frame of therapeutic intervention efficacy (using pharmacology and non-invasive brain stimulation). This project will be carried on by a consortium of two research teams' leaders in DOC and two computational neuroscience teams. The main goal of this proposal is to obtain a multi-centric validated set of biomarkers for the diagnosis, prognosis and therapeutic responsiveness of postcomatose and DOC patients in both chronic and acute stages. Clinically, our results may point to the specific reason to include each patient within a diagnostic group, hence setting the basis for future developments of specific interventions and treatments".

IP	Institut du Cerveau et de la Moelle épinière. Francia
Socios	Universitat Pompeu Fabra (Barcelona), Liège Université (Bélgica), Transylvanian Institute of Neuroscience (Rumanía)
Concedido ES	171.300 €
Presupuesto total	498.949 €

M-ERA.NET 2 - ERA-NET for materials research and innovation

M-ERA.NET 2 tiene como objetivo coordinar los esfuerzos de investigación de los Estados Miembros de la UE, los Estados Asociados y las Regiones participantes, así como los socios mundiales seleccionados, en materia de investigación e innovación de materiales, incluidos los materiales para tecnologías de energía baja en carbono y tecnologías de producción relacionadas. Una gran red de organizaciones de financiación nacionales y regionales de 23 Estados miembros de la UE y Estados asociados y otros países fuera de Europa ejecutará una serie de convocatorias anuales para financiar una excelente cooperación transnacional innovadora, incluida una convocatoria transnacional conjunta de propuestas con cofinanciación de la UE y calls adicionales no cofinanciadas.

Continuando con las actividades iniciadas bajo el proyecto predecesor M-ERA.NET, el consorcio M-ERA.NET 2 apoya la investigación en áreas temáticas relevantes, como, por ejemplo, superficies, recubrimientos, compuestos, aditivos. Fabricación o ingeniería de materiales computacionales.

Coordinador: Austria (Austria (Austrian Research Promotion Agency (FFG))

Socios: Bélgica (Flanders Region (Department of Economy, Science and Innovation / Flanders Innovation & Entrepreneurship) (EWI / VLAIO), National Fund for Scientific Research (FNRS), Public Service of Wallonia (SPW), Brasil (São Paulo Research Foundation (FAPESP), Bulgaria (National Science Fund of Bulgaria (BNSF), Chipre (Research Promotion Foundation (RPF/IPE), República Checa (Technology Agency of the Czech Republic (TACR), Estonia (Estonian Science Foundation (ETAG), Francia (New Aquitaine Region (RNA), Alemania (Federal Ministry of Education and Research (BMBF), Karlsruhe Institute of Technology (KIT), Project Management Juelich / Research Centre Juelich (PTJ/FZJ), Hungría (National Research, Development and Innovation Office (NKFIH), Islandia (Icelandic Centre for Research (RANNIS), Irlanda (Science Foundation Ireland (SFI), Israel (MATIMOP Israeli Industry Centre for R&D (OLD) (MATIMOP), Italia (Calabria Regione (CaR), Ministry of Education, University and Research (MIUR), Letonia (State Education Development Agency (VIAA), Lituania (Research Council of Lithuania (LSC/LMT/RCL), Luxemburgo (National Fund for Research (FNR), Países Bajos (Materials Innovation Institute (M2i), Netherlands Organisation for Scientific Research (NWO), Noruega (Research Council of Norway (RCN), Polonia (National Centre for Research and Development (NCBiR), National Science Centre (NCN), Portugal (Foundation for Science and Technology (FCT), Rumanía (Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI), Rusia (Foundation for Assistance to Small Innovative Enterprises (FASIE), Eslovaquia (Slovak Academy of Science (SAS/SAV), Eslovenia (Ministry of Education, Science, Culture and Sport (MESCS/MIZS), Sudáfrica (Department of Science and Technology (DST), España (**Agencia de Innovación y Desarrollo de Andalucía, Instituto de Desarrollo Económico del Principado de Asturias, Agencia Vasca de la Innovación-Berrikuntzaren Euskal Agentzia, Gobierno Vasco, Fundación para el Conocimiento Madri+d, Instituto de Desarrollo Empresarial y Competitividad de Castilla y León (ICE), Agencia Estatal de Investigación (AEI)**, Suecia (Swedish Governmental Agency for Innovation Systems (VINNOVA), Taiwán (MINISTRY OF SCIENCE AND TECHNOLOGY (MoST Taiwan), Turquía (The Scientific and Technological Research Council of Turkey (TUBITAK).

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales: 7 (2016, 2017, 2018, 2019, 2020, 2021, 2022)

Participación de MINECO/AEI en convocatorias conjuntas: 7 (2016, 2017, 2018, 2019, 2020, 2021, 2022).

CONVOCATORIA CONJUNTA INTERNACIONAL 2016

Países participantes (geometría variable)	Austria, Bélgica, Brasil, Chipre, Alemania, España, Finlandia, Francia, Hungría, Luxemburgo, Israel, Islandia, Korea, Letonia, Lituania, Países Bajos, Noruega, Polonia, Portugal, Rumania, Rusia, Suecia, Eslovaquia, Taiwán, Turquía
Temáticas	1. Integrated Computational Materials Engineering 2. New Surfaces and Coatings 3. High performance synthetic and biobased composites 4. Materials for Sustainable and Affordable Low Carbon Energy Technologies 5. Tailoring of bioactive material surfaces for health applications 6. Materials for Additive Manufacturing
Presupuesto total	40.000.000 €
Concedido ES	1.948.050€
Proyectos aprobados	46
Proyectos con financiación AEI	13 (3 coordinados)

Nº	Acrónimo y título del proyecto	Países participantes
1	HEAMODELL. High entropy alloys with predictable mechanical properties by computational modelling	Países Bajos, Rumanía, Eslovenia
2	MuMo4PEC. Multiscale Modeling and Design of Photo-Electrochemical Interfaces	Países Bajos, España, Polonia
3	ALD4MAX. Atomic Layer Deposition For tailored bottom-top growth of MAX and MXene films	Portugal, España, Países Bajos, Polonia
4	CellColor. Fabricating cellulose nanocomposites for structural coloration	Noruega, Portugal
5	CLEARPV. Transparent Perovskite Solar Cell	Taiwán, Hungría, Países Bajos
6	GRAFOOD. Active GRAphene based FOOD packaging systems for a modern society	Rumanía, Italia, Eslovenia, España
7	GreenCOAT. Green high-performance and low-friction interfaces tailored by the reactivity of novel DLC coatings and ionic liquids	Eslovenia, Portugal, Noruega
8	HEI-Coat. Hard Eco Innovative Coatings	Italia, Francia, Bélgica

9	INSURFCAST. Innovative Surfaces for Superalloys Casting Processes	Italia, Polonia
10	MaSNEC. Material Synthesis in Non-Equilibrium Conditions	Bélgica, Hungría, España
11	NESSIE. New Structured Substrates for Downstream Processing of Complex Biopharmaceuticals	Noruega, Portugal, Austria
12	NICRRE. Innovative Ni-Cr-Re coatings with enhanced corrosion and erosion resistance for high temperature applications in power generation industry	Polonia, Eslovaquia
13	SIOX. Engineering of silicon-oxide interface using the pulsed—laser deposition technique	Eslovenia, Países Bajos, Bélgica
14	TANDEM. Bactericidal hybrid surfaces against Gram-negative and Gram-positive pathogenic bacteria: Smart Tools for Wastewater Purification	Rumanía, Noruega
15	UltraGraf. Harnessing third-harmonic generation in graphene-coated optics - new devices for ultrafast pulse measurement and frequency upconversion	Portugal, España
16	WABASELCOAT. Water BASEd SElective COATings for intelligent facade collectors	Eslovenia, Noruega, Chipre
17	BIOFOODPACK. Biocomposite Packaging for Active Preservation of Food	Portugal, Polonia, Chipre
18	COMPIO. Eco-friendly nanoclay, nanocellulose and MIP composites for microbial formulations	Austria, Turquía, Rumanía, Israel
19	HyBiCo. High performance short-fibre biobased hybrid composites for injection moulding	Polonia, Letonia, Lituania
20	POLYMAGIC. Biodegradable PLA composites reinforced with micro and nano Mg particles: optimisation of processing and design, and scale-up of temporary implants	España, Italia, Bélgica
21	CCSRender. Energy efficient nano-modified renders with CO ₂ -storage potential	Chipre, Hungría
22	CTB Basics. CleanTechBlock - Sustainable Multi-functional Building Block Basics	Eslovenia, Luxemburgo, España (ADE), Portugal
23	GoPHy MiCO. Governing Principles in Hydration of Mixed Conducting Oxides	Noruega, España, Polonia
24	HyMatSiRen. Hybrid materials for Si surface passivation and battery applications	Noruega, España, Turquía
25	MOCO3. Novel molten carbonate/ceramic composite materials for sustainable energy technologies with CO ₂ capture and utilization	Noruega, Polonia, Portugal

26	NanoEIMem. Designing new renewable nano-structured electrode and membrane materials for direct alkaline ethanol fuel cell	Eslovenia, Noruega, Taiwán
27	NEILLSBAT. Nanostructured Electrodes and Ionic Liquid Electrolytes for Ultra High Energy Density Lithium Sulfur Batteries	Irlanda, Alemania, Países Bajos
28	PLARASBAT. Planar architecture all solid state batteries	España, Lituania, Taiwán
29	PNANO4BONE. Novovectors engineered for plasma enhanced theranostics in regenerative medicine	Luxemburgo, Bélgica, España, Polonia
30	RATOCAT. Rational design of highly effective photocatalysts with atomic - level control	Irlanda, Países Bajos, España
31	THERMOSS. Sustainable Thermoelectric Modules based on Non-toxic Silicides and Sulphides for Recovery of Waste Heat to Power Generation	Chipre, Portugal
32	BIOMB. Advanced biodegradable materials based on MgB2 resistant to microbial colonization	Rumanía, Italia
33	BIOMEMBRANE. Bioengineered in vitro model of retinal pigmented epithelium of human eye	Italia, Portugal, Sudáfrica, Polonia, España (in kind)
34	INCIPIT. INtegrated Conductive and biomimetic polymeric Interfaces able to serve as micronanostructured Patches for myocardial regeneraTion	Italia, Portugal, Brasil
35	MagicCELLGene. Localized MAGnetIC hyperthermia CELL-based GENE therapy for immune modulation	España, Portugal
36	NAT4MORE. NATural molecules on the surface of bioactive materials FOR MODulating the host RESponse to implants	Italia, Islandia, Brasil
37	Pelargodont. Engineering and functionalization of delivery system with Pelargonium sidoides biologically active substance on periodontal inflamed surface area	Lituania, Letonia, Polonia, Italia
38	SmartHyCAR. Smart multifunctional Hyaluronic Acid-Carnosine based bandages for wound care and regenerative therapy.	Italia, Bélgica
39	3D-CFRP. Additive Manufacturing of Continuous Fibers Reinforced Polymer Composite Materials for High Performance Structural Applications	Austria, Rusia, Lituania
40	AddiZwerk. Additive Manufacturing of Cutting Tools	Austria, Alemania
41	BauProAddi. New construction materials and product design for additive manufacturing processes in the construction industry	Alemania, Austria
42	BiogenInk. Biogenic Inks combining marine collagen and ionic-doped calcium phosphates for bone tissue engineering	Portugal, Rumanía, Países Bajos, España

43	Dressing4scars. New 4D printing dressing to treat skin scars	Portugal, Irlanda, España (IDEPA)
44	ELAM. Ultrafine eutectics by laser additive manufacturing	Alemania, España, Hungría
45	HiPA²L. High Performance Additive manufacturing of Aluminium alloys	Austria, Portugal
46	jawIMPLANT. Patient-specific bioactive, antimicrobial PLA-PGA/titanium implants for large jawbone defects after tumour resection	Austria, Polonia

CONVOCATORIA NACIONAL APCIN 2017

PROYECTO 2 MuMo4PEC. Multiscale Modeling and Design of Photo-Electrochemical Interfaces

We propose an innovative, multi-scale modeling and simulation approach in order to investigate photoelectrochemical (PEC) interfaces. This will pave the way towards targeted design and fabrication of PEC interfaces with advanced properties and performance. It is the first time that four levels of theory from atomistic to continuum level are combined for PEC interfaces and that electrochemical data will be simulated that can be directly compared to experimental data. Hence, we bridge theory and experiment. The kinetic parameters (intrinsic and extrinsic) as well as the structure and the dynamics of the solid-liquid interface will be determined. This will result in the identification of the limiting reaction steps at the interface which will allow for tailored design of photoelectrodes. We focus on the Fe₂O₃- water system due to its abundance, costs, and PEC properties, but also because of its benchmark character. The approach can be transferred to other electrochemical interfaces.

IP	Dutch Institute for Fundamental Energy Research (DIFFER), Países Bajos
Socios	Países Bajos (TUD), España (Universidad Pablo de Olavide), Polonia (PWr)
Concedido ES	105.000 €

PROYECTO 3 ALD4MAX. Atomic Layer Deposition For tailored bottom-top growth of MAX and MXene films

ALD4MAX will tackle the deposition of MAX phases and MXenes by Atomic Layer Deposition (ALD). MAX phases are ternary carbides and nitrides with specific stoichiometry and layered structure which show very interesting properties. MXenes are 2D systems equivalent to graphene which result from the elimination of the element 'A' from the MAX phase. There is no simple approach to deposit MAX phases on conventional substrates, e.g. heating at high temperatures is needed, which is inviable in many cases. Moreover, MXenes are only prepared in bulk form by chemical etching of the MAX phase, but the deposition of individual MXene is not reported. In ALD4MAX we will take benefit of the layer-by-layer growth characteristic of ALD to deposit MAX phases and MXenes with high control, and also 'mixed' MAX phases by stacking different types of MAX phases. ALD4MAX will generate a high impact, since not only a new class of materials will be prepared, but also new possibilities for ALD will be proven.

IP	University of Minho, Portugal
Socios	España (Ctech Nano, CIC Nanogune), Países Bajos (University of Groningen), Polonia (Lodz University of Technology)
Concedido ES	150.000 €

PROYECTO 6 GRAFOOD. Active GRAphene based FOOD packaging systems for a modern society

GRAFOOD aims to develop a pilot-scale prototype of active food package based on paper and polylactic acid (PLA) film respectively, modified with graphene oxide activated by probiotics and by nano-Ag-TiO₂, respectively. Specific objectives: - characterize the packages currently used for cheese and meat storage, - design, characterize and validate the prototype of active packages, - start the procedure to homologate the most efficient PLA and paper based active package and to obtain the Romanian and European patents. The result is a pilot-scale prototype of active package based on paper and PLA film, respectively. The project has multi-lateral impact for academic research teams and their universities, environment and society. Economic benefits: - reducing the costs for the processing of unsold goods, - diminishing the amount of the food waste and the costs for their processing, thus increasing the financial profit.

IP	Technical University of Cluj Napoca (UTCN), Rumanía
Socios	Rumanía (Ceprohart (CEPRO), Italia (University of Camerino, (UNICAM), Synbiotec (SYN), Eslovenia (National Institute of Chemistry (NIC), España (Andaltec (ANDA)
Concedido ES	95.000 €

PROYECTO 10 MaSNEC. Material Synthesis in Non-Equilibrium Conditions

The MaSNEC project aims to grow innovative surfaces and control their properties via material synthesis in non-equilibrium conditions. The innovation will be to obtain solid material by precipitation reactions performed within diffusive gradients of concentration and convective flows due to injection of one reactant into the other. We will provide new protocols taking advantage of imposed out-of-equilibrium constraints to synthesize thermodynamically unstable solid polymorphs, manufacture nanoparticles and structured surfaces, composite coatings and multilayered tubes. By defining an innovative procedure to structure and create new solid materials, this project proposes a paradigmatic shift in surface and coating technology to produce innovative materials with targeted relationships between their micro and macrostructures. The novel concept will impact material sciences and provide new routes to synthesize materials for societal and environmental applications.

IP	Université libre de Bruxelles, Bélgica
Socios	Hungría (University of Szeged, Budapest University of Technology and Economics), España (Consejo Superior de Investigaciones Científicas, CSIC)
Concedido ES	150.000 €

PROYECTO 15 UltraGraf. Harnessing third-harmonic generation in graphene-coated optics - new devices for ultrafast pulse measurement and frequency upconversion

Ultrafast lasers have many important applications in physics, materials processing, chemistry, biology and medicine. Their pulses are among the shortest events ever produced, with durations reaching the few femtosecond regime (1 fs = 10⁻¹⁵ s). Nevertheless, the lack of adequate temporal measurement and control tools has hampered their migration out of the laboratory and into mainstream applications.

This project directly addresses these challenges by developing and demonstrating a new and universal ultrafast pulse measurement and control device, where the dispersion-scan technique is combined with the exceptionally broad bandwidth and high conversion efficiency of nonlinear thirdharmonic generation (THG) in graphene coatings. This technology is highly performing, easy to use and applicable to an unprecedentedly wide range of laser systems, which should enable new scientific, industrial and medical applications of ultrafast lasers and contribute to the growth of the ultrafast market.

IP	University of Porto, Portugal
Socios	Portugal (University of Aveiro, Sphere Ultrafast Photonics), España (Universidad Complutense de Madrid (UCM))
Concedido ES	97.050 €

PROYECTO 20 POLYMAGIC. Biodegradable PLA composites reinforced with micro and nano Mg particles: optimisation of processing and design, and scale-up of temporary implants

The project proposes the optimisation and scaling-up of biodegradable and bioabsorbable composites for osteosynthesis based on a polylactic acid (PLA) matrix loaded with Mg particles in the nano and micrometric range, and processed by thermoplastic methods. Other innovative objectives are related to their processing by a colloidal suspension route to increase homogeneity and particle-matrix bonding, as well as by additive manufacture and electrospinning. The project also considers the sustainability of the whole life cycle of the proposed materials and processing. Potential benefits are related to better mechanical properties, increased bioactivity and antibacterial resistance, and possibility of tailoring degradability of implants by controlling shape and volume fraction of Mg (nano) filler. These temporary implants would improve life quality of patients, especially paediatric, and would open new business opportunities, guaranteed by the two participating SMEs.

IP	Consejo Superior de Investigaciones Científicas- CSIC, España
Socios	Italia (Università degli Studi di Perugia-UNIPG, M.D.P. MATERIAL, DESIGN & PROCESSING S.R.L., MIRACHROME S.R.L.), Bélgica (University of Mons-UMONS)
Concedido ES	172.000 €

PROYECTO 23 GoPhy MiCO. Governing Principles in Hydration of Mixed Conducting Oxides

GoPhy MiCO addresses one of the main challenges in the development of new efficient energy systems based on Proton Ceramic Fuel Cells and Electrolysers, namely the identification of ceramics with mixed protonic and electronic conductivity. These are essential for the oxygen/steam electrodes, but only few and mediocre ones are identified. By systematically studying a set of double perovskites with different cations on distinguishable A-sites, and by systematic substitutions of these and also the B-site cation, trends in structures, oxidation, and hydration behaviour and conductivity will be established. The project outcome will potentially bring significant contributions to the ongoing implementation of hydrogen energy systems. Methodology to be employed comprises Neutron Powder Diffraction, electrochemical methods impedance spectroscopy, thermogravimetry, and ab initio atomistic modelling.

IP	University of Oslo (UiO), Noruega
Socios	Noruega (Institute for Energy Technology (IFE), España (Consejo Superior de Investigaciones Científicas (CSIC), Polonia (Gdansk University of Technology (GUT)
Concedido ES	145.000 €

PROYECTO 24 HyMatSiRen. Hybrid materials for Si surface passivation and battery applications

Hybridization of organic and inorganic compounds allows to tune functionality of materials. Main focus of the project is synthesis and characterization of new hybrid materials obtained by incorporating inorganic nanomaterials into polymers. Functionality of the material will be tuned for applications in photovoltaics and Li-ion batteries. This is a multidisciplinary project combining expertise of specialists from different fields such as materials science and nanotechnology, photovoltaic technology, Li-ion batteries, physicists, chemists, and engineers. The consortium consists of experts from an education and basic research-oriented University from Spain, an applied research Institution from Norway, and a small & medium enterprise from Turkey. It will form the platform for further enhancing the ongoing collaboration, provide training of young scientists, exchange of infrastructure, new ideas, competence and impact in applications.

IP	Institute for Energy Technology, Noruega
Socios	España (Universidad Complutense de Madrid (UCM), Turquía (Enwair Energy Technologies Corp)
Concedido ES	150.000 €

PROYECTO 28 PLARASBAT. Planar architecture all solid state batteries

The all-solid-state lithium ion batteries is a long-sought target. They will have a wider operating temperature range and are safer than liquid electrolyte based counterparts. A large area sheet-like all solid state batteries (ASSB) innovative architecture is proposed. The “electrolyte supported” architecture thick-film battery is based on controlled deposition of electrodes onto a solid electrolyte thick film. Impact is expected as the batteries will be lighter, slightly flexible and compatible with large area electronics and flexible electronics devices. ASSBs can be used in wider temperature range, opening their use in harsh environments. The innovative ASSB architecture will provide quality energy storage in applications still no envisaged opening new markets. New

knowledge will be produced in solid state electrochemistry and ceramic technology. The societal benefits are many, they do not use pollutant organic electrolytes, use less metals and are safer.

IP	Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC), España
Socios	Lituania (VILNIAUS UNIVERSITETAS), Taiwán (National Cheng Kung University, Dijiya Energy Saving Technology Inc)
Concedido ES	172.000 €

PROYECTO 29 PNANO4BONE. Nanovectors engineered for plasma enhanced theranostics in regenerative medicine

Current scaffolds for regenerative medicine are facing several drawbacks, which are the low proliferation of living cells seeded in the implant, the short duration of drug delivery when drugs are embedded in the scaffold and the impossibility to easily follow the regenerative processes once the scaffold is implanted.

The objective of the project is to solve the above mentioned drawbacks by embedding specifically designed nanovectors in the scaffold. The interaction of these nanovectors with tissue-tolerable plasma (ionized gas) will allow promoting the living cell proliferation through the generation of reactive species. The inorganic core of the nanovectors will allow the drug release over weeks/months. The probes loaded in the nanovectors will allow monitoring the regenerative process with non-invasive imaging technologies. If successful in the context of bone regeneration, this approach could be easily adapted to the regeneration of other tissues and lead to lower therapies' costs.

IP	Institute of Science & Technology, Luxemburgo
Socios	Luxemburgo (CELLON SA (CEL), Bélgica (Université Catholique de Louvain (UCL), España (Universidad Politécnica de Cataluña (UPC), Polonia (Lublin University of Technology (LUT), Medical University of Lublin (MUL)
Concedido ES	150.000 €

PROYECTO 30 RATOCAT. Rational design of highly effective photocatalysts with atomic -level control

Using the sun's energy to generate hydrogen from water is probably the cleanest and most sustainable source of fuel that we can envisage. Unfortunately, catalysts that do this are currently too expensive to be commercially viable. The RATOCAT project aims to develop improved photocatalyst materials, along with the processes for their production. The catalytic performance of cheap TiO₂ and C₃N₄ powders will be improved by tailoring their surface with nanostructured oxides as co-catalysts of highly-controlled composition, nanoarchitecture, size and chemical state. First principles simulations will be used to design the optimum nanostructures, which will then be deposited onto powders with the required precision using atomic layer deposition, again supported by simulation. Lab-scale tests of photocatalytic activity will provide feedback for the optimisation of the material and process, before the most promising materials are tested in the field on both pure water and wastewater.

IP Tyndall-UCC, Irlanda	
Socios	Países Bajos (Delft University of Technology), España (Instituto de Ciencia de Materiales de Sevilla, Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC), Plataforma Solar de Almería- Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (PSA-CIEMAT)
Concedido ES	97.000 € + 97.000 € = 194.000 €

PROYECTO 35 MagicCELLGene. Localized MAGnetIC hyperthermia CELL-based GENE therapy for immune modulation

The goal of MagicCELLGene is to develop a novel, universal and highly efficient methodology for transfection triggered by magnetic hyperthermia, with potential clinical applications in cell-based gene therapy. Our innovative approach is to induce a controlled and localized heating of the cellular membrane (hotspots) using magnetic nanoparticles covalently immobilized onto cell membranes via bioorthogonal chemistry, the reversible changes of the cell membrane permeability/fluidity will be used to promote the artificial delivery of nucleic acids into cells. Efforts will be especially focused on hard-to-transfect cells (primary cells), thus clearly addressing an unmet need of the transfection market. Expected results going beyond the state-of-the-art in transfection are: i) the development of a universal transfection tool and ii) its application to systems where standard transfection methods have several bottlenecks using as a model immune system modulation.

IP	Instituto de Ciencia de Materiales de Aragón – Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC), España
Socios	España (Universidad de Zaragoza), Portugal (Associação para a Inovação e Desenvolvimento da FCT (NOVA.ID.FCT))
Concedido ES	122.000 € + 96.000 € = 218.000 €

PROYECTO 44 ELAM. Ultrafine eutectics by laser additive manufacturing

The proposed project aims at developing new high strength eutectic alloys by laser-based additive layer manufacturing (ALM) using selective laser melting and laser metal deposition based on Ti-TiFe and Fe-Fe₂Ti eutectics. These laser-based ALM methods possess inherently high cooling rates and are, thus, ideal for processing ultrafine eutectics and hierarchically structured near-eutectic alloys including Ti-Fe-Sn-Nb, Ti-Fe-Co, Fe-Ti-Si, Fe-Ti-Zr-B and other eutectic alloys. Although being the subject of research for decades and showing remarkable mechanical properties, none of these alloys is currently relevant for industrial applications since no economically and technically viable processing route exists. This proposal represents the first attempt to produce ultrafine Ti- and Fe-eutectics by ALM, spanning activities along the entire manufacturing chain from fundamental materials development, powder production, ALM process and post-treatment developments to demonstrator testing.

IP	DLR Institute for Materials Research, Alemania
Socios	Alemania (Access e.V., Fraunhofer Gesellschaft, Bosch-Mahle Turbosystems GmbH, P&G Manufacturing GmbH), España (IMDEA Materials Institute), Hungría (Wigner Research Centre for Physics (WIGNER RCP))
Concedido ES	150.000 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2018

Países participantes (geometría variable)	Austria, Bélgica, Brasil, Bulgaria, República Checa, Estonia, Alemania, Hungría, Italia, Lituania, Letonia, Luxemburgo, Noruega, Polonia, Portugal, Rumanía, Rusia, Eslovaquia, Eslovenia, Sudáfrica, España, Suiza, Taiwán, Turquía
Temáticas	1. Multiscale modeling for materials engineering and processing (M3EP) 2. Innovative surfaces, coatings and interfaces 3. High performance composites 4. Functional materials 5. New strategies for advanced material-based technologies in health applications 6. Materials for additive manufacturing
Presupuesto total	23.000.000 €
Concedido ES	864.000 €
Proyectos aprobados	27
Proyectos con financiación AEI	6

No.	Acrónimo y título del proyecto	Países participantes
1	TESTIMONIES. Theoretical and Experimental Study of Transition Metal Oxyhydride Nanomaterials for superconductivity and photocatalysis	Noruega, Rumanía, Lituania, Eslovaquia
2	CORR-PROOF. Graphene-based Environmentally-Friendly Corrosion Protective Coating for Aeronautics Industry	Noruega, Turquía
3	FunKeyCat. Functional grading by Key doping in Catalytic electrodes for Proton Ceramic Cells	Noruega, Polonia, España
4	HOTselflub. SELF-LUBRICATING SYSTEMS FOR HIGH TEMPERATURE TRIBO-APPLICATIONS	Estonia, Austria, Polonia
5	HyprSTEP. Development of novel hybrid process based on graphene modified smart textile filters and polymer membranes for advanced wastewater treatment	Alemania, Polonia,

6	INCOMARC. Innovative coating materials for arc resistant electric contacts	Italia, Bélgica
7	ISOS. Multi-functional icephobic, robust, lightweight and transparent coatings for windows and lenses	Noruega, España
8	MARWEL. MAteRials for Wind farm componEnts Life improvement	España, Italia
9	Smart RESCyou. Personal protection through sensor surfaces on smart high performance fibres	Alemania, Austria
10	StressLIC. Addressing the stress-related functional limitations of thin-film Li-ion components for energyintensive applications	Austria, España, Estados Unidos (no financiera)
11	TriboHEA. High entropy alloy coatings for tribological applications	España, Rumanía
12	CompoRail. Fibre-reinforced composite road guardrails	Bélgica, Letonia
13	ECOPLACKAGING. Vegetal fibres-reinforced PLA antimicrobial composites for packaging applications	Portugal, República Checa,
14	EPIC. European Partnership for Improved Composites	Letonia, Eslovaquia, República Checa
15	2D-SPIN-MEM. Functional 2D materials and heterostructures for hybrid spintronic-memristive devices	España, Rumanía, Bulgaria
16	BioValue. Advanced Membranes for biogas upgrading and high added value compounds recovery	Italia, República Checa
17	CATALEAST. Holistic design of fuel cell electrocatalysts for the least power applications	Rumanía, Hungría, España (sin financiación)
18	En-ActivETICS. Energy Activated External Thermal Insulation Composite System - integration of thermal storage and photovoltaics for energy-efficient buildings.	Eslovaquia, Estonia, Polonia
19	NOEL. Innovative Nanostructured Electrodes for Energy Storage Concepts	España, Eslovenia, Polonia
20	SunToChem. Engineering of perovskite photocatalysts for sunlight-driven hydrogen evolution from water splitting	Eslovenia, Taiwán, Letonia
21	VOC-DETECT. Smart Portable System for VOCs detection	Rumanía, Hungría
22	ZMOMUVS. ZnMgO materials with tunable band gap for solar-blind UV sensors	Letonia, Lituania, Taiwán
23	BIOMAG. Advanced magnetic nanoparticles for detection and quantification of biomarkers in biological fluids	Japón (sin financiación), España, Eslovenia
24	NanoTENDO. Nanoparticle Transfer Through Endothelial Barrier	Letonia, Polonia, España (sin financiación)

25	AluNanoCore. High strength nano reinforced aluminium powder cored wire for arc based ALM	Alemania, Bulgaria
26	AM-Crash. Additive Manufacturing Technologies for Crash loaded structural Components	Alemania, Polonia
27	A-MELIUS. Additive Manufacturing of functional and Effective Light Use-caseS	Alemania, España

CONVOCATORIA NACIONAL APCIN 2018

PROYECTO 3 FunKeyCat. Functional grading by Key doping in Catalytic electrodes for Proton Ceramic Cells

Functional Grading by Key doping in Catalytic electrodes for Proton Ceramic Cells (FunKeyCat) is an effort to bridge the gap between fundamental science and applied research for a leap towards highly efficient electrochemical cells by understanding the effects of functional and mechanical properties of the constituent materials on the efficiency of the electrochemical cells. Challenges such as cell resistance and catalytic properties of the electrodes will be overcome through studies of how doping of key elements affects ionic and electronic transport in the electrode materials, and how the balancing between these correlates with chemical and thermal expansion. Functional grading will increase mechanical robustness, minimise cell resistance and maximise electrochemical functionality. FunKeyCat will also explore a new concept of using electric potential for exsolution and regeneration of oxide nano catalysts to enhance cell durability and performance.

IP	University of Oslo, Noruega
Socios	Noruega (SINTEF Industry), Polonia (Gdansk University of Technology), España (Agencia Estatal Consejo Superior de Investigaciones Científicas)
Presupuesto total	1.091.047 €
Concedido ES	155.000 €

PROYECTO 7 ISOS. Multi-functional icephobic, robust, lightweight and transparent coatings for windows and lenses

Ice on window/lens surfaces cause operational difficulties in optical sensors and windshields. We propose a passive, environmentally friendly method to prevent or delay ice formation without the application of energy while preserving the surface optical properties. This solution overcomes the limits of the active methods currently employed that are costly, energy consuming, environmentally harmful and dangerous for lens/window integrity. Two families of innovative materials (functionalized graphene and selflubricating liquid water layer) will be synthesised, characterised, and tested at lab level for multifunctional coatings (TRL4), with icephobic, robust, lightweight and transparent properties. The proposed approach is flexible, cost-effective and scalable in production, allowing a fast integration at industrial scale. The performances of the coatings for industrial application in the optical sensor market sector will be assessed and validated with the industrial advisory board.

IP	University of Bergen, Noruega
Socios	Noruega (Christian Michelsen Research AS), España (Universidad Autónoma de Madrid)
Presupuesto total	690.000 €
Concedido ES	85.500 €

PROYECTO 10 StressLIC. Addressing the stress-related functional limitations of thin-film Li-ion components for energyintensive applications

For electric cars to compete with traditional cars and complete an industrial transition required for global sustainability, we need Li-ion batteries (LIBs) with energy density 500% higher than current technology permits. Such a disruptive innovation is only feasible if we understand how mechanical stress gradients degrade battery performance on the nanoscale, and take remedial action. The StressLIC consortium will characterize and propose remedies for the stress-related limitations of current LIBs, by combining cutting-edge thin film measurement and simulation techniques from several disciplines. StressLIC is committed to improving battery performance in terms of capacity, power, lifetime and safety. The consortium includes three leading EU Labs specialized in nanoscale materials science, an expert in LIBs from Sandia National Lab, and a large battery-analysis EU company.

IP	Universidad Autónoma de Madrid, España
Socios	Austria (Montanuniversität Leoben, Anstalt für Verbrennungskraftmaschinen List), España (Agencia Estatal Consejo Superior de Investigaciones Científicas), Estados Unidos (Sandia National Laboratories)
Presupuesto total	431.616 €
Concedido ES	70.000 € + 135.000 € = 205.000 €

PROYECTO 15 2D-SPIN-MEM. Functional 2D materials and heterostructures for hybrid spintronic-memristive devices

Magnetic memories (MRAM) and memristors are amongst the most promising technologies for emerging nonvolatile memories. MRAM implement concepts developed within spintronics, which uses spin –rather than electrons– to transfer and store information. In this project we will explore hybrid spintronic-memristor devices in graphene-based heterostructures comprising 2D transition metal dichalcogenides (TMDs) and less explored group-IV monochalcogenides (IV-MCs) materials. We will perform the first ever evaluation of the potential of 2D IV-MCs as memristors and implement graphene-based heterostructures with enhanced spin-orbit coupling using both TMDs and IV-MCs. With these heterostructures we aim at controlling graphene's spin properties by changing the memristive setting of the chalcogenides. They will be made and characterized such that new multifunctional 2D systems are generated for applications in ultradense and ultralow power nonvolatile memories and neuromorphic computer architectures.

IP	Catalan Institute of Nanoscience and Nanotechnology, España
Socios	Rumanía (National Institute of Materials Physics), Bulgaria (Institute of Optical Materials and Technologies, Institute of Solid State Physics)
Presupuesto total	300.000 €
Concedido ES	125.000 €

PROYECTO 19 NOEL. Innovative Nanostructured Electrodes for Energy Storage Concepts

Energy storage systems will play a fundamental role in reducing fossil fuel consumption and greenhouse gas emissions by providing solutions to store energy produced from renewable sources and to implement electrical vehicles. Graphite is the traditional material used in standard rechargeable batteries or supercapacitors, but presents limitations because of its limited intrinsic capacity, lithium-ion insertion capacity, and specific capacitance. Moreover, graphite, but also lithium and cobalt, all standard materials for supercapacitors and lithium-ion batteries, are limited resources, and Europe is dependent on external supply. To solve these shortcomings, NOEL aims at developing new low cost environmentally friendly layered semiconductor-carbon composites for their use as innovative electrodes for next generation batteries or supercapacitors, looking for improved performance, low price, high material availability, locally produced in Europe, and eco-friendly properties.

IP	Universidad de Zaragoza, España
Socios	Eslovenia (NIC), Polonia (PUT)
Presupuesto total	488.444 €
Concedido ES	170.000 €

PROYECTO 23 BIOMAG. Advanced magnetic nanoparticles for detection and quantification of biomarkers in biological fluids

An ever-increasing number of medical applications is adopting nanotechnology to go beyond the current state-of-the-art. BioMag aims to provide a quick, sensitive, reliable and low-cost in vitro diagnostic methodology based on functionalised magnetic nanoparticles (F-MNPs) for detection of biomarkers present in bodily fluids. The project aims to 1) design F-MNPs with recognition ligands that specifically interact with cardiac biomarkers related to myocardial infarction and MNP surface engineering to minimize unspecific interactions with off target biomolecules present in blood samples, 2) monitor changes of AC hysteresis loops of F-MNPs after specific interaction with biomarkers, 3) develop numerical simulations to model the variation of the AC hysteresis loops for quantifying the biomarker amount present in the studied sample. The BioMag consortium gathers excellent and multidisciplinary research teams for approaching material science fundamentals towards market applications.

IP	iMdea Nanociencia, España
Socios	Japón (Kyushu University), España (Universidad de Alcalá), Eslovenia (National Institute of Chemistry)
Presupuesto total	510.880 €
Concedido ES	145.000 € + 59.000 = 204.000 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2019

Países participantes	Austria, Bélgica, Brasil, Canadá, Chipre, España, Estonia, Francia, Hungría, Israel, Italia, Letonia, Lituania, Luxemburgo, Polonia, República checa, República Eslovaca, Rumanía, Rusia, Sudáfrica, Suiza, Taiwan, Turquía
Temáticas	1. Modeling for materials engineering and processing 2. Innovative surfaces, coatings and interfaces 3. High performance composites 4. Functional materials 5. New strategies for advanced material-based technologies in health applications 6. Materials for additive manufacturing
Presupuesto total	25.540.000 €
Concedido ES	600.000 €
Proyectos aprobados	37
Proyectos con financiación AEI	5 (4 proyectos coordinados)

No.	Acrónimo y título del proyecto	Países participantes
1	AnBaCo. Antibacterial Coatings Containing Carbon Nanoparticles Obtained by SolGel Method	Polonia, República Checa
2	cladHEA+. Laser cladding as resource efficient manufacturing route for high temperature corrosion and wear resistant coatings based on High Entropy Alloys (HEA)	Alemania, Francia, Rusia
3	ENZ4IFACES. Innovative enzymatic coatings for electrochemical interfaces	Rumania, España, Sudáfrica
4	InterBATT. Key enabling interface engineering and characterization for next generation batteries	Alemania, Luxemburgo
5	IsoWire. Drug eluting coating with ultralow friction interface for urological guide wire to reduce trauma during surgical removal of renal stones	Polonia, Sudáfrica

6	LaMoFlo. High-rate laser surface texturing of 3D injection molds to fabricate functionalized easy-flow polymeric containers	Alemania, Canadá
7	MiDiCoat. Microstructure Design of Innovative Interfaces in CVD Hard Coatings	Alemania, República Checa
8	MiLaCo. New optical Components based on nanostructured dielectric thin films designs for application in MicroLasers	Lituania, Francia
9	OxyGaN. Efficiency enhancement in GaN-based blue to blue-violet LDs by engineered nitrideoxide ohmic contacts	Polonia, Hungría, Israel
10	SensCoat. Smart Nano-bio-coating for Manufacturing of Biosensors for Point of Care Molecular Genetic Diagnosis	Turquía, España, Alemania
11	AMCSS. Additive manufactured composite smart structures with embedded fibre Bragg grating sensors	Polonia, Lituania
12	HEMP4NZEB. Manufacturing technology of building products made of ecological high performance fibre composites with encapsulated PCM for the NZEB application	Letonia, Polonia
13	Hybrid beams. Composite reinforcement in a light stainless steel bus structure	República Checa, Polonia
14	MERF. Matrix for carbon reinforced epoxy laminates with reduced flammability	República Checa, Lituania, Letonia, República Eslovaca
15	NATALINA. Natural fibers reinforced composite: an affordable and sustainable new material/ design/ manufacturing approach	Luxemburgo, Turquía
16	NovCom. Novel high performance diamond based composites	Polonia, Alemania
17	3D-Photocat. Multifunctional 3D photocatalytic systems for environmentally friendly sustainable technologies	España , Brasil, Rumanía
18	CENTAUR. Ceramics with sensing capabilities for high temperature applications	Alemania, Luxemburgo, República Checa
19	C-MOF.cell. Novel materials as electrode and electrolyte components in fuel cell technology	España , Estonia, Francia
20	COSMAG. From the Cosmos to the Lab: Development of the L10-FeNi Phase as a Disruptive Permanent Magnet Alternative	España , Alemania, República Eslovaca
21	GADEIRE. Gas Absorption sensors Development for Environment based on novel mid-InfraRed hollow fibers with Enhanced functional design	Francia, Polonia, Bélgica
22	HYSUCAP. Synthesis and characterization of novel 2D hybrid materials for supercapacitors	Alemania, República Checa, Polonia

23	INNENERMAT. Innovative nanostructured materials and smart textile electrodes for new generation of batteries and supercapacitors	España, Alemania, Italia
24	LiSABED. Li-ion Battery-SupErcapacitor Hybrid Device	República Checa, Elovaquia, Turquía
25	NANOPOL. Low density NANOnanocellular POLymers for thermal insulation in buildings. Basic heat transfer mechanisms and LCA	España, Taiwan, Brasil
26	NewILUMIS. NEW VERSATILE PLATFORM FOR ILLUMINATION AND SENSING	Polonia, Francia, Alemania
27	SALMOS. Sensor Arrays using Luminescent Metal-Organic Frameworks for the Optical Detection of Explosive Vapours and Toxic Substances	España, Chipre, Turquía
28	SmartMatter. Core integration of novel functional, adaptive materials into a smart, highly sensitive analytical system for point of need environmental applications	Rumanía, Italia, Francia
29	TRAVEL. A Novel Transparent Electrodes for VCSELs	Polonia, Francia
30	Eco-OLED. Enabling a Commercially Viable Long Lifespan and High-Efficiency Omni-Friendly OLED Lighting Source with G2 and G3 Emitters	Taiwán, Lituania, Letonia
31	INJECT-BIO. Bioactive injectable hydrogels for soft tissue regeneration after reconstructive maxillofacial surgeries	Letonia, Lituania, Turquía, República Checa, Israel
32	ISIDE. Innovative Strategies for bioactive/antibacterial advanced prostheses	Italia, Alemania, Rumanía, Turquía
33	LIGNP4WOUND. Antibacterial breathable wound dressing based on polymer electrospun nanofibers	República Checa, Luxemburgo
34	fingerIMPLANT. Patient-specific, anti-microbial bioactive finger implants for durable functional reconstruction after amputation	Austria, Polonia
35	MultiMat3. Multi-Material Additive Manufacturing	Alemania, Sudáfrica
36	RIPE4TEC. Reactive Inkjet Printing of Epoxy Thermoset Composites	Austria, Rumanía
37	SEAM-PP. Material and process development for the production of large-sized polypropylene components in the novel highspeed 3D printing process SEAM	Alemania, Suiza

CONVOCATORIA NACIONAL APCIN 2020

PROYECTO 17 3D-Photocat. Multifunctional 3D photocatalytic systems for environmentally friendly sustainable technologies

The main goal of the present proposal is the development of highly extended 3D carbonaceous@TiO₂ heterojunctions with improved photocatalytic performance for environmentally friendly reactions. High-surface area activated carbons modified with graphene (or graphene derivatives) will be used as 3D platforms to grow a thin TiO₂ nanofilm so that the final composite will give rise to an optimal photocatalytic performance based on the Z-scheme heterojunction model. These composites will be designed to take advantage of the excellent photocatalytic performance of TiO₂ and graphene, and the superior conversion of light in the confined nanospace of activated carbon materials. The development of a controlled porous network and a well-defined surface chemistry (including a well-dispersed TiO₂ nanofilm) will provide a bifunctional system able to adsorb and convert simultaneously or in pulsed-mode i) CO₂ into value-added chemicals, and ii) air and water pollutants into harmless compounds.

IP	Universidad de Alicante, España
Socios	Brasil, Rumania
Presupuesto total	426.908 €
Concedido ES	176.000 €

PROYECTO 19 C-MOF.cell. Novel materials as electrode and electrolyte components in fuel cell technology

Global concern over climate change related with the emission of hazardous chemical species together with high global demand for energy have led to an increase in the development of technologies related with renewable energy sources. In this scenario, it urges the development of new materials/technologies for the sustainable production and storage of energy, improving their efficiency, durability and environmental compatibility while decreasing their cost. The C-MOF.cell project aims to develop novel functional advanced materials for proton-exchange membrane fuel cells that are efficient, affordable and robust in a broader range of operating conditions than can be achieved with current materials. Specifically: novel non-precious metal catalysts for oxygen reduction reaction will be prepared to replace costly Pt in the cathode, while proton-conductive membranes based on Metal-Organic Frameworks will be developed as highly stable electrolyte. C-MOF.cell has the potential to significantly influence EU's energy system (from availability to energy consumption), potentially decarbonising EU and facing the climate change effects.

IP	IMDEA ENERGY, España
Socios	España, Estonia, Francia
Concedido	FUNDACION IMDEA ENERGIA 100.000 € + UNIVERSIDAD DE LA LAGUNA 80.000 €
Presupuesto Total	475.610 €

Concedido ES 100.000 + 80.000 = 180.000 €

PROYECTO 20 COSMAG. From the Cosmos to the Lab: Development of the L10-FeNi Phase as a Disruptive Permanent Magnet Alternative

COSMAG aims at the development of a next-generation permanent magnet (PM), with no content of critical raw elements, that can be found naturally only in some meteorites: L10-ordered FeNi. Theoretical predictions show its potential to compete with the best PMs used in current technology: rare earth (RE)-based NdDyFeB. The primary objective will be to increase the atomic mobility of Fe and Ni using non-equilibrium methods, thus forming L10-FeNi on industrial time scales. COSMAG will address the problematic that Europe is facing to achieve a sustainable technological development with no bottleneck risk originated from the lack of resources and the monopoly by Asia on REs. The project will count with the joint effort of research institutes (IMDEA, IFW, IPSAS) and industry (IMA, UMBRA). The proposed RE-free PM alternative will impact straightforward on technology development (electromobility, renewable energy technologies...) and patents in Europe, and will propel EU SMEs and strength LEs.

IP	IMDEA NANOCIENCIA, España
Socios	Alemania, Eslovaquia, España
Presupuesto total	569.00€
Concedido ES	170.000 €

PROYECTO 23 INNENERMAT. Innovative nanostructured materials and smart textile electrodes for new generation of batteries and supercapacitors

The project will be focused on the development of novel active materials for competitive energy storage devices: batteries and supercapacitors (SC) with a focus on the main components: active material, electrolyte and design of the device. It is planned to design structurally and chemically advanced functional carbon materials, smart textiles, metal oxides and hybrid materials to make a substantial advance in performance. Besides, improvements in the electrolytes through developing new polymers and gels will also be considered. Finally, due to the multidisciplinary consortium, it will be also possible to design flexible concepts for storage devices, with special emphasis in textile-based technologies. The participation of the industrial partners will allow to integrate easily all the new developments and to perform a proof-of-concept for different applications, allowing to reach TRL6 for flexible batteries and supercapacitors at the end of the project.

IP	CSIC- Consejo Nacional de Investigación de España, España
Socios	Agencia Estatal de Inveestigación (España), Federal Ministry of Education and Research (Alemania), POR Calabria 2014-2020(Italia)
Presupuesto total	1.087.450 €
Concedido ES	176.000 €

PROYECTO 27 SALMOS. Sensor Arrays using Luminescent Metal-Organic Frameworks for the Optical Detection of Explosive Vapours and Toxic Substances

The project will be focused on the development of novel active materials for competitive energy storage devices: batteries and supercapacitors (SC) with a focus on the main components: active material, electrolyte and design of the device. It is planned to design structurally and chemically advanced functional carbon materials, smart textiles, metal oxides and hybrid materials to make a substantial advance in performance. Besides, improvements in the electrolytes through developing new polymers and gels will also be considered. Finally, due to the multidisciplinary consortium, it will be also possible to design flexible concepts for storage devices, with special emphasis in textile-based technologies. The participation of the industrial partners will allow to integrate easily all the new developments and to perform a proof-of-concept for different applications, allowing to reach TRL6 for flexible batteries and supercapacitors at the end of the project.

IP	Universidad Pablo de Olavide, España
Socios	Universidad Pablo de Olavide (Spain), University of Cyprus (Cyprus), Balıkesir University (Turkey), University of Amsterdam (The Netherlands), INDRA Sistemas S.A. (Spain)
Presupuesto total	505.000 €
Concedido ES	148.000 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2021

Países participantes	Austria, Bélgica, Brasil, Bulgaria, Canadá, Croacia, República Checa, Dinamarca, Estonia, Finlandia, Francia, Alemania, Hungría, Islandia, Israel, Letonia, Lituania, Luxemburgo, Noruega, Polonia, Portugal, Rumania, Rusia, Eslovaquia, Eslovenia, Sudáfrica, República de Corea, España, Suecia, Suiza, Taiwan, Turquía
Temáticas	1. Modeling for materials engineering and processing 2. Innovative surfaces, coatings and interfaces 3. High performance composites 4. Functional materials 5. New strategies for advanced material-based technologies in health applications 6. Materials for additive manufacturing
Presupuesto total	69.900.000 €
Concedido ES	3.666.748 €
Proyectos aprobados	70
Proyectos con financiación AEI	15 (9 coordinados)

No.	Acrónimo y título del proyecto	Países participantes
1	LaserBATMAN. Multi-scale simulation of laser welding for optimal battery pack manufacturing	Dinamarca, Suecia
2	MEDIATE. Semantic-based Material Twin and Co-Simulation Platform for Solid Oxide Fuel Cells	Luxemburgo, Alemania, Noruega
3	ModEI-FuturE. Modelling Wear of Intrinsically Self-Healing Elastomers for Reduced Particle Emission and Improved Lifetime Performance in Future e-Mobility Concepts	República Checa, Alemania, Francia
4	NACAB. NANoCarbon materials for sustainable Battery technology	Finlandia, Islandia
5	PHANTASTIC. PHysics- and dATA-driven multiscale modelling design of layered lead halide perovskiTe mATerials for Stable phoTovoltaICs	Bélgica, Alemania, Francia, Israel, Luxemburgo
6	PORMETALOMICS. Porous Metal Genomics for Tailoring Mechanical Properties of Light-weight 3D-Printed Architectures	España, Polonia, Israel
7	ARISER. Large Area Magnetron Sputtered All-Solid-State Batteries with ALD Buffer Layers	Turquía, Polonia
8	BATMAN. Development of novel Li ion BATtery solid electrolyte separators based on Metal orgANic frameworks	Austria, República Checa, Taiwan
9	BattPor. Inline evaluation of Li-ion battery electrode porosity using machine learning algorithms	Alemania, Austria, Eslovaquia
10	GoFIB. Gallium Oxide Fabrication with Ion Beams	Noruega, Finlandia, Alemania
11	Gold-PAWS. Sustainable Production Process for High-Quality Gold-Plated Wires for Antennae	Suecia, Bélgica
12	GREEN-BAT. GRadient- and multi-matERial procEssing of Next-generation solid-state-lithium BATteries using direct maTERial processing.	Finlandia, Suecia, Alemania
13	Greenhouse-PV. Semi-transparent PV coatings for greenhouse application	Taiwan, Dinamarca, Polonia, República Checa
14	HardCoat. Surface hardening and highly wear-resistant nanocomposite coatings for woodworking tools	Alemania, Rumania, República Checa
15	I4BAGS. Ion Implantation for Innovative Interface modifications in BATtery and Graphene-enabled Systems	Polonia, Bélgica

	InsBIOration.	
16	Bio-inspired interfaces for the development of next generation degradable multi-phase materials	Alemania, Francia, Rumania, Eslovenia, Finlandia
	M-LUGE.	
17	Multi-scale laser surface texturing for low ice-friction contacts	Alemania, Letonia
	PLASMANODE.	
18	Plasma-modified powder materials for Li-ion battery anodes processable by waterbased techniques	Bélgica, España, Noruega
	RESTINA.	
19	Recovered Silicon / Tin Sulphide Nanocomposite Anode Materials for Generation 3b Lithium-Ion Batteries	Austria, Bélgica
	SanFlex.	
20	Antipathogenic touchscreen polymer films	Alemania, Suecia
	SOLIMEC.	
21	Enhancing the mechanical stability of interfaces in solidstate Li-ion batteries for energyintensive applications	España, Austria, Noruega, Eslovaquia
	TOPCAPI.	
22	Advanced cutting Tools of predictable life with OPTimized Coating-substrate combination to be APplied in the Industry for machining of stainless steel	Turquía, España
	3DNano-HPC.	
23	3D Biotextile with Technological Composition of nano particles to enhance the protecting properties	Letonia, Lituania
	DCEC2.	
24	Development of novel concept of engineered layered composites	Bélgica, Hungría
	DuplexCER.	
25	High performance duplex ceramics for efficient machining of nickel superalloys	Polonia, Eslovaquia, Estonia
	EcoMat.	
26	Durable bio-based polymer composites reinforced with natural waste fillers with antibacterial properties	Polonia, Letonia
	GEOSUMAT.	
27	Materials for Circular Economy: Industrial Waste Based Geopolymers Composites with Hybrid Reinforcement	Noruega, Islandia, Polonia, Rumania, República Checa
	GRADIENT.	
28	Graded interphases for enhanced dielectric and mechanical strength of fiberreinforced composites	Alemania, Suecia, Letonia
	MAR-WRECK.	
29	Development of geopolymer composites as a material for protection of hazardous wrecks and other critical underwater structures against corrosion	Alemania, Polonia, República Checa
	MatDeMa.	
30	Affordable and Sustainable Multi-Material Lightweight Design and Manufacturing	Alemania, Luxemburgo, Letonia, Turquía

31	AfreeSSB. Anode-free all-solid-state batteries: From thin film to bulk	Suiza, España, Alemania
32	ALISA. Advanced Lithium-Sulfur batteries with ultramicroporous carbons	Eslovenia, Alemania, Suiza
33	BALSA. Bio-sourced Alternatives for Lithium-Silicon Anodes	Noruega, Finlandia, Suecia, Canadá,
34	BRIGHT. Cellulose based Bio-foam for Interactive Energy Harvester	Portugal, Alemania
35	COFFEE. Cationic Covalent Organic Frameworks as Anion Exchange Membranes for Electrochemical Energy Applications	Noruega, Francia, Rumania
36	Cool BatMan. Battery Thermal Management System Based on High Power Density Digital Microfluidic Magnetocaloric Cooling	Eslovenia, España, Alemania
37	FULSENS-GEL. Innovative fullereneol - hydrogels based nanomaterials for health diagnostic and care applications	Rumania, Turquía, España
38	GraSonics. High Sensitive Wideband Graphene Ultrasonic Transducers	República Checa, Alemania, Polonia
39	HYDROSENS. Room temperature hydrogen sensors based on polycarbazole and its derivatives	Polonia, España, Suecia
40	IMMENSE. Inkjet manufacturing of CCMs for PEMFC by development of catalytic inks & their deposition	Alemania, España, República Checa
41	KESPER. Kesterite based Photoelectrodes for Water and Nitrogen Reduction	Bélgica, Portugal, Dinamarca
42	LASIBAT. Laser-based in-line sintering of adapted ceramic materials for the manufacturing of solid-state battery cells	Alemania, Noruega, España
43	LDI MAGIC. Laser Direct Imaging Material and Process Developments for Next Generation Integrated Chipless RFID	Alemania, Polonia
44	NanoTRAACES. Ultrasensitive sensors for the detection of Lithium-Ion Batteries fails	Francia, Lituania, Luxemburgo, República de Corea
45	NanOx4EStor. Nanoscaled ferroelectric (pseudo)-binary oxide thin film supercapacitors for flexible and ultrafast pulsed power electronics	Portugal, Rumania, Francia
46	PRINTCAP. Next generation of 3D printed structural supercapacitors	Alemania, Francia
47	SPIRIT. Solid state Potassium-Ion batteries for safe and sustainable energy storage	España, Alemania, Israel, Suecia

48	SuperSuper. Alternative Superconducting Superlattices	España , Portugal, Bélgica
49	SuSaNa. Sustainable and Safe anodefree Na battery	España , Suecia, Alemania, Dinamarca
50	SUSTBATT. Scalable Sustainable Anodes for Li-ion Batteries by Structural Design	Noruega , Suecia, España,
51	Thermos. Tellurium-Free Thermoelectric Modules by Interface Engineering	Alemania , España, República Checa, Dinamarca
52	ZABAT. Next generation rechargeable and sustainable Zinc-Air batteries	España , Alemania, Noruega, Polonia
53	ZABSES. Zinc-Air Battery for the Stationary Electricity Storage	Alemania , Francia
54	BioMAT4EYE. Neoteric Biomaterials for hIPSCs Monitorized Differentiation to RGCs: Creation, Microfabrication & Microfluidics	España , Alemania, Noruega, Bélgica, Eslovenia
55	MBrace. Multi-Matrix Composites for Fashionable, Customized and Evolvable Braces	Alemania , Bélgica
56	Memb4BoTiReg. Biodegradable functionalized Membrane for Bone and Tissue Regeneration	Alemania , Brasil, Polonia
57	Nano4Glio. Engineered nano-based device for glioblastoma multiforme therapy	Portugal , Noruega, Dinamarca
58	PIECRISCI. Investigation of Regenerative Effects of CRISPR / Cas9 Functionalized Piezoelectric Nerve Conduits on in vitro and in vivo Spinal Cord Injury Models	Turquía , Polonia, Dinamarca
59	RePark. Refining the efficacy of systemic administration of bioactive molecules for Parkinson's Disease	Bélgica , Portugal, Israel
60	SMILE. Surface coating and Microstructuring for compound functionalized biomaterials in dentistry	Alemania , Polonia, Rumania
61	TARDIS. Nano-enabled stimuli-responsive scaffolds for targeted antimicrobials delivery to treat Staphylococcus aureus infections and restore skin homeostasis	España , Noruega, Turquía, Israel, Bulgaria
62	VENUS. Anti-calcification treatment of elastin-rich bioprosthetic materials using Fetuin A for aortic valved conduits	Alemania , Polonia, Turquía, Letonia
63	3D-FOAM.	Polonia , Letonia, Hungría, Taiwan

Foamed Geopolymer Made by Additive Manufacturing for the Construction Technology Applications

64	AddMag. Additive manufacturing of permanent magnet materials	Austria , Eslovenia, Francia
65	AM-ACTS. Additive Manufacturing of Actively Cooled Thermal Shield	España , Francia, Suecia
66	BioCel3D. Cellulose from waste and bacteria in electro-spinning for continuous fibre reinforced 3D printed composites	Luxemburgo , Bélgica, Eslovenia, Austria
67	CerAM SLS. Qualification of thermoset-based powders for selective laser sintering of ceramic components	Austria , Alemania
68	LIFOMUL 3D. Lignin FORMulations for MULTimaterial 3D printing of microneedle electrodes	Austria , Alemania
69	Pompey. Polymer-Metal 3D Printing using Hybrid Material Extrusion	Alemania , Polonia
70	PowderEUse. Novel method of polyamide powders reconditioning for reuse in selective laser sintering process	Polonia , Alemania

CONVOCATORIA NACIONAL PCI 2022

PROYECTO 6 PORMETALOMICS. Porous Metal Genomics for Tailoring Mechanical Properties of Light-weight 3D-Printed Architectures

Porous Metal Genomics for Tailoring Mechanical Properties of Light-weight 3D-Printed Architectures. M-ERA.NET Call 2021 33 Porous metals are increasingly important in technology. Due to their tunable mechanical properties, they are promising candidates in various emerging applications such as metallic scaffolds for load-bearing bones, lightweight structures for transport technologies, electrodes for electrochemical energy storage devices, and more. This project aims at developing a computational model to establish a quantitative understanding of the relations between the enormous variety of possible morphologies of porous structures and their mechanical properties. The machine-learning-based model will be employed to identify various prototype structures of new morphologies via the implementation of hierarchical screening and a material genome approach. The optimal and/or statistically relevant structures will be 3D printed and tested mechanically in experiments, with the results contributing to both tuning and validation of the computational designs.

IP	Agr-Fundación IMDEA Materiales. España
Socios	Technion - Israel Institute of Technology (Israel), Institute of Mathematics, Polish Academy of Sciences (Polonia)
Presupuesto total	455.000 €
Concedido ES	245.000 €

PROYECTO 21 SOLIMEC. Enhancing the mechanical stability of interfaces in solidstate Li-ion batteries for energyintensive applications

Enhancing the mechanical stability of interfaces in solid-state Li-ion batteries for energy-intensive applications. The climate conference in Glasgow 2021 emphasized the importance of reducing CO₂ emissions. This endeavor requires a more significant step towards sustainable energy sources and storage. The rationale for this project is to improve the next generation of emerging solid-state Li batteries (SSLBs), which can eliminate hazards and energy density issues associated with conventional liquid electrolyte-based Li-ion batteries (LIBs). To achieve this goal, five leading research groups and a large technological company in the EU have developed the following strategy to face the current challenges of SSLBs. We rely on multicomponent engineering of cathode material and its interface with the solid-state electrolyte to prevent stress-induced loss of contact during charge/discharge, which degrades electron/ion transfer, and thus improving the SSLB performance and longevity. Potential benefits are seen in the application of SSLB as true alternative to LIB to replace fossil fuels in the car industry.

IP	Universidad Autónoma de Madrid. España
Socios	Montanuniversität Leoben (Austria), Centre for advanced materials application SAS (Eslovaquia), Norges Teknisk-Naturvitenskapelige Universitet NTNU (Noruega), AVL List GmbH (Austria), Agencia Estatal Consejo Superior de Investigaciones Científicas-CSIC (España)
Presupuesto total	1.016.791 €
Concedido ES	344.977 € (Universidad Autónoma de Madrid 223.100 €), (Agencia Estatal Consejo Superior de Investigaciones Científicas-CSIC 121.877 €)

PROYECTO 31 AfreeSSB. Anode-free all-solid-state batteries: From thin film to bulk

The project aims to develop solid-state batteries (SSBs) with power densities >1000 W/L and energy densities >800 Wh/L, combined with fast charging and discharging, deep discharge cycles, long cycle life, and safe operation in a wide temperature range. Potential applications for these batteries include high-end and mobile applications such as drones, robots, aerospace, and urban mobility. Selected innovation objectives are: i) To develop anode-free thin-film SSBs with high power densities, ii) to transfer the anode-free concept to bulk cathodes for high energy densities, iii) to develop operando characterisation methods, and iv) to demonstrate the SSB performance in an operational environment. The expected impacts include: i) SSBs for industrial Internet of Things that require safe operation in a wide temperature range, ii) new software and measurement hardware products for battery testing, and iii) the roll-to-roll fabrication of carbon-coated current collectors for anode-free SSBs.

IP	Empa - Swiss Federal Laboratories for Materials Science and Technology. Suiza
Socios	FLUXiM AG (Suiza), IREC - Institut de Recerca en Energia de Catalunya (España), Alternative Energy Innovations, S.L. (España), Forschungszentrum Jülich GmbH (Alemania), Aixtron SE (Alemania)
Presupuesto total	873.574 €
Concedido ES	175.000 €

PROYECTO 36 Cool BatMan. Battery Thermal Management System Based on High Power Density Digital Microfluidic Magnetocaloric Cooling

Battery Thermal Management System Based on High Power Density Digital Microfluidic Magnetocaloric Cooling. Li-ion batteries are key to transitioning away from the fossil fuels dependence in the next decade. A major bottleneck in Li-ion's efficient and reliable operation is their narrow temperature range where they operate at full efficiency without major degradation. There are two key aspects of battery thermal management system (BTMS); high efficiency and compactness. In e-mobility compact BTMS preferably with no moving parts is of the utmost importance. The majority of BTMSs are based on vapor-compression technology. Due to utilization of environmentally harmful refrigerants and moderate efficiency there is a need for more efficient cooling technologies. One showing such potential is magnetocaloric (MC) cooling. The MC material will be coupled with an ElectroWetting On Dielectric (EWOD) phenomenon to form a unique MC cooling principle. The goal of the project is to develop a compact MC/EWOD cooling proof-of-principle suitable for integration as BTMS for Li-ion batteries in e-mobility.

IP	University of Ljubljana.Eslovenia
Socios	Josef Stefan Institute (Eslovenia), Leibniz Institute for Solid State and Materials Research Dresden (Alemania), Universidad de Barcelona (España)
Presupuesto total	510.000 €
Concedido ES	120.000 €

PROYECTO 39 HYDROSENS. Room temperature hydrogen sensors based on polycarbazole and its derivatives

The purpose of the project is to develop technologies for sensors, measurement systems, and IoT solutions for monitoring the production and use of hydrogen to provide increased safety. By replacing cost-, energy- and material-intensive technologies for sensors and providing an integrated platform for data collection through IoT solutions, new areas of use are made possible. The project promotes the development of sustainable and more environmentally friendly solutions, especially for coal-intensive industries. Increase safety in industrial production and use of hydrogen with more cost-effective solutions for sensors, measurement systems, and IoT solutions. The project aims to develop and in a real industrial environment verify IoT based measurement system for hydrogen. The starting point is to produce technical specifications with different technology developers and end-users. Implementation of technical platforms is verified in the first step in the laboratory environment and then in the industrial production environment of end-users.

IP	Silesian University of Technology (Politechnika Śląska). Polonia
Socios	Institute of Microelectronics of Barcelona, IMBCNM-CSIC (España), STC - Sensible Things that Communicate (Suecia), Polish Oil and Gas Company (Polskie Górnictwo Naftowe i Gazownictwo S.A.) (Polonia), MidDec Scandinavia AB (Suecia)
Presupuesto total	928.341 €
Concedido ES	174.552 €

PROYECTO 40 IMMENSE. Inkjet manufacturing of CCMs for PEMFC by development of catalytic inks & their deposition

In the course of global undertakings to achieve a CO₂-neutral energy economy, the German-Spanish-Czech consortium of the project named IMMENSE targets the UN sustainable development goals (SDG) 7 and 9. In detail, it plans to make impact on the current fuel cell technology by tailoring the catalytic ink and processing it using digital inkjet-printing technology supplementing the currently used analogous processes. The consortium represents experts for material development focussing on tuning interfacial properties. In focus are a flexible design of CCMs, reducing manufacturing costs, experimental characterization and advanced mathematical modelling. A short stack fuel cell demonstrator will validate the new manufacturing technology based on an optimized material system that shows similar performance as conventionally produced fuel cells used for mobile applications, i.e. in a car. To reflect all developments according to market needs, an industrial partner is part of the consortium.

IP	Fraunhofer ENAS. Alemania
Socios	Technische Universität Bergakademie Freiberg (Alemania), Universidad del País Vasco (España), University of Chemistry and Technology Prague (República Checa), ÚJV Řež, a.s (República Checa)
Presupuesto total	1.078.540 €
Concedido ES	201.250 €

PROYECTO 47 SPIRIT. Solid state Potassium-Ion batteries for safe and sustainable energy storage

Solid state Potassium-Ion batteries for safe and sustainable energy storage. SPIRIT consortium is composed of 1 university, 3 research centers and 1 SME with the objective to develop the next generation of energy storage devices, a solid-state Potassium-ion battery (TRL4) based on safe, sustainable and cost-competitive anode, cathode and novel polymer electrolyte materials. The solidstate batteries developed within SPIRIT would find applications in large-scale energy storage coupled to production of renewables in sun or wind farms, light electromobility and in medium and small size, remote, off-grid energy storage. The societal and economic impact is expected to be substantive, eliminating the need of hazardous (Pb, LiPF₆, flammable solvents) and critical raw materials (Co, Li, graphite) from our widespread energy storage devices and creating a sustainable European battery technology. This will enable safer and more affordable energy storage devices (SDG7) that help in the transition towards a zerocarbon emission energy future in the EU.

IP	Universidad Complutense de Madrid. España
Socios	Karlsruhe Institute of Technology (Alemania), Instituto de Ciencia y Tecnología de Polímeros del CSIC (España), Weizmann Institute of Science (Israel), Iolitec (Alemania)
Presupuesto total	1.010.310 €
Concedido ES	347.998 € (Universidad Complutense de Madrid 201.250 €), (Agencia Estatal Consejo Superior de Investigaciones Científicas- CSIC 143.748 €)

PROYECTO 48 SuperSuper. Alternative Superconducting Superlattices

Alternative Superconducting Superlattices. Moiré materials have emerged as a two-dimensional platform with a broad range of states between superconducting and insulating. Despite the remarkable scientific progress, an important bottleneck is the lack of a general and facile approach for the production of moiré materials. SuperSuper is targeted at developing a disruptive straightforward bottom-up approach to prepare highly crystalline moiré materials, which will exceed the current challenges and limitations of existing materials and methods, and also, at establishing Proof-of-Principle of their technological potential. Achieving this would represent an important step forward in the design of the next generation of superconductors.

IP	POLYMAT. Basque Center For Macromolecular Desing and Engineering. España
Socios	University of Aveiro (Portugal), Graphenea Semiconductor S.L. (España), Katholieke Universiteit Leuven (Bélgica)
Presupuesto total	986.901 €
Concedido ES	287.500 €

PROYECTO 49 SuSaNa. Sustainable and Safe anodefree Na battery

In the near future the market is going to need large amounts of batteries that require to be sustainable and safe. SuSaNa project aims at developing a sustainable, safe, and high energy density Na-based battery. The focus is put on: (i) formulate novel non-flammable electrolytes with high efficiency of Na plating-stripping, to supress dendrite growth becoming safe, (ii) development of anode-free cells that provide high power and high specific energy, and (iii) using a highly performing patented cathode, Prussian white. Moreover, key processes, products and materials are to comply with Green Chemistry and Green Engineering principles, and Ecodesign concepts including recyclability aspects that will be proposed at early TRLs.

IP	Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC). España
Socios	Forschungszentrum Jülich GmbH (Alemania), Altris AB (Suecia), Technical University of Denmark (Dinamarca), PhaseTree ApS (Dinamarca), Uppsala University (Suecia), ACCUREC-RECYCLING GMBH (Alemania)
Presupuesto total	1.694.717 €
Concedido ES	238.485 €

PROYECTO 50 SUSTBATT. Scalable Sustainable Anodes for Li-ion Batteries by Structural Design

Scalable Sustainable Anodes for Li-ion Batteries by Structural Design. Due to their potential to contribute to zero-emission mobility and storage of renewable energy, Lithium-ion batteries are a technological pathway to climatechange mitigation and energy sustainability. To achieve this, sustainability of battery raw materials is a must. SUSTBATT aims to produce scalable and sustainable high-capacity Si-based anodes through the cultivation of diatoms, a type of photosynthetic algae that synthesize hierarchical nanostructured SiO₂ skeletons through

biomineralization. With a landmark of 840 mAhg⁻¹ after 100 cycles (at 100 mAg⁻¹) using diatom-SiO₂, this project aims to exploit the full potential of diatom feedstock by adjusting Si/SiO₂ ratio in SiO_x structures. Relying on a structural design of the anodes, the main goal of SUSTBATT is to reach stable storage capacities of 1500 mAhg⁻¹ after 1000 cycles (at 100 mAg⁻¹) in upscaled full-cells. This will pave the way for the innovative integration of sustainably sourced feedstock into the battery technology.

IP	Norwegian University of Science and Technology. Noruega
Socios	SINTEF Energy AS (Noruega), Swedish Algae Factory (Suecia), LiFeSiZE (Suecia), University of Uppsala (Suecia), Agencia Estatal Consejo Superior de Investigaciones Científicas -CSIC (España)
Presupuesto total	1.078.540 €
Concedido ES	201.250 €

PROYECTO 51 Thermos. Tellurium-Free Thermoelectric Modules by Interface Engineering

Thermoelectric (TE) technology offers solutions to solid-state heat recovery and cooling. Till now, only Bi₂Te₃ modules are commercially mature. Their applicability is limited by the scarcity and toxicity of tellurium (Te) with a concentration of <0.001 ppm in the earth's crust. The replacement of Te will be addressed by THERMOS. As major objective THERMOS will develop highly efficient modules using atomic layer deposition and Te-free Zintl materials with a conversion efficiency of 8.5% and a cooling temperature of 65°C to outperform Bi₂Te₃ modules. THERMOS will enable novel applications such as powering off-grid Internet-of-Things (IoT) nodes, energy harvesting from low-grade waste heat or cooling of medical devices. Joint efforts of research institutes from Germany and Spain, one university from the Czech Republic, and the Danish company TEGnology will impact the development and production of nextgeneration TE modules "Made in Europe" with better sustainability and performance.

IP	IFW Dresden. Alemania
Socios	CIC nanoGUNE (España), University of Pardubice (República Checa), Fraunhofer Institute for Manufacturing Technology and Advanced Materials IFAM Dresden (Alemania), TEGnology ApS (Dinamarca)
Presupuesto total	1.198.007 €
Concedido ES	201.250 €

PROYECTO 52 ZABAT. Next generation rechargeable and sustainable Zinc-Air batteries

Next generation rechargeable and sustainable Zinc-Air batteries Energy Storage technologies are essential to reach the mid- (2030) and long-term (2050) EU climate and energy goals. Particularly, batteries are crucial to include renewables (wind, solar...) into the EU grid. Hence, for the stability and security of Europe's energy supply. Aligned with that, ZABAT will develop and validate a rechargeable Zn-Air battery to enable cost-effective behind the meter energy storage applications for industry and household coupled with renewables. ZABAT aims to

develop a critical material free energy storage system, with at least 300 Wh Kg⁻¹ and > 2,000 hours cycle life. The technology is based on abundant Zn, thus reducing the use of CRMs (i.e., lithium, natural graphite and cobalt) while promoting the circular economy, as set by the United Nations in the sustainable development goals. ZABAT will also address environmental, toxicity, and societal impact of the materials and processes related to r-ZAB technology through sustainable and circularity assessments.

IP	Leitat Technologies Center. España
Socios	SINTEF (Noruega), Fraunhofer Institut (Alemania), Politechnika Wroclawska (Polonia), HEREUS (Alemania)
Presupuesto total	1.651.567 €
Concedido ES	249.999 €

PROYECTO 54 BioMAT4EYE. Neoteric Biomaterials for hiPSCs Monitorized Differentiation to RGCs: Creation, Microfabrication & Microfluidics

Matrigel is a benchmark costly supporting material for cell culture, being a basement membrane matrix extracted from Engelbreth–Holm–Swarm murine sarcomas, presenting ethical issues, low productivity, low batch-to-batch reproducibility, and an extraordinary complex physicochemical nature. Therefore, highly reliable and tuneable materials adequate for large-scale production to replace Matrigel are desirable. bioMAT4EYE will address this need by joining several multidisciplinary research teams with key expertise in biomaterial production (fermentation, extraction), physicochemical modification and conformation in 2D, 2D+ and 3D structures by diverse technologies, micro-bioreactor design, construction and physicochemical control, and hiPSCs generation, culture and monitored differentiation to RGCs. RGCs can be the basis for cell therapies for patients with optic neuropathies of low prevalence (e.g. LHON, DOA) and age-related increasingly prevalent ones (e.g. glaucoma).

IP	Universidad Complutense de Madrid. España
Socios	Fundación para la Investigación Biomédica del Hospital Universitario Doce de Octubre (España), Katholieke Universiteit Leuven (Bélgica), RISE PFI AS (Noruega), University of Ljubljana (Eslovenia), Chitinor AS (Noruega), Leipzig University (Alemania), Regemat 3D Ltd-CDTI (España)
Presupuesto total	1.505.024 €
Concedido ES	345.000 € (Universidad Complutense de Madrid 172.500 €), (Fundación para la Investigación Biomédica del Hospital Universitario Doce de Octubre 172.500 €)

PROYECTO 61 TARDIS. Nano-enabled stimuli-responsive scaffolds for targeted antimicrobials delivery to treat Staphylococcus aureus infections and restore skin homeostasis

Nano-enabled stimuli-responsive scaffolds for targeted antimicrobials delivery to treat Staphylococcus aureus infections and restore skin homeostasis. Skin infections have a significant impact on human health, especially when they cause disability and disfigurement. Treatments using antibiotics not only select for antimicrobial resistance, a global healthcare

treat and heavy economic burden, but also disrupt the protective skin microbiome promoting new or recurrent infections. TARDIS will develop innovative antimicrobial hydrogel scaffolds of targeted bio-based nanoactives with high bactericidal efficacy towards *Staphylococcus aureus*, the most common skin pathogen, and ability to maintain the beneficial microbial balance and physiological functions of the skin. The environmental and societal impacts of the technologies and products will be considered during the whole lifecycle. The exploitation strategy will harmonize the needs of the society and business in the long term. TARDIS multidisciplinary scientific knowledge and technologies will be easily implemented for a broad range of applications from healthcare to astronomy.

IP	Universtitat Politècnia de Catalunya. España
Socios	SINTEF OCEAN AS (Noruega), Marmara University (Turquía), Sofia University (Bulgaria), Dead Sea and Arava Science Center (Israel)
Presupuesto total	1.016.791 €
Concedido ES	249.998 €

PROYECTO 65 AM-ACTS. Additive Manufacturing of Actively Cooled Thermal Shield

AM-ACTS is an EU project funded through the M-ERA.NET 2021 call, involving a multidisciplinary consortium with a balanced scientific and industrial partnership, aiming at demonstrating the feasibility of using active microfluidic cooling for enhancing the performance of thermal protection systems fabricated from ultra-high temperature ceramics (UHTCs) and refractory metals for use in aerospace, energy-generation and many other engineering applications. High-temperature Thermal Protection Systems (TPS) are critical in many industrial applications (aerospace, energy generation, etc.), and they typically rely on passive thermal insulation, which is limited by the oxidation and ablation resistance of their constituent materials. AM-ACTS project will develop novel high-performance thermal shields that can be actively cooled by circulating an appropriate fluid through a bioinspired internal microchannel network created during the additive fabrication (3D printing) of the TPS elements from ultra-high temperature ceramics and refractory metals. This will enable the sustainable and environmentally friendly production of atmospheric re-entry shields for reusable spacecrafts, turbine blades, rocket engines, reactor walls or solar receivers with improved maximum service temperature and/or service lifetime at that temperature, which could boost the energy efficiency and reduce maintenance costs in these and many other industrial applications.

IP	Universidad de Extremadura. España
Socios	Iberespacio-CDTI (España), University West (Suecia), Questek (Suecia), Laboratoire Procédés, Matériaux et Energie Solaire-PROMES (Francia)
Presupuesto total	869.532 €
Concedido ES	287.500 €

M-ERA.NET 3. ERA-NET for research and innovation on materials and battery technologies, supporting the European Green Deal

M-ERA.NET 3 tiene como objetivo coordinar los esfuerzos de investigación en los Estados miembros, regiones y estados asociados de la UE participantes en investigación e innovación de materiales, incluidos materiales para futuras baterías, para apoyar la economía circular y los Objetivos de Desarrollo Sostenible. Una gran red de organizaciones de financiación nacionales y regionales de 25 Estados miembros de la UE, 4 Estados asociados y 6 países fuera de Europa implementarán una serie de convocatorias conjuntas anuales para financiar una excelente cooperación transnacional innovadora en IDT, incluida una convocatoria de propuestas con cofinanciación de la UE y Convocatorias adicionales no cofinanciadas. Continuando con las actividades iniciadas en el marco del proyecto predecesor M-ERA.NET 2 (3/2016-2/2021), el consorcio M-ERA.NET 3 abordará tecnologías emergentes y áreas de aplicaciones relacionadas, como, por ejemplo, superficies, revestimientos, composites, fabricación aditiva o modelado integrado de materiales. La investigación sobre materiales que respaldan la iniciativa de investigación a gran escala sobre futuras tecnologías de baterías se destacará particularmente como objetivo principal de la convocatoria cofinanciada (Convocatoria 2021) con miras a apoyar, en particular, el ODS 7 (“Energía limpia y asequible”) al permitir la electromovilidad. a través de tecnología de almacenamiento de energía sostenible y el ODS 9 (“Innovación e infraestructura industriales”) mediante la mejora de la investigación científica y la mejora de las capacidades tecnológicas de los sectores industriales. Varios planes de acción e iniciativas relevantes servirán como guías programáticas para M-ERA.NET 3 a la hora de definir las actividades conjuntas, como el Plan de Acción de Economía Circular, la Agenda 2030 para el Desarrollo Sostenible y sus 17 Objetivos de Desarrollo Sostenible, la comunicación de la CE “A Planeta limpio para todos”, y el “Pacto Verde Europeo”. Se espera que el presupuesto total movilizado de la convocatoria pública alcance los 150 millones de euros con una inversión privada adicional de 50 millones de euros. Por lo tanto, el efecto palanca de la contribución de la UE alcanzará un factor de 13, superando con creces el factor mínimo requerido de 5.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjunta internacionales: 1 (2022)

Participación de AEI en convocatorias conjuntas: 1 (2022)

CONVOCATORIA CONJUNTA INTERNACIONAL 2022

Países participantes	Austria, Bélgica, Brasil, Bulgaria, Canadá, Croacia, República Checa, Dinamarca, Estonia, Finlandia, Francia, Alemania, Hungría, Israel, República de Corea, Letonia, Lituania, Luxemburgo, Polonia, Rumania, Eslovenia, Eslovaquia, Sudáfrica, España, Taiwán, Turquía, Croacia
Temáticas	• Functional materials • Materials for energy • Innovative surfaces, coatings and interfaces • High performance composites • New strategies for advanced material-based technologies for health applications • Materials for electronics

Presupuesto total	43,7 M
Concedido ES	2.501.070 €
Proyectos aprobados	46
Proyectos con financiación AEI	11 (9 coordinados)

No.	Acrónimo y título del proyecto	Países participantes
1	3DBiofibreGoesAuto. Lightweight biobased composites for improved functionality by additive manufacturing for automotive industry	Luxemburgo , Austria, Turquía
2	ALD-SE. Surface protection and interfacial optimization by ALD-coatings on sulfide-based solid electrolytes (SE)	Alemania , Finlandia, Brasil
3	AM2pC. Novel two-phase cooling systems for data centres through additive manufacturing	Dinamarca , Alemania, Bélgica
4	ATOSENS. Atomic-layer 3D printing as a new paradigm for smart sensorics	Eslovaquia , Dinamarca, Taiwán
5	AtraumaBioMat. Advanced metamaterials dedicated for cardiovascular surgeries to minimize tissue injury	Polonia , Austria, Turquía
6	BEATRICE. Biobased dEgradable fIAme reTardant pRInted eCo-elElectronics	Alemania , Hungría, Rumania
7	BiLaTex. New Generation Of Bioactive Laser Textured Ti/Hap Implants	Polonia , Estonia, Eslovenia
8	Coco. Copper conductive lines with glass insulation by a melt extrusion process	Alemania , España, Polonia
9	DC-PEM. Development of a Cost-effective anode for PEM water electrolysis	Alemania , Rumanía, República Checa
10	DEMETRA. Defective metal oxides as the next generation of lead-free piezoelectrics for ultrasonic actuators	Dinamarca , Brasil, Polonia
11	DNABEATS. Customised DNA-based nanocarriers to boost heart healing	España , Estonia, Lituania, Polonia
12	H2MobilHydride. Development and Processing of Advanced Metal Hydride Composites with Specific Microstructure Properties for mobile hydrogen storage applications	República Checa , Eslovaquia, Alemania

13	HAMAAC. Healable Al alloys Manufacturing by Advanced Automated Characterisation	Bélgica , República Checa, Francia
14	HELVA Hybrid ELectrosynthesis of Value-Added chemicals	España , Polonia, Brasil
15	HERO Thermoplastic elastomers from recycled polyolefins and tire	Hungría , Alemania, Rumania
16	HEWOX. p-n Heterojunctions of Emergent Wide band gap Oxides for self-powered UVC sensing	España , Francia, Alemania
17	HIDDEN-PV New wide bandgap photovoltaic devices based on sustainable materials and eco-efficient processes for ubiquitous integrated PV applications	España , Luxemburgo, Alemania
18	HYMOCA Safe Composite Pressure Vessels with Self Structural Health Monitoring Capacity	Luxemburgo , Turquía, Alemania
19	HetCat Engineering of two-dimensional heterostructural photocatalysts for hydrogen generation	Eslovenia , Taiwán, Letonia
20	INNOHYPPY INNOvative catalyst and its regeneration for clean Hydrogen Production via methane PYrolysis	Lituania , Letonia, Eslovenia
21	InCoatBat Inert Coatings for Prevention of Ageing of NMC Cathode for Lithium-Ion Batteries	Letonia , Taiwán, Alemania
22	IronWorkCoat High-manganese steels to develop gradable coating systems by work hardening for sustainable wear protection applications	Alemania , Polonia, Austria, Turquía
23	IsoFoamComp Development of a functional composite insulation and foam material for battery housings	Austria , Alemania, Francia
24	LiMeCore Lithium Metal Coating Technologies for Future Generation Batteries	Alemania , Bélgica, Taiwán
25	LightCell Quasi-1D materials for advanced thin-film photovoltaics	Dinamarca , Rumania, Estonia, República de Corea
26	LumAI Luminescent tagging of documents and the method of their mobile detection based on Hyperspectral Imaging and Artificial Intelligence	Polonia , Letonia, Lituania
27	MASTER Mastering Electrode Surface to Achieve Ultra-High Reversible Capacity	Bulgaria , España, Turquía
28	MUST Materials for Ultraefficient chiral SpinTronics	España , Polonia, Turquía
29	MachFlexComp Machining of Flexible Recycled Composite Components for Electric Vehicles and Aeronautics	Turquía , España, Bélgica
30	NAMEAS Novel asymmetric anion-exchange membranes for fuel cells	Turquía , Francia, Brasil, Polonia

31	NANOFIB Targeted NANOMedicine to reverse FIBrosis in ischemic cardiomyopathies	España, Israel, Polonia
32	Nano4Zombie Senolytic nanoplatform to target and eliminate skin cancer Zombie cells	España, Polonia, Letonia
33	PECLABEL Plasmonic Electrochromic Materials for Dual-Band VIS-NIR Smart Labelling	Bélgica, Francia, España, Finlandia
34	NanoCANDI Advanced functional nanomaterials for precise cancer diagnosis	España, Francia, Brasil
35	PolyBioMat Polylactide-based multifunctional materials	Alemania, Polonia, Eslovaquia
36	REPLACER Recycling plastic and developing hybrid living materials by capturing greenhouse gases to produce value-added products	Alemania, Rumania, Letonia
37	SAFER Self-healing fiber ceramic matrix composite	Alemania, República Checa, Brasil
38	SLAP Stabilization of Lithium Metal Anodes with Porphyrin-based Electrolyte Additives	Alemania, Dinamarca, Polonia
39	STEEP UP Steep absorption with supramolecular self-assembled functional dyes for vacuum-deposited organic solar cells	Alemania, Polonia, Francia, Bélgica
40	STELLAR Surface Texturing with Laser for Large Areas with Riblets	Alemania, España, Francia
41	SoftCompEI Soft Magnetic Composites for Advanced Electrification	Alemania, Bélgica, Finlandia
42	SustainFibresFCM Development of sustainable fibre-based food packaging materials made from agricultural residues using safety-by-design	Alemania, Austria, Polonia
43	TBC4H2 Thermal Barrier Coatings for greener heat-to-power applications: understanding limits of operation under hydrogen combustion and sustainable outlook	Polonia, Francia, Alemania
44	TOP-Crete Novel bendable thermoplastic rebars for improved durability and sustainability of concrete structures	España, Francia, República Checa
45	TRANSITION Transforming waste into high-performance 3D printable cementitious composite	Letonia, Eslovenia, Lituania
46	Wood-wastePanels Wood waste containing composites for high performance nearly zero energy building panels	Letonia, Polonia, Francia

CONVOCATORIA NACIONAL PCI 2023

PROYECTO 11 DNABEATS. Customised Dna-Based nanocarriers to boost heart healing

Myocardial infarction and its evolution towards heart failure is a leading cause of death in Europe. No curative treatment aside heart transplantation has been accomplished so far. DNABEATS aims to bring advanced materials to regenerate injured myocardium. Cutting-edge DNA nanotechnology is exploited for the fabrication of fully customised biocompatible DNA-based nanocarriers (DNCs) to achieve the cardio-targeted and efficient delivery of a regenerative microRNA. The therapeutic efficacy of DNCs will be assessed in human-derived cardiac cells, a ground-breaking aspect, that together with an exhaustive in vitro and in vivo biocompatibility investigation, will facilitate their future clinical application and industrial transfer.

IP	Universidad de Zaragoza. España
Socios	Estonia, Lituania, Polonia
Presupuesto total	866.862 €
Concedido ES	310.970 € (Universidad de Zaragoza 187.550 €) y (Fundación Instituto de Investigación Sanitaria Aragón 123.420 €)

PROYECTO 14 HELVA. Hybrid ELectrosynthesis of Value-Added chemicals

Rationale: the manufacturing of chemicals and carbon-based materials still relies on fossil fuels and energy/carbon-intensive processes. HELVA proposes an alternative approach using CO₂ as the carbon source to realize complex carbon-based non-petrochemical plastics powered by renewable electricity. Objectives: HELVA pursues the e-synthesis of polyhydroxyalkanoates (PHAs) from captured CO₂ using a tandem system approach that couples CO₂ electrolysis and microbial bio-upgrade. We will pursue these goals through advances in catalyst, system, and reactor design, as well as microbe engineering to promote PHA metabolic pathways. Our final objective is the synthesis of PHA at concentrations above 50 g/L. Potential applications: The realization of sustainable biodegradable plastics. Impact and potential benefits: The proposed technology would offer a path for the sustainable biological manufacturing of non-petrochemical renewable plastics, mitigating global emissions and warming.

IP	Instituto de Ciencias Fotónicas. España
Socios	Polonia, Brasil
Presupuesto total	1.553.441 €
Concedido ES	211.750 €

PROYECTO 16 HEWOX. P-N heterojunctions of emergent wide band gap oxides for self-powered uvc sensing

Uncontrolled fires are estimated to contribute as much to carbon gas emissions as all of commercial transport and must thus be a critical challenge for the EU Green Deal objective of no carbon gas emissions by 2050. A key problem is prompt detection to limit the damage. Most commercial fire/smoke detectors, usually infrared detectors, do not go off until it is too late to

intervene. Remote optical sensing should be a big part of the solution. For this reason, there is a need for ultraviolet C band (UVC) flame sensors, which are not subject to such false positives because their photoresponse is solar blind. HEWOX project will explore and contrast the advantages of developing of Ga₂O₃/NiO heterojunctions (thin films/nanostructure) for use as self-powered remote fire/flame sensors. This approach reinforces the innovative character of the project due to merging of UVC sensing and autonomous operation into a functional materials platform, by employing emerging ultra-wide band gap oxides.

IP	Universidad Complutense de Madrid. España
Socios	Francia, Alemania
Presupuesto total	1.171.770 €
Concedido ES	193.600 €

PROYECTO 17 HIDDEN PV. New guide bandgap photovoltaic devices based on sustainable materials and eco-efficient processes for ubiquitous integrated PV applications

New wide bandgap photovoltaic devices based on sustainable materials and eco-efficient processes for ubiquitous integrated PV applications Needs to be addressed: The ubiquitous integration of photovoltaics (PV), key for EU's twin transition, requires novel concepts and technologies that maximize performance and minimize visual intrusiveness in integrated PV applications. Objectives: HIDDEN-PV develops a new generation of earth-abundant low toxicity wide bandgap PV devices based on Sb(S,Se)I for high performance in non-standard illumination and on (Zn,Mg)(O,S,Se) for truly transparent PV. Potential applications: The HIDDEN-PV technology allows hiding the PV elements paving the way to the ubiquitous integration of PV in scenarios such as IoT, building/vehicle/urban integrated PV, agrivoltaics, tandem and bifacial PV. Impact and potential benefits: HIDDEN-PV will have impact at the scientific (fundamental research), economic (impact on different markets and on EU's PV industry), social (availability of PV-powered high tech products) and environmental (distributed PV generation avoiding CO₂ emissions and battery waste) levels.

IP	Fundacio Institut De Recerca De L'energia De Catalunya. España
Socios	Lituania, Luxemburgo
Presupuesto total	790.213 €
Concedido ES	237.160 €

PROYECTO 27 MASTER. Mastering electrode surface to achieve ultra-light reversibly capacity

The MASTER aims to advance a new concept for the surface design of electrode materials to achieve reversible capacities that approach the theoretical ones. The proof-of-concept will be validated by the construction of a full Na-ion battery. This battery is targeting to reach the EGD's goals for introducing of affordable large-scale energy storage technology. The specific objectives are: (i) to understand the reactions at the electrode surfaces that currently prevent achieving the theoretical capacity; (ii) to exploit this knowledge to facilitate the elaboration of high-performance electrodes; (iii) to integrate the surfacemodified electrodes into a full Na-ion battery;

(iv) to maximise the impact of the project beyond the Na-ion batteries. The most innovative output is the MASTER database, by which the lead candidates as electrodes will be selected. The consortium comprises multidisciplinary teams from Bulgaria, Spain and Turkey and it covers the full value chain from TRL2 to TRL4.

IP	Institute of General and Inorganic Chemistry at the Bulgarian Academy of Sciences. Bulgaria
Socios	España, Turquía
Presupuesto total	499.322 €
Concedido ES	145.200 €

PROYECTO 28 MUST. Materials for Ultraefficient chiral SpinTronics

Today, information and communication technologies (ICT) consume over 10% of global energy, with a rapidly increasing trend for the next decades. We urgently need mitigation plans to reduce this toll, and one effective approach consists in developing energy-efficient data storage and computing platforms. MUST aims at exploiting spin-based electronics as an innovative solution to tackle the above issue. In MUST, we will explore and optimize the chiral properties of ultrathin magnetic materials and develop a range of heterostructures and nanometer-scale devices that could lead to novel or improved spintronic concepts. The developed materials and technologies will offer better sustainability, higher energy efficiency, and new functionalities to some of the current ICT products, making a global societal and economic impact. Overall, our efforts will help ease the ever-increasing energy demand in ICT and help Europe maintain its steering wheel toward the 2050 Green Deal objectives.

IP	Agencia Estatal Consejo Superior de Investigaciones Científicas. España
Socios	Polonia, Turquía
Presupuesto total	450.000 €
Concedido ES	187.550 €

PROYECTO 31 NANOFIB. Targeted nanomedicine to reverse fibrosis in ischemic cardiomyopathies

The project NANOFIB focused on the understanding of the electrospinning process, the creation of polymer fibres of nanometer diameters from liquid solution filaments that get stretched and dry in a strong electric field. For this the project investigated in detail the breaking dynamics of liquid filaments, in particular what causes a sufficient stabilisation of such a complex solution jet, so that it does not simply disintegrate into droplets as, for example, water would do. Throughout the project several mechanisms have been identified, just to name a few: viscous stresses, viscoelasticity and the relaxation time and extensibility of a polymer, but also the interfacial properties of the liquid nanofilaments or the embedding of nanoparticles.

IP	Universidad de Navarra. España
Socios	Israel, Polonia

Presupuesto total	1.049.405 €
Concedido ES	281.930 € (Universidad de Navarra 124.630 €) y (Institut de Recerca De L Hospital de La Santa Creu I Sant Pau 157.300 €)

PROYECTO 32 NAN04ZOMBIE. Senolytic nanoplatform to target and eliminate skin cancer zombie cells

The ‘Nano4zombie’ project, which aims to develop an innovative therapeutic approach for the elimination of senescent tumour cells using a multifunctional nanoplatform based on magnetic nanoparticles (MNP). Throughout life, ultraviolet radiation or treatments such as radiotherapy and chemotherapy can cause cells to age prematurely, causing them to stop dividing but not die, known as premature cell senescence. These cells become “zombie” cells that stop “functioning properly”. Over time, large numbers of aged or senescent cells accumulate in the body’s tissues. Resistant to cell death, they may contribute to tissue ageing or promote tumour recurrence, metastasis or drug resistance. Therefore, elimination of senescent cancer cells represents a novel and promising anti-cancer strategy.

IP	Universidad de Zaragoza. España
Socios	Polonia, Letonia
Presupuesto total	1.135.474 €
Concedido ES	254.100 €

PROYECTO 33 PECLABEL. Plasmonic electrochromic materials form dual-band vis-nir-smart labelling

The PECLABEL (Plasmonic ElectroChromic Materials for Dul-Band VIS-NIR Smart LABELing) project aims to develop an innovative technology of smart electrochromic labelling for intelligent packaging and other electronics-related applications based on inorganic metal oxide nanomaterials. PECLABEL relies on strongly innovative and ambitious concepts and approaches, sustaining responsible research, designing and characterising novel functional materials for smart energy- and electronic-related applications. As an overall approach, PECLABEL will build on a new generation of metal-oxide-based plasmonic nanomaterials for the conceptual design of VIS-NIR dual-band, spectrally selective EC display and labelling materials, surfaces and devices.

IP	University of Liège. Bélgica
Socios	Francia, España, Finlandia
Presupuesto total	1.486.905 €
Concedido ES	169.400 €

PROYECTO 34 NANOCANDI. Advanced functional nanomaterials for precise cancer diagnosis

NanoCANDi develops new functional materials and biosensing microtechnology for cancer diagnosis. The project designs and manufactures large magnetic moment nanostructures with unique spin configurations for biomedical applications, specifically optimized for ultra-high sensitive giant magnetoresistance biosensors by micromagnetic modelling of both nanostructures

and sensors. It addresses a key strategy in the fight against cancer: the early-stage detection of the disease. A crucial feature in this strategy is the specific biorecognition of cancer indicators. NanoCANDi undertakes this key point creating exclusive aptamers for a precise immobilization of cancer biomarkers, developing an innovative aptakiss/aptaswitch selection approach. The project expands new M-ERA.NET Call 2022 21 technologies and materials, producing biosensing devices that will impact the healthcare system with the adoption of precise medicine, letting physicians to detect and monitor treatments with reliable and affordable biochips.

IP	Universidad del País Vasco. España
Socios	Francia, Brasil
Presupuesto total	872.172 €
Concedido ES	291.610 € (Universidad del País Vasco 217.800 €) y (Agencia Estatal Consejo Superior de Investigaciones Científicas-CSIC 73.810 €)

PROYECTO 44 TOP-CRETE. Novel bendable thermoplastic rebars for improved durability and sustainability of concrete structures

Rationale / Needs to be addressed: Novel and recyclable composite reinforcement is needed to design and build highly durable structures with high mechanical performance and a longer service life, as well as to reduce the current high cost of corrosion and contribute to sustainability and circular economy. Objectives: Development of a bendable, durable and recyclable embedded thermoplastic (TP) fibre reinforced polymer (FRP) reinforcement for a new concept of highly durable and high-performance reinforced concrete (RC) structures. Potential applications: Structural application of TP FRP reinforcement in concrete structures. Impact and potential benefits: Optimization of TP FRP composition and production process, and development of recycling approaches, demonstration of their structural use and development of design guidelines for TP FRP RC structures. Significant savings in production with less primary materials and a change in the supply chain model.

IP	Universitat Politècnica de Catalunya. España
Socios	Francia, República Checa, Italia
Presupuesto total	1.263.809 €
Concedido ES	217.800 €

ECSEL - Electronic Components and Systems for European Leadership Joint Undertaking

ECSEL es una asociación entre los sectores público y privado para promover el estado del arte en componentes y sistemas electrónicos. Los componentes y sistemas electrónicos (ECS) son una tecnología habilitadora clave generalizada que afecta a todas las ramas industriales y a casi todos los aspectos de la vida. Un teléfono inteligente, una tarjeta inteligente, una red de energía inteligente, una ciudad inteligente, incluso una gobernanza inteligente; todo lo "inteligente" se basa en la integración de chips semiconductores que ejecutan software integrado. Proporcionan el tejido sobre el que se ejecuta Internet; dan vida a teléfonos portátiles y tabletas; conducen coches y trenes sin conductor, vuelan aviones, drones y satélites. En los tiempos modernos, ninguna economía nacional puede ganar en la competencia global sin dominar esta tecnología, con un impacto sistémico y estratégico incomparable.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales: 11 (2014-1, 2014-2, 2015-1, 2015-2, 2015-1, 2016-2; 2017-1; 2017-2; 2018-1; 2018-2; 2019)

Participación de MINECO en convocatorias conjuntas: 9 (2015-1, 2016-1; 2017-1; 2017-2; 2018-1; 2018-2; 2019)

CONVOCATORIA CONJUNTA ECSEL-2014-1 RESEARCH AND INNOVATION ACTIONS (RIA)

Países participantes (geometría variable)	Austria, Bélgica, Bulgaria, República Checa, Dinamarca, Finlandia, Francia, Alemania, Grecia, Hungría, Irlanda, Israel, Italia, Letonia, Países Bajos, Noruega, Polonia, Portugal, Rumanía, Eslovaquia, España, Reino Unido
Presupuesto total	33.000.000 €
Concedido ES	€
Proyectos aprobados	12
Proyectos financiados pro MINECO	3(1 coordinado)

Nº.	Acrónimo y título del proyecto	Países participantes
1	3Ccar. Integrated Components for Complexity Control in Affordable Electrified Cars	Alemania, Austria, Bélgica, República Checa, España, Finlandia, Francia, Italia, Letonia, Lituania, Países Bajos, Rumanía, Taiwán, Reino Unido.
2	EXIST. Extended Image Sensing Technologies	Bélgica, Países Bajos, Grecia, Finlandia.

3	MANTIS. Cyber Physical System based Proactive Collaborative Maintenance	España , Finlandia, Dinamarca, Bélgica, Países Bajos, Portugal, Italia, Austria, Reino Unido, Hungría, Eslovenia, Alemania, Dinamarca.
4	OSIRIS	Francia , Noruega, Suecia, Eslovaquia
5	RobustSENSE. Robust and Reliable Environment Sensing and Situation Prediction for Advanced Driver Assistance Systems and Automated Driving	Alemania , Austria, España, Italia, Finlandia.
6	SWARMS. Smart and Networking Underwater Robots in Cooperation Meshes	España , Alemania, Noruega, Francia, Portugal, Suecia, Países Bajos, Rumania, Turquía, Italia
7	ADMONT. Advanced Distributed Pilot Line for More-than-Moore Technologies	
8	InForMed. An Integrated Pilot line for Medical Micro-Fabricated Devices	Países Bajos , Bélgica, Finlandia, Francia, Alemania, Gran Bretaña, Irlanda, España, Suecia, Suiza
9	PowerBase. Enhanced substrates and GaN pilot lines enabling compact power applications	Austria , Bélgica, Alemania, Italia, Noruega, Eslovaquia, España, Reino Unido, Países Bajos
10	R2POWER300	
11	SeNaTe. Seven Nanometer Technology	
12	WAYTOGO FAST. Which Architecture Yields Two Other Generations of Fully-depleted Advanced Substrates and Technologies	Francia , España, Alemania, Austria, Israel, Países Bajos, Bélgica, Finlandia, Reino Unido, Grecia

CONVOCATORIA NACIONAL APCIN 2014

PROYECTO 1 SWARMS. Smart and Networking UnderWater Robots in Cooperation Meshes

The SWARMS project aims to solve this problem by extending the use of unmanned underwater vehicles (AUVs, ROVs). This will be achieved by enabling them to collaborate in a cooperative mesh, thus increasing the reliability of operations, by combining their functionalities and doing new applications feasible. SWARMS will increase the autonomy of AUVs and improve the usability of ROVs by introducing new operator assistance functions for intuitive control. This will substantially reduce training times for operators which nowadays take up to five years. In contrast to present day subsea machinery, SWARMS allows seamless integration of new robots from different manufacturers.

IP	Universidad Politécnica de Madrid (UPM), España
Socios	España (Consortio para el diseño, la construcción, equipamiento y explotación plataforma oceánica Canarias, ACCIONA Infraestructuras, IXION Industry and

	Aerospace SL, Fundación TECNALIA Research & Innovation, TTI Norte S.L., HI IBERIA Ingeniería y Proyectos SL), Alemania (Robert Bosch GMBH, Evologics GMBH), Francia (ECA ROBOTICS, Office National d'etudes et de Recherches Aérospatiales, THALES SA), Portugal (Greensphere Unipessoal LDA, Instituto de Telecomunicacoes, Universidade de Aveiro), Noruega (STIFTELSEN SINTEF, Norges Teknisk-naturvitenskapelige Universitet NTNU, Maritime Robotics AS, INVENTAS AS, WATER LINKED AS), Suecia (Deepvision AB, Maelardalens Hoegskola), The Netherlands (TNO, Science and Technology B.V.), Rumanía (Teamnet World Professional Services SRL, Autonomous Systems SRL), Turquía (Desistek Robotik Elektronik Yazilim arGe uretim Danismanlik Ithalat ihracat ticaret limited sirketi, Sabanci University), Italia (Whitehead Sistemi Subacquei SPA, Scuola Superiore di Studi Universitari e di Perfezionamento Sant'Anna)
Concedido ES	354.600 € + 232.080 € = 586.680 €

PROYECTO 2 PowerBase. Enhanced substrates and GaN pilot lines enabling compact power applications

Ensure the availability of Electronic Components and Systems (ECS) for key markets and for addressing societal challenges, aiming at keeping Europe at the forefront of the technology development, bridging the gap between research and exploitation, creating economic and employment growth in the European Union. The project PowerBase aims to contribute to the industrial ambition of value creation in Europe and fully supports this vision by addressing key topics of ECSEL multi annual strategic plan 2014. By positioning PowerBase as innovation action a clear focus on exploitation of the expected result is primary goal.

IP	Infineon Technologies Austria AG (IFAT), Austria
Socios	Austria (IFAT, Plansee SE, Fronius Int. GmbH, Kompetenzzentrum Automobil – und Industrieelektronik GmbH, ams AG, CISC Semiconductor GmbH, Universität Graz, BESI Austria GmbH, Carinthian Tech Research AG), Bélgica (Interuniversitair Micro-Electronica Centrum, Epigon NV), Alemania (Infineon Technologies AG, Osram Opto Semiconductors, SILTRONIC AG, PacTech - Pckaging Technologies GmbH, Baumann GmbH, NanoFocus AG, Fraunhofer Gesellschaft zur Förderung der Angewandten Forschung, Max Planck Institut für Eisenforschung GmbH, Infineon Technologies Dresden GmbH, NaMLab GmbH, Freibereger Compound Materials GmbH, Technische Universität Dresden, HAP Handhabungs- Automatisierung- und Prazisionstechnik GmbH Dresden), Italia (Universita degli Studi di Padova, Infineon Technologies Italia Srl), Noruega (Eltek AS, Universiteteti Oslo), Eslovaquia (Slovenska Technicka Univerzita Bratislave, Nano Design SRO), España (Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC), For Optimal Renewable Energy Systems S.L, Ikerlan S. Coop., Greenpower Technologies S.L.), Reino Unido (Quantemol Limited, SPTS Technologies Ltd, Memsstar Limited, University of Bristol), Países Bajos (BESI Netherlands BV, Trymax Semiconductor Equipment BV)
Concedido ES	155.000 €

CONVOCATORIA NACIONAL APCIN 2015

PROYECTO 1 WAYTOGO FAST. Which Architecture Yields Two Other Generations of Fully-depleted Advanced Substrates and Technologies.

The pilot-line WAYTOGO FAST will leverage Europe's leadership in Fully Depleted Silicon on Insulator technology (FDSOI*) so as to compete through a leading-edge technology offer at the 14nm node and beyond, as well as prepare the future nodes' transistor architecture.

IP	Gilles Thomas, STMICROELECTRONICS S.A., Francia
Socios	Francia (STMicroelectronics S.A, CEA, S.O.I.TEC Silicon On insulator Technologies SA, CNRS, Applied Materials France Sarl, Institut Polytechnique de Grenoble, Lam Research SAS, Tokyo Electron Europe Limited), España (Universidad de Granada) , Alemania (SILTRONIC AG, Globalfoundries Dresden Module One LLC & Co. KG, Dainippon Screen Deutschland GmbH, HSEB Dresden GmbH, BRUKER AXS GMBH, FUJITSU semiconductor Europe GMBH, ALCATEL-LUCENT Deutschland AG, Fraunhofer-Gesellschaft zur Foerderung der Angewandten Forschung E.V., SONY Deutschland GMBH, MUNEDA GmbH, HQ-Dielectrics GmbH), Austria (LAM Research AG, EV GROUP E. THALLNER GMBH, GLOBAL TCAD SOLUTIONS GMBH), Israel (KLA-TENCOR Corporation, Nova Measuring Instruments Ltd.), Países Bajos (FEI Electron Optics BV, PRODRIVE BV), Bélgica (Universite Catholique de Louvain), Finlandia (PICOSUN OY), Reino Unido (Gold Standard Simulations Ltd), Grecia (Integrated Systems Development S.A.)
Concedido ES	120.000 €

PROYECTO 2 INFORMED. A pilot line for micro-fabricated medical devices enabling optimal use of the techonologes and competencies available in Europe

Resumen: In the InForMed project an integrated pilot line for medical devices will be established, covering the complete innovation chain from technology concept to system qualification. It will include micro-fabrication, assembly and even the fabrication of smart catheters. Uniquely, the integrated pilot line is hosted by a large industrial end-user, and is specifically targeted and equipped to bridge the gap in the landscape of micro-fabrication of medical devices between concept creation and full-scale production. 39 Partners from 10 countries participate in the project to form manufacturing networks and an eco-system where new medical devices van be seeded and nurtured to grow into new business opportunities for Europe, in a time when there is a paradigm shift from large expensive diagnostic equipment towards small, disposable, minimal invasive and un-obtrusive diagnostic and therapeutic instruments and tools. The Pilot line will be demonstrated by six demonstrator products which cover traditional, emerging, and entirely new market segments, in the domains of "Hospital and Heuristic Care as well as "Home Care and Well-being," and that demonstrate the trend towards "Smart Health" solutions.

IP	Sieger Swaving, Philips Electronics Nederland, Países Bajos
Socios	Países Bajos, Bélgica, Finlandia, Francia, Alemania, Gran Bretaña, Irlanda, España (Universidad de Zaragoza) , Suecia, Suiza
Concedido ES	122.000 €

CONVOCATORIA CONJUNTA H2020-ECSEL-2015-1-RIA- RESEARCH AND INNOVATION ACTIONS

Proyectos aprobados: 8

Proyectos aprobados con participación española: 2 (un proyecto coordinado)

No.	Acrónimo y título del proyecto	Países participantes
1	3DAM. 3D Advanced Metrology and materials for advanced devices	Países Bajos
2	AMASS. Architecture-driven, Multi-concern and Seamless Assurance and Certification of Cyber-Physical Systems	España , República Checa, Austria, Alemania, Países Bajos, Italia, Suecia, Reino Unido
3	ASTONISH. Advancing Smart Optical Imaging and Sensing for Health	Países Bajos , Italia, Finlandia, España, Bélgica, República Checa
4	DELPHI4LED. From Measurements to Standardized Multi-Domain Compact Models of LEDs	Países Bajos
5	DENSE. aDverse wEather eNvironmental Sensing systEm	Alemania
6	PRIME. Ultra-Low PowerR technologies and MEMory architectures for IoT	Bélgica
7	REFERENCE. Rf Engineered substrates to FostER fEm performaNCE	Francia
8	SafeCOP. Safe Cooperating Cyber-Physical Systems using Wireless Communication	Suecia

CONVOCATORIA CONJUNTA H2020-ECSEL-2015-2-IA-TWO-STAGE - INNOVATION ACTIONS (IA)

Proyectos aprobados: 5

Proyectos aprobados con participación española: 3

No.	Acrónimo y título del proyecto	Países participantes
1	ENABLE-S3. European Initiative to Enable Validation for Highly Automated Safe and Secure Systems	Alemania , Bélgica, Países Bajos, Dinamarca, Reino Unido, España, Francia, Austria, Finlandia, Irlanda, República Checa
2	EnSO. Energy for Smart Objects	Francia , Países Bajos, Dinamarca, España , Bélgica, Alemania, República Checa, Suiza
3	IoSense. Flexible FE/BE Sensor Pilot Line for the Internet of Everything	Alemania , Países Bajos, España, Austria, Bélgica, Eslovaquia
4	Semi40Power. Semiconductor and Electronics Manufacturing 4.0	Austria
5	TAKE5. Technology Advances and Key Enablers for 5 nm	Países Bajos

CONVOCATORIA NACIONAL APCIN 2015

PROYECTO 1 IOSENSE. Flexible FE, BE Sensor Pilot Line for the Internet of Everything

Aim of IoSense is to boost the European competitiveness of ECS industries, by establishing three fully connected semiconductor Pilot Lines in Europe: two 200mm frontend (Dresden and Regensburg) and one Backend (Regensburg) pilot lines will be facilitated to enable the production of innovative sensor system components. Focus will be on the availability of top innovative, competitive sensors and sensor systems “Made in Europe” for applications in Smart Production, Society, Mobility and Health.

IP	Norbert Thyssen, Infineon Technologies Dresden GMBH, Alemania
Socios	Alemania (Infineon Technologies Dresden GMBH, Bernitz Electronics GmbH, Dr. Födisch Umweltmesstechnik AG, Fraunhofer Gesellschaft zur Förderung der Angewandten Forschung EV, IMA Materialforschung Und Anwendungstechnik GMBH, Technische Universitaet Dresden, XENON Automatisierungstechnik GmbH), Países Bajos (Advanced Packaging Center BV, Boschman Technologies BV, Philips Lighting B.V., Technische Universiteit Delft), España (Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC) , Centre Tecnologic de Telecomunicacions de Catalunya, Fundación Tecnalia Research & Innovation, Integrasys SA, IQUADRAT Informatica SL, Ixion Industry and Aerospace SL, Thales Alenia Space Espana, SA), Austria (Austrian Institute of Technology GmbH, AMS AG, ANDRITZ AG, CTR Carinthian Tech Research AG, Forschung Burgenland GmbH, Infineon Technologies Austria AG, Materials Center Leoben Forschung GmbH, Technische Universitaet Graz, Universitaet Klagenfurt, Kompetenzzentrum - Das Virtuelle Fahrzeug, Forschungsgesellschaft mbH), Bélgica (Interuniversitair Micro-Electronicacentrum Imec VZW), Eslovaquia (Powertec SRO, Slovenska Technicka Univerzita V Bratislave)
Concedido ES	148.000 € + 175.000 € = 323.000 €

CONVOCATORIA NACIONAL APCIN 2015-2

PROYECTO 2 ENABLE-S3. European Initiative to Enable Validation for Highly Automated Safe and Secure Systems

ENABLE-S3 will pave the way for accelerated application of highly automated and autonomous systems in the mobility domains automotive, aerospace, rail and maritime as well as in the health care domain. Virtual testing, verification and coverage-oriented test selection methods will enable validation with reasonable efforts. The resulting validation framework will ensure Europeans Industry competitiveness in the global race of automated systems with an expected market potential of 60B€ in 2025. Project results will be used to propose standardized validation procedures for highly automated systems (ACPS).

IP	Michael Paulweber, AVL List GmbH, Alemania
Socios	Alemania, Bélgica, Países Bajos, Dinamarca, Reino Unido, España, Francia, Austria, Finlandia, Irlanda, República Checa
Concedido ES	137.000 € + 137.000 € = 274.000 €

PROYECTO 3 ASTONISH. ADVANCING SMART OPTICAL IMAGING AND SENSING FOR HEALTH

The ageing population and related increase in chronic diseases put considerable pressure on both the healthcare system and the society, resulting in an unsustainable rise of healthcare costs. As a result there is an urgent need to improve efficiency of care and reduce hospitalisation time in order to control cost and increase quality of life. Addressing this need, medical applications need to become less invasive and improve disease detection, diagnosis and treatment using advanced imaging and sensing techniques. ASTONISH will deliver breakthrough imaging and sensing technologies for monitoring, diagnosis and treatment applications by developing smart optical imaging technology that extends the use of minimally invasive diagnosis and treatment and allows for unobtrusive health monitoring.

IP	Robert Hofsink, Philips Healthcare, Países Bajos
Socios	Países Bajos (Eindhoven University of Technology, Philips Research, Quest Medical Imaging, Anteryon, Kempenhaeghe, NKI, LUMC), Italia (STMicroelectronics, University Chieti Pescara, University of Palermo, CNR-IMM), Finlandia (VTT, Revenio, Okmetic), España (Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC), GTEC, NorayBio, Tecnalía, Ibermática, Universidad del País Vasco), Bélgica (IMEC), República Checa (Brno University, IMA)
Concedido ES	128.000 € + 128.000 € = 256.000 €

PROYECTO 4 ENSO. Energy for Smart Objects

The goal of EnSO is to develop and consolidate a unique European ecosystem in the field of autonomous micro energy sources (AMES) supporting Electronic European industry to develop innovative products. EnSO multi-KET objectives are: to demonstrate the competitiveness of EnSO energy solutions of the targeted Smart Society, Smart Health, and Smart Energy key applications; to disseminate EnSO energy solutions to foster the take-up of emerging markets; to develop high reliability assembly technologies of shapeable micro batteries, energy harvester and power management building blocks; to Develop and demonstrate high density, low profile, shapeable, long life time, rechargeable micro battery product family; to develop customizable smart recharge and energy harvesting enabling technologies for Autonomous Micro Energy Source “AMES”; and to demonstrate EnSO Pilot Line capability and investigate and assess the upscale of AMES manufacturing for competitive very high volume production.

IP	Franck Dosseul, Stmicroelectronics (Tours) SAS, Francia
Socios	Francia, Países Bajos, Dinamarca, España (Agencia Estatal Consejo Superior de Investigaciones Biológicas (CSIC), Bélgica, Alemania, República Checa, Suiza
Concedido ES	146.000 €

PROYECTO 5 AMASS. Architecture-driven, Multi-concern and Seamless Assurance and Certification of Cyber-Physical Systems

Embedded systems have significantly increased in technical complexity towards open, interconnected systems. This has exacerbated the problem of ensuring dependability in the presence of human, environmental and technological risks. The rise of complex Cyber-Physical Systems (CPS) has led to many initiatives to promote reuse and automation of laborintensive activities. Two large-

scale projects are OPENCOSS and SafeCer, which dealt with assurance and certification of software-intensive critical systems using incremental and model-based approaches. OPENCOSS defined a Common Certification Language (CCL), unifying concepts from different industries to build a harmonized approach to reduce time and cost overheads, via facilitating the reuse of certification assets. SafeCer developed safety-oriented process lines, a component model, contract-based verification techniques, and process/ product-based model-driven safety certification for compositional development and certification of CPSs. AMASS will create and consolidate a de-facto European-wide assurance and certification open tool platform, ecosystem and self-sustainable community spanning the largest CPS vertical markets. We will start by combining and evolving the OPENCOSS and SafeCer technological solutions towards end-user validated tools, and will enhance and perform further research into new areas not covered yet.

IP	Huáscar Espinoza, Tecnalia, España
Socios	España (Universidad Carlos III), República Checa, Austria, Alemania, Países Bajos, Italia, Suecia, Reino Unido
Concedido ES	142.000 €

CONVOCATORIA CONJUNTA 2016

No.	Acrónimo y título del proyecto	Países participantes
1	EuroPAT-MASIP	
2	MICROPRINCE	
3	Productive4.0	Dinamarca, Alemania, Francia, Austria, Hungría, Bélgica, España, Polonia, Suecia, Italia, Finlandia, Portugal, Grecia, Noruega, República Checa, Irlanda, Luxemburgo, Turquía, Países Bajos
4	R3-PowerUP	Italia, Alemania, Bélgica, Austria, República Checa, Finlandia, Polonia, Rumanía, España, Irlanda, Francia
5	SCOTT. Secure Connected Trustable Things	Austria, España, Finlandia, Irlanda, Suecia, Alemania, Polonia, Portugal, Países Bajos, Bélgica, Noruega
6	TAKEMI5	
7	AutoDrive. Highly and fully automated driving for safer, efficient, affordable and user-friendly future mobility	
8	TARANTO	
9	SILENSE	
10	WInSiC4AP	
11	I-MECH	

12	CONNECT. Innovative smart components, modules and appliances for a truly connected, efficient and secure smart grid	Alemania, Eslovaquia, Países Bajos, España, Italia
13	AQUAS	
14	MegaMaRt2. An scalable model-based framework for continuous development and runtime validation of complex systems	República Checa, España, Francia, Italia, Finlandia, Suecia

CONVOCATORIA APCIN 2017

PROYECTO 3 PRODUCTIVE 4.0

Productive4.0 is an ambitious holistic project addressing all domains of the Digital Industry, thus comprising the complete range of Industry 4.0. The consortium consists of over 100 partners and specialists which range amongst the best in Europe. The project is based on an efficient interaction between the different work packages. The inputs of all partners with their specific roles will be clustered. Results will be delivered according to a rules descriptions and roadmaps. Over a period of three years and two innovation cycles the different activities of the entire project will be synchronized by eight milestones. A final review will round up the whole project. The Productive4.0 innovation project will open the gate to the potentials of Digital Industry. Means of electronics and ICT across the entire value chain will be the key to enhanced production efficiency and significant gains. They will make production more predictable and flexible, change business models, and be the basis for more qualified employment. The digital transformation will be indispensable for maintaining a leadership position of the industries in Europe.

IP	Knut Hufeld INFINEON TECHNOLOGIES AG, Alemania
Socios	Dinamarca, Alemania, Francia, Austria, Hungría, Bélgica, Polonia, Suecia, Italia, Finlandia, Portugal, Grecia, Noruega, República Checa, Irlanda, Luxemburgo, Turquía, Países Bajos, España (Asociacion de Empresas Tecnologicas Innovalia, Bosonit SL, Engine Power Components Group Europe SL, Ideko S. Coop. (IK4-Ideko), MONDRAGON ASSEMBLY, S. Coop., Mondragon Sistemas De Informacion Sociedad Cooperativa, Mondragon Goi Eskola Politeknikoa Jose Maria Arizmendiarrieta S. Coop., Savvy Data Systems SL, Trimek S.A., ULMA Embedded Solutions, S. Coop., DANOBAT)
Concedido ES	175.000 €

PROYECTO 4 R3- POWERUP

R3-POWERUP will establish the first 300mm Pilot Line in Europe for Smart Power and discrete power devices featuring 90nm lithography for high-density logic, analogue and power devices and embedded Non Volatile Memories for the realization of complex Systems-on-Chip. As such, it will fill the existing gap in the availability of 300mm Pilot Lines in Europe, which covers only Logic CMOS and discrete power devices.

IP	Roberto Zafalon, STMICROELECTRONICS S.R.L, Italia
Socios	Italia (Politecnico di Torino, Consorzio Nazionale per la Nanoelettronica, Università di Pisa, Università di Pavia, Consiglio Nazionale delle Ricerche), Alemania (Robert Bosch GMBH, KLA-Tencor MIE GmbH, DISCO HI-TEC EUROPE GMBH, SILTRONIC AG, AP&S International GMBH, Ancosys GMBH, Atotech Deutschland GMBH),

	Bélgica (ICOS VISION SYSTEMS NV), Países Bajos (ASM Europe BV, Advanced Packaging Center BV,), Austria (Besi Austria GMBH, EV GROUP E. THALLNER GMBH), Eslovaquia (Slovenska Technická Univerzita v Bratislave, Nanodesign SRO), Finlandia (PICOSUN OY), República Checa (IMA S.R.O., VYSOKÉ Učení Technické V BRNE), Polonia (Instytut Technologii Elektronowej, Automatix Spolka Z Ograniczona Odpowiedzialnoscia), Rumanía (Universitatea Politehnica din Bucuresti), España (Greenpower Technologies, Universidad de Sevilla) , Irlanda (Applied Materials), Israel (Nova Measuring Instruments LTD), Francia (SOITEC SA, Lam Research SAS, Laser Systems & Solutions of Europe)
Concedido ES	175.000 €

PROYECTO 5 SCOTT. Secure Connected Trustable Things

SCOTT will significantly impact the European Union to achieve the full potential of the IoT. It will establish the EU as a centre of leading, trusted, user (citizen) friendly, secure, and reliable IoT ecosystems enabled by a strong industry with a strong reputation and an informed society to enable products and services based on IoT compliant to European values. The project's consortium will intensely cooperate with different working groups of AIOTI, the Alliance for the Internet of Things Innovation, as well as numerous national cluster associations. It aims to facilitate the worldwide uptake of "European Technology" and infrastructure with the goal to earn an international reputation for secure, smart, and privacy-aware wireless solutions. Additionally, it will strengthen Europe's IoT industry by demonstrating wireless solutions which allow third parties – in particular start-up companies – to develop IoT applications faster in an open innovation based approach to increase societal benefits.

IP	Michael Karner, VIRTUAL VEHICLE Research Center, Austria
Socios	Austria, Bélgica, Brasil, Finlandia, Alemania, Irlanda, Países Bajos, Noruega, Polonia, España (Acciona Infraestructuras S. A., IK4-Tekniker, Indra Sistemas SA, IntegraSys, Instituto Tecnológico de Informática, JIG Internet Consulting, Mondragon Goi Eskola Politeknikoa JMA S. Coop., Tecnalia Research and Innovation, Universidad Politécnica de Madrid (UPM), Suecia
Concedido ES	175.000 € + 175.000 € = 350.000 €

PROYECTO 7 AUTODRIVE. Highly and fully automated driving for safer, efficient, affordable and user-friendly future mobility

AutoDrive will provide fail-aware, fail-safe, and fail-operational integrated electronic components, Electrical/Electronic (E/E) architectures as well as (deeply) embedded software systems for highly and fully automated driving to make future mobility safer, more efficient, affordable, and end-user acceptable. Advancing towards fail-operational systems will require increased reliability and availability of components, new redundancy schemes as well as architectures, and methodologies to appropriately manage and balance complexity, cost, robustness, and flexibility. The AutoDrive project will advance the current level of safety and reliability by considerably driving forward fail-operational technologies and by making use of safety and security concepts from the aviation domain. Consequently, AutoDrive will significantly contribute to the grand societal challenge of increasing vehicle and road safety.

Concedido ES	174.900 €

PROYECTO 12 CONNECT. Innovative smart components, modules and appliances for a truly connected, efficient and secure smart grid

CONNECT aims to research, design, develop and showcase novel solutions for efficient devices and components of the future smart grid, in order to reduce the peak power demand by at least a factor of two. The solutions will include techniques for the reduction of power fluctuations of the grid over time and for reduction of power consumption and losses.

CONNECT works on smart grid solutions for buildings, cooperation of buildings and local micro-grids at the low voltage supply level (yellow) up to the connection point to medium voltage distribution level (orange) including communication infrastructure.

IP	Holger Schmidt, Infineon Technologies AG, Alemania
Socios	Alemania (NXP Semiconductors Germany GmbH, Friedrich Alexander Universität Erlangen, Rheinisch-Westfälische Technische Hochschule Aachen, Devolo AG, Mixed Mode GmbH); Eslovaquia (Slovenska Technická Univerzita v Bratislave, R-DAS SRO), Países Bajos (Enexis BV, Technische Universiteit Eindhoven, HELIOX BV, GreenFlux Assets BV), España (Asociación Acondicionamiento Terrasense, Centro Tecnológico de Telecomunicaciones de Cataluña, Iquadrat Informatica SL) , Italia (STMicroelectronics SRL, ENEL SPA, Consorzio Nazionale Interuniversitario per la Nanoelettronica, University of Bologna, University of Ferrara, University of Padova, University of Pisa, Politecnico de Bari)
Concedido ES	175.000 €

PROYECTO 14 MegaM@Rt. An scalable model-based framework for continuous development and runtime validation of complex systems

MegaM@Rt will create a framework incorporating methods and tools for continuous development and validation. It will leverage the advantages in scalable model-based methods to provide benefits in significantly improved productivity, quality and predictability of large and complex industrial systems. Significantly increased productivity and quality of system development and shorten time-to-market for complex systems; Reinforced European scientific and technological leadership in the design of complex systems; and Improved competitiveness of European companies by reducing design and maintenance costs as well as the time-to-market.

IP	Gunnar Widforss, MÄLARDALEN UNIVERSITY, Suecia
Socios	República Checa (Brno University of Technology, CAMEA, spol. s r.o.), España (Atos Spain S.A, Universidad de Cantabria, Universitat Oberta de Catalunya, IKERLAN S. Coop., Fent Innovative Software Solutions) , Francia (Softteam Thales, ClearSy System Engineering, ARMINES, Université de Pau et des Pays de l'Adour, Smartesting Solutions & Services), Italia (Tekne Industry, Università degli Studi dell'Aquila, Intecs Solutions SpA, Ro Technology srl), Finlandia (Åbo Akademi University, AinaCom Oy, Space Systems Finland Ltd., Nokia Networks, VTT Technical Research Centre of Finland, Conformiq Software Oy), Suecia (SICS Swedish ICT Västerås AB, Volvo Construction Equipment AB, Bombardier Transportation Sweden AB)
Concedido ES	117.906 € + 162.900 € = 280.806 €

CONVOCATORIA CONJUNTA 2017-1

Países participantes	Austria, Bélgica, Alemania, Finlandia, Francia, Hungría, Irlanda, Israel, Italia, Letonia, Noruega, Países Bajos, Polonia, Rumanía, Eslovaquia, España, República Checa, Suecia, Turquía
Temáticas	Innovation Actions (IA)
Presupuesto total	92.5 M € (UE)
Concedido ES	656.000 €
Proyectos aprobados	6
Proyectos con ES	3

No.	Acrónimo y título del proyecto	Países participantes
1	iDev40. Integrated Development 4.0	Austria, Alemania, Bélgica, Italia, España, Rumanía
2	WAKeMeUP. Wafers for Automotive and other Key applications using Memories, embedded in Ulsi Processors	Francia, Alemania, República Checa, España, Turquía
3	OCEAN12. Opportunity to Carry European Autonomous driving further with FDSOI technology up to 12nm node	Francia, Alemania, Austria, Portugal, Israel, España, Polonia
4	TAPES3. Technology Advances for Pilotline of Enhanced Semiconductors for 3nm	Países Bajos, Bélgica, Israel, Alemania, Francia, Bélgica, Austria, Reino Unido, Suiza
5	REACTION. First and euRoPEAn siC eigTh Inches piLOt liNe	Italia, Suiza, Alemania, Bélgica, Suecia, Austria, Rumanía, Eslovaquia, Francia, Reino Unido, Polonia, España, Israel, Irlanda
6	POSITION-II. A pilot line for the next generation of smart catheters and implants	Países Bajos, Francia, Finlandia, Alemania, Suiza, Irlanda, Suecia, Portugal, España, Bélgica, Hungría, Italia

CONVOCATORIA NACIONAL APCIN 2018

PROYECTO 2 WAKeMeUP. Wafers for Automotive and other Key applications using Memories, embedded in Ulsi Processors

WAKeMeUP will set-up a pilot line for advanced microcontrollers with embedded non-volatile memory, and design and manufacturing for the prototyping of many innovative applications. Driven by the requirements of demanding end applications, especially for decreasing the power consumption, the project will target the industrialisation of the embedded Phase Change Memory (ePCM) technology built on top of the FDSOI 28nm logic process pilot line. WAKeMeUP will build on the already defined microcontrollers with 40nm embedded flash technology in order to establish a

solid manufacturing platform. Additional developments include the integration of memory, power management, connectivity, strong security on the same chip. To generate high value added semiconductor circuits in Europe using a breakthrough leading edge technology, the project will deploy all necessary activities to bring this new technology to an early industrial maturity stage. These activities include a number of further enhancements, including extended reliability and temperature range (up to 165°C), high security demands, high flexibility, etc., as well as prototyping demonstrators in the different application areas - Smart Mobility and Smart Society.

IP	Dominique GOUBIER, STMicroelectronics Crolles2 SAS, Francia
Socios	Francia (GEMALTO, CEA-LETI, ST-ROU, ST-GRE, ST-LEM, Pfeiffer, CNRS-LTM, ST-SA), Alemania (CONTI, FhG-IPMS, TUDarm, XFAB, MLX), República Checa (UTIA, IMA), Turquía (TUBITAK), España (Universitat Autònoma de Barcelona)
Presupuesto total	96.7M €
Concedido ES	75.000 €

PROYECTO 3 REACTION. first and euRopEAn siC eigTh Inches pilOt line

REACTION will push through the first worldwide 200mm Silicon Carbide (SiC) Pilot Line Facility for Power technology. This will enable the European industry to set the world reference of innovative and competitive solutions for critical societal challenges, like Energy saving and CO₂ Reduction as well as Sustainable Environment through electric mobility and industrial power efficiency. Establishing the first 200mm SiC Pilot Line in the world and developing the most innovative and cost competitive technology, this project will address mass-market applications like smart energy and smart mobility, and industrial. It will allow to meet the more and more increasing demand of requirements in terms of quality and cost constraint for next decade generation's power electronics. The Project strength is the complete Pilot Line value chain implementation, integrating and optimizing partnership in the fields of SiC equipment developers, SiC process technologists, RTOs, and end users partners till the final applications context. This will allow to develop a full 8" SiC line ecosystem enhancing the competitiveness of EU- Industries down to the value chain in a market context where other countries today, such as the USA or Japan, are just starting to play on 6" SiC market.

IP	Angelo Alberto Messina, Stmicroelectronics SRL, Italia
Socios	Italia (Consorzio Nazionale Interuniversitario per la Nanoelettronica, L.P.E. SPA, Università Degli Studi Di Palermo, Consiglio Nazionale Delle Ricerche), Suiza (Evatec AG), Alemania (HQ-Dielectrics GmbH, Disco HI-TEC EUROPE GMBH, II-VI Deutschland GMBH, Centrotherm International AG, Applied Materials GmbH), Bélgica (JSR MICRO NV), Suecia (Mittuniversitetet, Elforest AB), Austria (EV Group E. Thallner GMBH), Eslovaquia (Nano Design SRO, Slovenska Technicka Univerzita V Bratislave), Francia (Lam Research SAS), Reino Unido (Italeaf UK Limited United), Polonia (Instytut Technologii Elektronowej, DACPOL SP. Z O.O.), España (For Optimal Renewable Energy Systems SL, Universidad De Zaragoza, IKERLAN SCL) , Israel (Applied Materials Israel LTD), Irlanda (Applied Materials Ireland Limited), Rumanía (Universitatea Politehnica Din Bucuresti)
Presupuesto total	46.5M €
Concedido ES	154.000 €

PROYECTO 6 POSITION-II. A pilot line for the next generation of smart catheters and implants

The objective of POSITION-II is to bring innovation in the development and production of smart catheters by the introduction of open technology platforms for miniaturization, AD conversion at the tip, ultra-sound MEMS devices and encapsulation. Open technology platforms will generate the production volume that will enable sustainable innovation. The availability of open technology platforms will result in new instruments that have a better performance, new sensing and imaging capabilities, while the scale of volume will result in lower manufacturing costs. The production of the “brains” of these smart catheters will take place in Europe, with many European partners contributing essential technologies. The POSITION-II project will consolidate Europe’s premier position as manufacturer of cath lab infrastructure since these new smart catheters will be seamlessly integrated in the cath lab hardware and software platforms. By combining the different sensing and imaging data a more intuitive cath lab experience will be achieved. Looking forward, POSITION-II prepares the European electronics industry for the next revolution in healthcare, bioelectronics implants. Bioelectronics implants are expected to replace a considerable fraction of traditional medicine by direct stimulation of nerves. The miniaturization and soft encapsulation platforms developed in POSITION-II will be the ideal technology frame work for the manufacturing of these bioelectronics implants. The technology platforms developed in POSITION-II are demonstrated by five challenging product demonstrators covering FRR, IVUS, ICE, EP and cell therapy as well as a bioelectronics implant to treat cluster headache.

IP	Ronald Dekker, Philips Electronics Netherlands BV, Países Bajos
Socios	Países Bajos (Philips Medical Systems Nederland BV, Technische Universiteit Delft, Salvia Bioelectronics B.V., Technische Universiteit Eindhoven, Reden B.V., Catena Holding BV), Francia (Commissariat a l’Energie Atomique et aux Energies Alternatives, Vermon SA, Philips France, Murata Integrated Passive Solutions), Filandia (Okmetic OYJ, Teknologian tutkimuskeskus VTT OY, Afore OY, Aalto-Korkeakoulusaatio), Alemania (Fraunhofer Gesellschaft Zur Foerderung der Angewandten Forschung E.V., Osypka AG, Finetech GmbH & Co. KG, Amic Angewandte Micro-Messtechnik GMBH, Institut Fuer Mikroelektronik Stuttgart, Multi Channel Systems MCS GMBH, Johnson Matthey Piezo Products GmbH, Catena Germany GmbH, 3D-Micromac AG, CORTEC GMBH), Suiza (Dyconex AG), Irlanda (University College Cork - National University of Ireland, Analog Devices International, Brivant Limited, Creganna Unlimited Company), Suecia (Silex Microsystems AB), Portugal (Instituto de Telecomunicacoes, PDM E Fc Projecto Desenvolvimento Manutencao Formacao e Consultadorialda, Inesc ID - Instituto de Engenhariade Sistemas e Computadores, Investigacao e Desenvolvimento em Lisboa), España (Brio Apps Alphasip S.L., Centro de Investigación Biomédica en Red, Cikautxo S Coop, Fundación Centro de Cirugía de Mínima Invasión Jesus Usón, Universidad de Zaragoza, Universidad Complutense de Madrid (UCM), Bélgica (Interuniversitair Micro-Electronica Centrum), Hungría (Magyar Tudományos Akademia Energiatudományi Kutatóközpont, Pazmany Peter Katolikus Egyetem), Italia (Universita Degli Studi Roma Tre, Fondazione Bruno Kessler)
Presupuesto total	41.3M €
Concedido ES	119.000 € + 79.000 € + 111.000 € + 118.000 € = 427.000 €

CONVOCATORIA CONJUNTA 2017-2

Países participantes	Austria, Bélgica, Alemania, Finlandia, Francia, Hungría, Irlanda, Israel, Italia, Letonia, Noruega, Países Bajos, Polonia, Rumanía, Eslovaquia, España, República Checa, Suecia, Turquía
Temáticas	Research and Innovation Actions (RIA)
Presupuesto total	67.5 M€ (UE)
Concedido ES	842.000€
Proyectos aprobados	6
Proyectos con ES	5 (1 coordinado)

No.	Acrónimo y título del proyecto	Países participantes
1	HiPERFORM. High performant Wide Band Gap Power Electronics for Reliable, energy eEfficient drivetrains and Optimization thRough Multi-physics simulation	Austria, España, Bélgica, Alemania, Eslovaquia, Italia, Países Bajos, Eslovenia
2	5G_GaN2. Advanced RF Transceivers for 5G base stations based on GaN Technology	Francia, Alemania, Eslovaquia, Países Bajos, Suecia, Italia, Luxemburgo, Irlanda
3	FITOPTIVIS. From the cloud to the edge - smart IntegraTion and OPTimization Technologies for highly efficient Image and VIdeo processing Systems	Países Bajos, República Checa, Finlandia, España, Italia
4	SECREDAS. Cyber Security for Cross Domain Reliable Dependable Automated Systems	Países Bajos, Austria, Bélgica, República Checa, Alemania, Finlandia, Francia, Hungría, Italia, Polonia, Portugal, Suecia, Reino Unido, Túnez
5	AFarCloud. Aggregate Farming in the Cloud	España, Alemania, Bélgica, Austria, Portugal, Noruega, Suecia, Finlandia, República Checa, Polonia, Letonia, Israel
6	PRYSTINE. Programmable Systems for Intelligence in Automobiles	Alemania, Italia, Países Bajos, Austria, España, Turquía, Israel, Finlandia, Rumanía, Lituania, Bélgica, Letonia, Suecia

CONVOCATORIA NACIONAL APCIN 2018

PROYECTO 1 HiPERFORM. High performant Wide Band Gap Power Electronics for Reliable, energy eEfficient drivetrains and Optimization thRough Multi-physics simulation

The project objective of the project HiPERFORM is based on the investigation of industrial applicability of high-performance semiconductors with wide-band gap materials in the field of Smart Mobility. For this purpose, a holistic approach is selected that includes the entire supply chain – from the manufacturer of semiconductors as well as power modules through suppliers of development methods and tools to the system manufacturer and ultimately the vehicle

manufacturer. The integration of academic partners with a high level of competence in these domains completes this approach. On the other hand, specific requirements for power electronics are addressed in specific application areas, which include both power inverters in the vehicle, electrical charging modules inside and outside the vehicle, as well as the associated development and test systems. The high performance spectrum of wide-band gap semiconductors and the resulting potential for improvement and savings within the concrete applications of the electrified power train contribute to a substantial saving of CO₂ in transport and thus support the achievement of the set climate targets in Europe. The jointly planned objectives and research activities will further strengthen European research and industry partners in the field of electronic components and systems. Besides Semiconductor manufacturing capabilities, the project requires also high capabilities in Cyber Physical Systems and Design Technologies and supports the domain Smart Mobility and Smart Energy as well.

IP	Christoph Abart, AVL List GmbH, Austria
Socios	Austria (Infineon Technologiesaustria AG, Kompetenzzentrum – Das Virtuelle Fahrzeug, Forschungsgesellschaft mbH, FH Joanneum Gesellschaft MBH, Technische Universitaet Wien), ES, Bélgica (Vrije Universiteit Brussel, Interuniversitair Micro-Electronica Centrum, On Semiconductor Belgium BVBA, Siemens Industry Software NV, powerdale), Alemania (AVL Software And Functions GMBH, Infineon Technologies AG, Fraunhofer Gesellschaft Zur Foerderung Der Angewandten Forschung E.V., Scia Systems GmbH, CREAVAC GmbH, Sindlhauser Materials GmbH, SET Power Systems GmbH), España (Fundación Tecnalia Research & Innovation, MODEMSYS S.L., IBERMATICA SA, ENCOPIM S.L., Universidade da Coruña) , SK, Italia (Ideas & Motion SRL, JAC Italy Design Center SRL, Centro Ricerche Fiat Scpa, Politecnico Di Torino), Países Bajos (Heliox, Nederlandse Organisatie Voor Toegepast Natuurwetenschappelijk Onderzoek, Technische Universiteit Eindhoven), Eslovenia (Elaphe Pogonske Tehnologije Doo), Eslovaquia (Nano Design SRO, Slovenska Technicka Univerzita V Bratislave)
Presupuesto total	41.2M €
Concedido ES	20.000 € + 97.000 € = 117.000 €

PROYECTO 3 FITOPTIVIS. From the cloud to the edge - smart IntegraTion and OPTimization Technologies for highly efficient Image and Video processing Systems

The objective of FitOptiVis is to develop an integral approach for smart integration of image- and video-processing pipelines for CPS covering a reference architecture, supported by low-power, high-performance, smart devices, and by methods and tools for combined design-time and runtime multi-objective optimisation within system and environment constraints. Low latency Image processing is often crucial for autonomy, and performing the right interaction of the CPS with its environment. The most important CPS in the project have sensors and processing at distributed places. For many reasons (parts of) CPS has to operate on low energy, whereas the complete system needs results with low latency. The focus of the project is on multi-objective optimisation for performance and energy use. However, other qualities, like reliability, security etc. also play a role in the optimisation.

IP	Frank Van der Linden, Philips Electronics Netherlands BV, Países Bajos
Socios	Países Bajos (Futura Composites BV, Technische Universiteit Delft, Technische Universiteit Eindhoven), República Checa (Camea, spol. s r.o., Univerzita Karlova, Rex Controls s.r.o., Vysoké Učení Technické v Brně, Západočeská Univerzita v Plzni, Ústav Teorie Informací a Automatizace AV CR VVI), Finlandia (Hurja Solutions OY, Nokia Technologies OY, TTY-SAATIO, Turun Yliopisto, Visidon Oy); España (HI Iberia Ingeniería y Proyectos SL, Instituto Tecnológico de Informática, R G B Medical Devices SA, Seven Solutions SL, Schneider Electric España SA, Thales Alenia Space España, SA, Universidad de Cantabria, Universidad de Granada) , Italia (Abinsula SRL, Aitek Societa' per Azioni, Societa Acquadotti Tirreni SPA, Bittree SRL, Isarail S.P.A., Università degli Studi di Cagliari, Università degli Studi di Sassari, Università degli Studi dell'Aquila)
Presupuesto total	22.5M €
Concedido ES	126.000 € + 126.000 € = 252.000 €

PROYECTO 4 SECREDAS. Cyber Security for Cross Domain Reliable Dependable Automated Systems

The high-level goal of SECREDAS is to develop software for validating architecting methodologies, reference architectures, components and suitable integration, as well as verification approaches for automated systems in different domains. These will combine high security and privacy protection while preserving functional-safety and operational performance. SECREDAS will take a first important step to developing and enhancing trustworthiness, particularly for the future European transportation and medical industries. This will help to make connected and automated vehicles a reality, and ensure that European Original Equipment Manufacturers (OEM) remain competitive and can maintain their world leading position. In addition, SECREDAS addresses cross-domain cybersecurity and safety related technologies in the areas of automated systems in the medical, railway & aerospace sectors, as well as support cross-domain actions.

IP	Patrick Pye, NXP Semiconductors Netherlands BV, Países Bajos
Socios	Austria (Kompetenzzentrum - Das Virtuelle Fahrzeug, Forschungsgesellschaft mbH, AVL LIST GMBH, CISC Semiconductor GMBH, AIT Austrian Institute of Technology GMBH, Thales Austria GMBH, SBA Research Gemeinnützige GMBH, secinto GmbH); Bélgica (Interuniversitair Micro-Electronica Centrum, Transport & Mobility Leuven NV); República Checa (Vysoké Učení Technické v Brně, Institut Mikroelektronických Aplikací S.R.O.); Alemania (NXP Semiconductors Germany GMBH, AVL Software and Functions GMBH, Roche PVT GmbH, senetics healthcare group GmbH & Co. KG, Commsolid GmbH, IVM Institut für Vernetzte Mobilität GMBH, Fraunhofer Gesellschaft zur Förderung der Angewandten Forschung E.V., Giesecke+Devrient Mobile Security GmbH, ZF Friedrichshafen AG, Technische Universität Kaiserslautern, Merantix GmbH); España (Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC), FICOSA ADAS, S.L., Advanced Automotive Antennas S.L, INDRA Sistemas SA, Tecnologías Servicios Telemáticas y Sistemas S.A., Fundación Tecnalia Research & Innovation) ; Finlandia (Oulun Yliopisto, Nokia Solutions and Networks OY, Solita Oy, Haltian Ltd.); Francia (Commissariat à l'Énergie Atomique et aux Énergies Alternatives, Gemalto SA, Invia, Oberthur Technologies SA, Internet of Trust, Prove&Run S.A.S., YoGoKo, iN2Car, PSA ID, Institut Français des Sciences et Technologies des Transports, de l'aménagement et des Réseaux, Canon Research Centre France); Hungría (COMMSIGNIA KFT, Budapesti Muszaki és Gazdaságtudományi Egyetem); Italia (Ideas & Motion SRL,

	Magneti Marelli S.P.A., Università degli Studi di Modena e Reggio Emilia, Evidence SRL; Países Bajos (Fasttree3D B.V., Gemeente Helmond, Philips Electronics Nederland B.V., Ubiqu Access B.V., Stichting Imec Nederland, Stichting Katholieke Universiteit, Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek TNO, Technische Universiteit Eindhoven); Polonia (Politechnika Gdanska); Portugal (Instituto de Telecomunicacoes, PDM e FC Projecto Desenvolvimento Manutencao Formacao e Consultadorialda); Rumanía (Universitatea Politehnica din Bucuresti); Suecia (Rise Research Institutes of Sweden AB, RISE SICS AB, China-Euro Vehicle Technology Aktiebolag, Technology Nexus Secured Business Solutions AB); Túnez (Ecole Nationale d'ingénieurs de Tunis, Ridha Bouallegue), Reino Unido (Nexperia UK LTD)
Presupuesto total	51.5 M €
Concedido ES	105.000 €

PROYECTO 5 AFarCloud. Aggregate Farming in the Cloud

Farming is facing many economic challenges in terms of productivity and cost-effectiveness, as well as an increasing labour shortage partly due to depopulation of rural areas. Furthermore, reliable detection, accurate identification and proper quantification of pathogens and other factors affecting both plant and animal health, are critical to be kept under control in order to reduce economic expenditures, trade disruptions and even human health risks. AFarCloud will provide a distributed platform for autonomous farming that will allow the integration and cooperation of agriculture Cyber Physical Systems in real-time in order to increase efficiency, productivity, animal health, food quality and reduce farm labour costs. This platform will be integrated with farm management software and will support monitoring and decision-making solutions based on big data and real time data mining techniques. The AFarCloud project also aims to make farming robots accessible to more users by enabling farming vehicles to work in a cooperative mesh, thus opening up new applications and ensuring re-usability, as heterogeneous standard vehicles can combine their capabilities in order to lift farmer revenue and reduce labour costs. The achievements from AFarCloud will be demonstrated in 3 holistic demonstrators (Finland, Spain and Italy), including cropping and livestock management scenarios and 8 local demonstrators (Latvia, Sweden, Spain and Czech Republic) in order to test specific functionalities and validate project results in relevant environments located in different European regions. AFarCloud outcomes will strengthen partners' market position boosting their innovation capacity and addressing industrial needs both at EU and international levels. The consortium represents the whole ICT-based farming solutions' value chain, including all key actors needed for the development, demonstration and future market uptake of the precision farming framework targeted in the project.

IP	José-Fernán Martínez-Ortega, Universidad Politécnica de Madrid (UPM), España
Socios	España (Acciona Construcción SA, Fundación Tecnalia Research & Innovation, Tecnologías Servicios telemáticos y Sistemas S.A., Encore Lab SL, Rovimatica SL, Bosonit SL, Management, Construction and Trade, Innovative Solutions International SL, HI Iberia Ingeniería y Proyectos SL, Carrera d'en Bas S.L.); Alemania (Nuromedia GMBH, Germandrones GMBH, Logic Way GmbH, Technische Universitaet Dresden, Universitat Des Saarlandes); Bélgica

	(Katholieke Universiteit Leuven, NXP Semiconductors Belgium NV, Intrasoftware International SA); Austria (AIT Austrian Institute of Technology GMBH, Ttcontrol GMBH, Technische Universitaet WIEN, AMS AG, AVL Commercial Driveline & Tractor Engineering GMBH, AVL LIST GMBH); Portugal (Instituto de Telecomunicacoes, PDM e FC Projecto Desenvolvimento Manutencao Formacao e Consultadorialda); Noruega (Stiftelsen Sintef, Maritime Robotics AS); Suecia (Maelardalens Hoegskola, Imagimob AB, SICS East Swedish ICT AB, Rise Acreo AB, Spacemetric AB, Qamcom Research and Technology AB, SEnseair AB); Finlandia (Teknologian tutkimuskeskus VTT Oy, Centria Ammattikorkeakoulu Oy, Agricultural Data Processing Centre Ltd, PehuTec Oy, PROBOT Oy), República Checa (Institut Mikroelettronickych Aplikaci S.R.O., Zapadoceska Univerzita v Plzni, Vyzkumny Ustav Zivocisne Vyroby V.V.I. Uhrineves, Univerzita Karlova, Lesprojekt Sluzby SRO); Polonia (Politechnika Gdanska, Bettersolutions SA); Italia (Consiglio Nazionale delle Ricerche, Universita degli Studi di Parma, Universita degli Studi del Sannio, Universita degli Studi Dell'aquila, KES Knowledge ENvironment Security SRL, RO Technology SRL, Laboratori Archa SRL, E.S.T.E. S.r.l., Stmicroelectronics SRL); Letonia (Latvijas Universitates Matematikas un Informatikas Instituts); Grecia (Harokopio University, Exodus Anonymos Etaireia Pliroforikis)
Presupuesto total	16.6M €
Concedido ES	214.000 €

PROYECTO 6 PRYSTINE. Programmable Systems for Intelligence in Automobiles

The ambition of PRYSTINE is to strengthen and to extend traditional core competencies of the European industry, research and universities in smart mobility and in particular the electronic component and systems and cyber-physical systems domains. PRYSTINE's target is to realize Failoperational Urban Surround perception (FUSION) which is based on robust Radar and LiDAR sensor fusion and control functions in order to enable safe automated driving in urban and rural environments. PRYSTINE will deliver (a) fail-operational sensor-fusion framework on component level, (b) dependable embedded E/E architectures, and (c) safety compliant integration of Artificial Intelligence (AI) approaches for object recognition, scene understanding, and decision making within automotive applications. The resulting reference FUSION hardware/software architectures and reliable components for autonomous systems will be validated in 22 industrial demonstrators.

IP	Herbert Roedig, Infineon Technologies Austria AG, Austria
Socios	Austria (CISC Semiconductor GMBH, Technische Universitaet Graz, Kompetenzzentrum -Das Virtuelle Fahrzeug, Forschungsgesellschaft mbH, AVL LIST GMBH, Dice Danube Integrated Circuit Engineering GMBH & CO KG, TTTech Computertechnik AG); Bélgica (Interuniversitair Micro-Electronica Centrum, Tenneco Automotive Europe BVBA); Finlandia (Mattersoft Oy, NOKIA Solutions And Networks Oy, TTY-SAATIO, Turun Yliopisto, Vionice Oy, TTS Kehitys Oy, Murata Electronics Oy, Okmetic Oy Finland, Teknologian tutkimuskeskus VTT Oy); Alemania (videantis GmbH, Friedrich-Alexander-Universitaet Erlangen Nuernberg, Robert Bosch GmbH, EPOS embedded core & power systems GmbH & Co. KG, TTTech Germany GmbH, Ostbayerische Technische Hochschule Amberg-Weiden, Bayerische Motoren Werke Aktiengesellschaft); Grecia (Harokopio University); Israel (Autocar Media Group Ltd., STARHOME); Italia (Aitek Societa' per Azioni, Ideas & Motion SRL, Maserati S.P.A., Politecnico di Torino, RE: LAB S.R.L., Universita Degli Studi Di

	Modena E Reggio Emilia, Centro Ricerche FIAT SCPA); Letonia (Elektronikas Un Datorzinatnu Instituts); Lituania (UAB Metis Baltic); Países Bajos (Anywi Technology Bv, DAT.Moblity BV, NXP Semiconductors Netherlands BV, Nederlandse Organisatie Voor Toegepast Natuurwetenschappelijk Onderzoek TNO, Technische Universiteit Delft, Technische Universiteit Eindhoven, Innoluce BV, Noord-Brabant Provincie – MobilityMoveZ); Rumanía (NXP Semiconductors Romania SRL, Universitatea Politehnica din Bucuresti); España (Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC), FICOSA ADAS, S.L., Idiada Automotive Technology SA, Instituto Tecnológico de Informática, Rovimática SL, Fundación Tecnalía Research & Innovation, IRIZAR S COOP) ; Suecia (Kungliga Tekniska Hoegskolan, Scania CV AB); Turquía (Ford Otomotiv Sanayi Anonim Sirketi, Avl Arastirma Ve Muhendislik Sanayi Ve Ticaret Limited Sirketi, Habitus Research)
Presupuesto total	50M €
Concedido ES	154.000 €

CONVOCATORIA CONJUNTA 2018-1

Países participantes	Austria, Bélgica, Alemania, Finlandia, Francia, Hungría, Irlanda, Israel, Italia, Letonia, Noruega, Países Bajos, Polonia, Rumanía, Eslovaquia, España, República Checa, Suecia, Turquía
Temáticas	Innovation Actions (IA)
Presupuesto total	586 M€ (UE)
Concedido ES	857.000€
Proyectos aprobados	7
Proyectos con ES	3

No.	Acrónimo y título del proyecto	Países participantes
1	APPLAUSE. Advanced packaging for photonics, optics and electronics for low cost manufacturing in Europe	Bélgica, Alemania, Países Bajos, Finlandia, Noruega, Austria, Suiza, Francia, Hungría, Israel, Letonia
2	Arrowhead Tools. Arrowhead Tools for Engineering of Digitalisation Solutions	Suecia, Austria, España, Turquía, Polonia, Italia, Alemania, República Checa, Noruega, Países Bajos, Bélgica, Letonia, Rumanía, Francia, Hungría, Portugal, Suiza, Finlandia
3	MADEin4. Metrology Advances for Digitized ECS industry 4.0	Israel, Francia, Alemania, Austria, Italia, Suecia, Países Bajos, Bélgica, Hungría, Rumanía
4	PIN3S. Pilot Integration of 3nm Semiconductor technology	Países Bajos, Bélgica, Israel, Alemania, Francia, Rumanía
5	Power2Power.	Alemania, Austria, Suiza, España, Finlandia, Hungría, Eslovaquia, Países Bajos

The next-generation silicon-based power solutions in mobility, industry and grid for sustainable decarbonisation in the next decade.		
6	VIZTA. VIZTA sounds for Vision, Identification, with Z-sensing Technologies and key Applications	Francia, Suecia, Grecia, España, Reino Unido, Alemania, Luxemburgo, Letonia, Hungría
7	CPS4EU. Cyber Physical Systems for Europe	Francia, España, Alemania, Hungría, Italia,

CONVOCATORIA NACIONAL APCIN 2018

PROYECTO 2 Arrowhead Tools. European investment for Digitalisation and Automation Leadership

The Arrowhead Tools project aims for digitalisation and automation solutions for the European industry, which will close the gaps that hinder the IT/OT integration by introducing new technologies in an open source platform for the design and run-time engineering of IoT and System of Systems. The project will provide engineering processes, integration platform, tools and tool chains for the cost-efficient development of digitalisation, connectivity and automation system solutions in various fields of application.

IP	Lulea Tekniska Universitet, Suecia
Socios	Austria ((AEE - Institut fur Nachhaltige Technologien, Infineon Technologies Austria AG, Kai Kompetenzzentrum Automobil - Und Industrieelektronik GMBH, Kompetenzzentrum Das Virtuelle Fahrzeug Forschungsgesellschaft MBH, Forschung Burgenland GMBH, CISC Semiconductor GMBH, AIT Austrian Institute Of Technology GMBH), España (Acciona Construcción SA, Dotgis Corporation SL, FAGOR ARRASATE S COOP, FAGOR Automation S COOP, IKERLAN S. COOP, Mondragon Goi Eskola Politeknikoa Jose Maria Arizmendiarieta S COOP, Mondragon Sistemas De Informacion Sociedad Cooperativa, Knowledge Centric Solutions SL, Universidad Carlos III de Madrid, ULMA Embedded Solutions S Coop, Mondragon Corporacion Cooperativa Scoop) ; Turquía (ARCELIK A.S.), Polonia (DAC Spolka Akcyjna, Politechnika Gdanska); Italia (Consorzio Nazionale Interuniversitario per la Nanoelettronica, Eurotech SPA, Politecnico di Torino, Santer Reply SPA, Stmicroelectronics SRL); Suecia (Bnearit AB, Boliden Mineral AB, Equa Simulation AB, Lindbacks Bygg AB, Lundqvist Travaru AB, Podcomp AB, Volvo Lastvagnar AB); Alemania (Bosch Software Innovations GMBH, Eclipse Foundation Europe GMBH, Expleo Germany GMBH, Hochschule fuer Technik und Wirtschaft Dresden, Infineon Technologies AG, Infineon Technologies Dresden GMBH& CO KG, Technische Universitaet Dresden, Technische Universitaet Kaiserslautern, Institut Fuer Automation Und Kommunikation E.V. Magdeburg, Institute Fur Engineering Desing Of Mechatronic Systems Und Mplm EV, Universitat Zu Lubeck, Systema Systementwicklung Dipl Inf.Manfred Austen GMBH, Semantis Information Builders GMBH, Robert Bosch GMBH); República Checa (Ustav Teorie Informace A Automatizace AV CR VVI, CAMEA, spol. s r.o., Ceske Vysoke Ucení Technické V Praze, Vysoke Ucení Technické V Brne); Noruega (Høgskolen I Ostfold, Jotne Epm Technology AS, Norges Teknisk-Naturvitenskapelige Universitet NTNU, SAP Norway AS, Tellu IOT AS); Países Bajos (ASML Netherlands B.V., ICT Automatisering Nederland BV, Philips Medical Systems Nederland BV, Technische Universiteit Eindhoven, Technolution BV); Bélgica (3E, Sirris Het Collectief Centrum Van De Technologische Industrie); Rumanía (Beia Consult International SRL, Ropardo SRL); Finlandia (ABB OY, CSC-Tieteen Tietotekniikan Keskus OY, Teknologian tutkimuskeskus VTT Oy, Wapice

	OY); Francia (Commissariat a l'Energie Atomique et aux Energies Alternatives, Magillem Design Services SAS, Stmicroelectronics Grenoble 2 SAS, Technext); Hungría (Aitia International Informatikai Zartkoruen Mukodo RT, Budapesti Muszaki Es Gazdasagtudomanyi Egyetem, Evopro Innovation KFT, Incquery Labs Kutatas-Fejlesztési KFT); Portugal (Universidade Nova de Lisboa); Letonia (Elektronikas un Datorzinatnu Instituts); Suiza (Equa Solutions AG)
Presupuesto total	€
Concedido ES	80.000 € + 135.000 € = 215.000 €

PROYECTO 5 Power2Power. Providing next-generation silicon-based power solutions in transport and machinery for significant decarbonisation in the next decade

The EU-funded project Power2Power gathers 43 partners from eight countries to develop silicon-based power semiconductors with increased power density and energy efficiency. These technologies will push the performance of a large number of applications, with a focus on industry, mobility, grid and renewable energy. Together, they will make a major contribution towards reducing carbon-dioxide emissions despite the world's ever-increasing energy needs. Power2Power partners along the value chain (wafer-, semiconductor-, package-, system- and application-manufacturers) will establish pan-European pilot lines with advanced industry 4.0 aspects to develop innovative power electronics that are fit for the future. Here, the focus is on silicon, which outcompetes upcoming new materials because of its high reliability and excellent performance-price ratio. Power2Power will strengthen the predominant position of silicon-based power semiconductors on the worldwide market in the next decade.

IP	Infineon Technologies Dresden GmbH & Co. KG, Alemania
Socios	Alemania (AVL Software und Functions GmbH (AVL SFR), Elektrische AAT GmbH Chemnitz (EAAT), Fraunhofer Gesellschaft zur Foerderung der angewandten Forschung e.V., Hesse GmbH (HESSE), Hochschule Zittau-Görlitz (HSZG), Infineon Technologies AG (IFAG), MI2-factory GmbH (mi2), SGS Institut Fresenius GmbH (SGS), Siltronic AG (SIL), Technische Universitaet Chemnitz (TUC), Technische Universitaet Dresden (TUDD), Technische Universitaet Ilmenau (TUIL), Universitaet Bremen (UniHB), Paderborn University (UPB), Universitaet Rostock, X-FAB Dresden GmbH & Co. KG (XFAB-DD), X-FAB Semiconductor Foundries GmbH (XFAB-EF); Austria (CTR Carinthian Tech Research AG (CTR), Infineon Technologies Austria AG (IFAT), Kompetenzzentrum – Das virtuelle Fahrzeug Forschungsgesellschaft mbH (VIF), Materials Center Leoben Forschung GmbH (MCL); Suiza (BRUSA Elektronik AG (BRUSA), Eidgenössische Technische Hochschule Zürich (ETHZ); España (Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC), Fagor Automation S. Coop. (FAGOR), Ingeteam Power Technology, S.A. (IPT), Tecnologías, Servicios Telemáticos y Sistemas, S.A. (TST), Universidad de Oviedo (UNIOVI), Universidad Politécnica de Madrid (UPM); Finlandia (Aalto University (AAU), ABB Oy Drives (ABB), Kemppe Oy (KEMPE), Powernet Oy (POWERNET); Hungría (Infineon Technologies Cegléd Kft. (IFCE); Eslovaquia (POWERTEC SRO (PTEC), Slovak University of Technology in Bratislava (STUBA); Países Bajos (Advanced Packaging Center BV (APC), Alfen BV (ALFEN), Boschman Technologies BV (BTE), IWO Project BV (IWO), JIACO Instruments BV (JIACO), Delft University of Technology (TUD)
Presupuesto total	€
Concedido ES	168.000 € + 164.000 € + 155.000 € = 487.000 €

PROYECTO 6 VIZTA. Vision, Identification, with Z-sensing Technologies and key Applications

3D imaging has become important in industrial and consumer applications, allowing more accurate inspection of components at manufacturing sites and greater image depth for media, respectively. The EU-funded VIZTA project is developing advanced new optical sensors and laser sources for short- and long-range 3D imaging. Innovations include, amongst others, advanced time-of-flight solutions leveraging single-photon avalanche diodes, cost-effective near-infrared and RGB on-chip filters, complex RGB pixels for multimodal imaging, advanced Optical Phase Array and laser sources for LiDAR systems. Bringing together industry and academia, VIZTA will develop six demonstrators that will find applications in diverse fields including the automotive, security, smart buildings, mobile robotics for smart cities, and industry 4.0.

IP	STMicroelectronics Crolles, Francia
Socios	Francia (Stmicroelectronics Grenoble 2 SAS, Commissariat a l'Energie Atomique et aux Energies Alternatives, III-V LAB, Idemia Identity & Security France, Stmicroelectronics SA, Lumibird, Applied Materials France, Keopsys Industries), Suecia (Veoneer Sweden AB), Grecia (ISd Lyseis Olokriromenon Systimatonanonymos Etaireia), España (Beamagine S.L., Universitat Politècnica de Catalunya , Fundacio Eurecat, Ficomirrors SA, Alter Technology TUV NORD SA, BCB Informática y Control S.L.), Reino Unido (Stmicroelectronics (Research & Development), Alemania (Ibeo Automotive Systems GMBH, Deutsches Forschungszentrum fur Kunstliche Intelligenz GMBH), Luxemburgo (IEE International Electronics & Engineering SA), Letonia (Elektronikas un Datorzinatnu Instituts), Hungría (Semilab Felvezeto Fizikai Laboratorium Reszvenytarsasag)
Presupuesto total	€
Concedido ES	155.000 €

CONVOCATORIA CONJUNTA 2018-2

Países participantes	Austria, Bélgica, Alemania, Finlandia, Francia, Hungría, Irlanda, Israel, Italia, Letonia, Noruega, Países Bajos, Polonia, Rumanía, Eslovaquia, España, República Checa, Suecia, Turquía
Temáticas	Research and Innovation Actions (RIA)
Presupuesto total	212M€
Concedido ES	455.000€
Proyectos aprobados	6
Proyectos con ES	2

No.	Acrónimo y título del proyecto	Países participantes
1	UltimateGaN. Research for GaN technologies, devices, packages and applications to address the challenges of the future GaN roadmap	Austria , Bélgica, Alemania, Italia, Noruega, Eslovaquia, Suiza, España, Suecia
2	NewControl. Integrated, Fail-Operational, Cognitive Perception, Planning and Control Systems for Highly Automated Vehicles	Alemania , Austria, Países Bajos, Francia, Finlandia, Italia, Bélgica, República Checa, España, Turquía, Chipre, Lituania
3	TEMPO. Technology and hardware for neuromorphic computing	Bélgica , Francia, Alemania, Países Bajos, Suiza
4	AI4DI. Artificial Intelligence for Digitizing Industry	Alemania , Austria, República Checa, Italia, Noruega, Letonia, Taiwán, Bélgica, Lituania, Francia, Noruega, Grecia, Finlandia,
5	HELIAUS. tHERmaL vision AUgmented awareneSS	Francia , Alemania, Irlanda, Italia
6	COMP4DRONES. Framework of key enabling technologies for safe and autonomous drones' applications	España , Austria, Bélgica, República Checa, Francia, Italia, Letonia, Países Bajos

CONVOCATORIA NACIONAL APCIN 2018

PROYECTO 2 NewControl. Integrated, Fail-Operational, Cognitive Perception, Planning and Control Systems for Highly Automated Vehicles

The emergence of the highly automated vehicle market requires advanced solutions that guarantee increased levels of awareness, understanding and command. The EU-funded NewControl project will develop virtual platforms that provide highly automated operations for automated vehicles based primarily on safety. The project will combine Lidar, Radar and sensor technologies to design an integrated fail-safe operational platform. This virtual platform will provide effective control of propulsion systems. It will elaborate and validate the findings of the project to prove cost reductions, power efficiency, trustworthiness and improvement of safety for eventual mass commercialisation. NewControl will increase the market share of safe automation systems and support the EU's objective for zero road accidents by 2050.

IP	Infineon Technologies AG, Alemania
Socios	Alemania (Bayerische Motoren Werke Aktiengesellschaft, Fraunhofer Gesellschaft Zur Foerderung Der Angewandten Forschung E.V., Nxp Semiconductors Germany GMBH, Technische Universitaet Muenchen, Albert-Ludwigs-Universitaet Freiburg, Aviontek GMBH, Fortiss GMBH), Austria (Infineon Technologies Austria AG, AVL List GMBH, Kompetenzzentrum Das Virtuelle Fahrzeug Forschungsgesellschaft MBH, Tttech Auto AG), Países Bajos (Technische Universiteit Delft, Technische Universiteit Eindhoven, Smart Photonics BV, NXP Semiconductors Netherlands BV, Innoluce BV, Amber Nederland BV), Francia (Thales SA, PSA ID), Finlandia (Valossa Labs OY, Tampereen Korkeakoulusaatio SR, Teknologian tutkimuskeskus VTT Oy, Aalto Korkeakoulusaatio SR, Okmetic OY, Murata Electronics OY, Unikie OY), Italia (Ideas & Motion SRL, Magneti Marelli S.P.A., Università di Pisa, Università degli Studi di Modena e Reggio Emilia, Danisi Engineering SRL, 4S-Sistemi Sicuri E Sostenibili

	SRL), Bélgica (Xenomatrix, Vrije Universiteit Brussel, Bifast), República Checa (Vysoke Ucení Technické V Brně, Institut Mikroelektronických Aplikací S.R.O.), España (Idneo Technologies SAU, Knowledge Centric Solutions SL, Universidad Carlos III de Madrid, Agencia Estatal Consejo Superior de Investigaciones Científicas), Turquía (Ford Otomotiv Sanayi Anonim Şirketi, Habitus Arastirma ve Danismanlik Limited Şirketi), Chipre (Iotam Internet of Things Applications and Multi Layer Development LTD), Lituania (UAB Teraglobus)
Presupuesto total	€
Concedido ES	150.000 € + 150.000 € = 300.000 €

PROYECTO 6 COMP4DRONES. Framework of key enabling technologies for safe and autonomous drones' applications

The use of drones today is expanding as it reduces costs and offers environmental benefits. However, existing technologies could make drones' usage harmful for humans, vehicles and properties. SESAR JU, in charge of EU research in air traffic management, suggested that further investments and motivations are needed for the safe use of drones. The ECSEL JU-funded project COMP4DRONES will work on safe software and hardware drone solutions aligned with SESAR objectives. Coordinated by Indra, COMP4DRONES brings together 49 partners from 8 countries aiming to build an ecosystem that will support the systemization and safety of drone platforms, reliable communications, cost-efficient and safe design of drones. COMP4DRONES will deploy applications in five domains: transport, construction, surveillance and inspection, logistics and agriculture.

IP	Indra Sistemas SA, España
Socios	España (Acciona Construcción SA, Acorde Technologies SA, Hemav Technology SL, HI Iberia Ingeniería y Proyectos SL, Ikerlan S. COOP, Universidad de Cantabria), Austria (AIT Austrian Institute of Technology GMBH, Forschung Burgenland GMBH, Moravitz Martin, Infineon Technologies Austria AG, Skyability GESMBH), Bélgica (Interuniversitair Micro-Electronica Centrum, Airobot), República Checa (Vysoke Ucení Technické V Brně, Zapadoceska Univerzita V Plzni, Smartmotion S.R.O.), Francia (Soben, Ecole Nationale de l'Aviation Civile, Siemens Industry Software SAS, Eurogiciel, Ecole Nationale Supérieure de Mécanique et d'aérotechnique, Commissariat à l'Energie Atomique et aux Energies Alternatives, Atechsys Engineering, Sherpa Engineering SA, Total S.A., Altran Technologies), Italia (Abinsula SRL, Università degli studi di Modena e Reggio Emilia, Università degli studi del Sannio, Università degli studi di Sassari, Università degli studi dell'aquila, Tekne SRL, Topview SRL, Aitek SPA, Ud'anet SRL, Aitronik SRL, RO technology SRL, Modis Consulting SRL), Letonia (Elektronikas un Datorzinatnu Instituts, Latvijas Universitātes Matēmatikas un Informatikas Instituts, Latvijas Mobilais Telefons SIA), Países Bajos (Anywi Technology BV, Stichting Imec Nederland, Thales Nederland BV, Technische Universiteit Eindhoven, Technische Universiteit Delft, Demcon Unmanned Systems BV, Almende BV)
Presupuesto total	€
Concedido ES	155.000 €

CONVOCATORIA CONJUNTA 2019

Países participantes	Alemania, Austria, Bélgica, Bulgaria, Chipre, Dinamarca, Eslovaquia, Eslovenia, España, Estados Unidos, Finlandia, Francia, Grecia, Hungría, Irlanda, Italia, Israel, Letonia, Lituania, Noruega, Países Bajos, Polonia, Portugal, República Checa, Rumanía, Suecia, Suiza, Turquía
Temáticas	1. Transport & Smart Mobility 2. Health and Well-Being 3. Energy 4. Digital Industry 5. Digital Life 6. Systems and Components: Architecture, Design and Integration 7. Connectivity and Interoperability 8. Safety, Security and Reliability 9. Computing and Storage 10. Process Technology, Equipment, Materials and Manufacturing 11. Long term vision
Presupuesto total	173.800.000 €
Concedido ES	1.000.000 €
Proyectos aprobados	13
Proyectos con ES	7

No.	Acrónimo y título del proyecto	Países participantes
1	ADACORSA. Airborne data collection on resilient system architectures	Alemania, Noruega, Austria, Francia, Suiza, Chipre, Grecia, Lituania, Portugal, Turquía, Italia, Finlandia
2	ArchitectECA2030. Trustable architectures with acceptable residual risk for the electric, connected and automated cars	Alemania, Noruega, República Checa, Austria, Países Bajos, Lituania, Estados Unidos, Francia
3	BEYOND5. Building the fully European supply chain on RFSOI, enabling New RF Domains for Sensing, Communication, 5G and beyond	Francia, Alemania, Suecia, Turquía, Bélgica, Polonia, Israel, Noruega, Rumania
4	BRAINE. Big data processing and Artificial Intelligence at the Network Edge	Italia, Polonia, Dinamarca, Países Bajos, Israel, Irlanda, Hungría, Alemania, Francia, Eslovaquia, Italia, Bulgaria, Suiza, Finlandia, República Checa
5	CHARM. Challenging environments tolerant Smart systems for IoT and AI	Finlandia, Austria, Bélgica, Suiza, República Checa, Alemania, Letonia, Países Bajos, Polonia
6	FRACTAL. A Cognitive Fractal and Secure EDGE based on an unique Open-Safe-Reliable-Low Power Hardware Platform Node	España, Italia, Austria, Francia, Alemania, Suiza, Finlandia

7	INSECTT. Intelligent Secure Trustable Things	Austria , España, Italia, Suecia, Francia, Portugal, Turquía, Irlanda, Polonia, Eslovenia, Países Bajos, Finlandia
8	IREL 4.0 INTELLIGENT RELIABILITY 4.0	Austria , Alemania, Eslovaquia, Suecia, Finlandia, Bélgica, Italia, Países Bajos, Turquía, Eslovenia, Portugal, Grecia, Francia, España
9	IT2. IC Technology for the 2nm Node	Bélgica, Israel, Alemania, Países Bajos, Francia, Austria, Hungría, Estados Unidos, Rumanía
10	MOORE4MEDICAL. Accelerating Innovation in Microfabricated Medical Devices	Países Bajos , Italia, España, Finlandia, Bélgica, Alemania, Austria, Suiza, Portugal, Hungría, Rumanía
11	NEXT PERCEPTION. Next generation smart perception sensors and distributed intelligence for proactive human monitoring in health, wellbeing, and automotive systems	Finlandia , España, Italia, Alemania, República Checa, Bélgica, Países Bajos
12	PROGRESSUS. Highly efficient and trustworthy components and systems for the next generation energy supply infrastructure	Alemania , Países Bajos, España, Italia, Eslovaquia
13	VALU3S. Verification and Validation of Automated Systems' Safety and Security	Suecia , Italia, España, Portugal, Turquía, Alemania, Austria, Irlanda, Francia

CONVOCATORIA NACIONAL APCIN 2020

PROYECTO 6 FRACTAL. A Cognitive Fractal and Secure EDGE based on an unique Open-Safe-Reliable-Low Power Hardware Platform Node

The objective of this research activity is to create a reliable computing node that will create a Cognitive Edge under industry standards. This computing node will be the building block of scalable Internet of Things (from Low Computing to High Computing Edge Nodes). The cognitive skill will be given by an internal and external architecture that allows to forecast its internal performance and the state of the surrounding world. Hence, this node will have the capability of learning how to improve its performance against the uncertainty of the environment.

As a result of the integration of these cognitive systems into a fractal network, there will be another intrinsic crucial advantage, emergency and adaptability, new functions will flourish through the created space of possibilities of our cognitive Systems. This complex network will transfer all those cognitive advantages to the Edge, a computing paradigm that lay down between the physical world and the cloud.

IP	IKERLAN SOCIEDAD COOPERATIVA, España
Socios	España, Italia, Austria, Francia, Alemania, Suiza, Finlandia
Presupuesto total	17.380.905 €
Concedido	BARCELONA SUPERCOMPUTING CENTER 155.000 € + UNIVERSITAT POLITÈCNICA DE VALÈNCIA 128.920 €
Concedido ES	

PROYECTO 7 INSECTT. Intelligent Secure Trustable Things

Artificial Intelligence of Things (AIoT) is the natural evolution for both Artificial Intelligence (AI) and Internet of Things (IoT) because they are mutually beneficial. AI increases the value of the IoT through machine learning by transforming the data into useful information, while the IoT increases the value of AI through connectivity and data exchange. Therefore, InSecTT – Intelligent Secure Trustable Things, a pan-European effort with 50 key partners from 12 countries (EU and Turkey), will provide intelligent, secure and trustworthy systems for industrial applications to provide comprehensive cost-efficient solutions of intelligent, end-to-end secure, trustworthy connectivity and interoperability to bring the Internet of Things and Artificial Intelligence together. InSecTT aims at creating trust in AI-based intelligent systems and solutions as a major part of the AIoT, i.e. moving AI to the edge and making AI and ML based systems trustable, explainable and not just a black box.

InSecTT will foster cooperation between big industrial players from various domains, a number of highly innovative SMEs distributed all over Europa and cutting-edge research organisations and university. The project features a big variety of industry-driven use cases embedded into various application domains, i.e. smart infrastructure, building, manufacturing, automotive, aeronautics, railway, urban public transport, maritime as well as health. The demonstration of InSecTT solutions in well-known real-world environments like trains, ports, airports and the health sector will generate huge impact on both high and broad level, going from citizens up to European stakeholders. It will establish the EU as a center of intelligent, secure and trustworthy systems for industrial applications enabled by a strong industry with a strong reputation and an informed society, in order to enable products and services based on AI compliant to European values and “Made in Europe”.

IP	Kompetenzzentrum - Das Virtuelle Fahrzeug, Forschungsgesellschaft mbH, Austria
Socios	Austria, España, Italia, Suecia, Francia, Portugal, Turquía, Irlanda, Polonia, Eslovenia, Países Bajos, Finlandia
Presupuesto total	11.500.000 €
Concedido ES	150.000 €

PROYECTO 8 IREL 4.0. INTELLIGENT RELIABILITY 4.0

Intelligent Reliability 4.0 (iRel40) has the ultimate goal of improving reliability for electronic components and systems by reducing failure rates along the entire value chain. Trend for system integration, especially for heterogeneous integration, is miniaturization. Thus, reliability becomes an increasing challenge on device and system level and faces exceptional requirements for future complex applications. Applications require customer acceptance and satisfaction at acceptable cost. Reliability must be guaranteed when using systems in new and critical environments.

In iRel40, 79 partners from 14 countries collaborate in 6 technical work packages along the value chain. WP1 focuses on specifications and requirements. WP2 and WP3 focus on modelling, simulation, materials and interfaces based on test vehicles. WP4 applies the test vehicle knowledge to industrial pilots related to production. WP5 applies the knowledge to testing. WP6 focuses on application use cases applying the industrial pilots. We assess and validate the iRel40 results.

Reliable electronic components and systems are developed faster and new processes are transferred to production with higher speed. Crucial insight gained by Physics of Failure and AI methods will push overall quality levels and reliability.

iRel40 results will strengthen production along the value chain and support sustainable success of Electronic Components and Systems investment in Europe. By collaboration between academy, industry and knowledge institutes on this challenging topic of reliability, the project secures more than 25.000 jobs in the 25 participating production and testing sites in Europe. The project supports new applications and reliable chips push applications in energy efficiency, e-mobility, autonomous driving and IoT. This unique project brings, for the first time ever, world-leading reliability experts and European manufacturing expertise together to generate a sustainable pan-European reliability community.

IP	INFINEON TECHNOLOGIES AUSTRIA AG, Austria
Socios	Austria, Alemania, Eslovaquia, Suecia, Finlandia, Bélgica, Italia, Países Bajos, Turquía, Eslovenia, Portugal, Grecia, Francia, España
Presupuesto total	25.000.000 €
Concedido ES	INSTITUTO DE MICROELECTRONICA DE BARCELONA 165.000 € + UNIVERSIDAD DE CASTILLA-LA MANCHA 136.000 € + UNIVERSIDAD CARLOS III DE MADRID 90.000 €

PROYECTO 10 MOORE4MEDICAL. Accelerating Innovation in Microfabricated Medical Devices

Compared to the pace of innovation in electronic consumer products, the pace of innovation for medical devices is lagging behind. It is the overarching objective of Moore4Medical to accelerate innovation in electronic medical devices.

Moore4Medical emerging medical applications that offer significant new opportunities for the ECS industry including: active implantable devices (bioelectronic medicines), organ-on-chip, drug adherence monitoring, smart ultrasound, radiation free interventions and continuous monitoring. The new technologies will help fighting the increasing cost of healthcare by: reducing the need for hospitalization, helping the development of personalized therapies, and realizing intelligent point-of-care diagnostic tools.

Moore4Medical will bring together 68 specialists from 12 countries who will develop open technology platforms for these emerging fields to help them bridge “the Valley of Death” in shorter time and at lower cost. Open technology platforms used by multiple users for multiple applications with the prospect of medium to high volume markets are an attractive proposition for the European ECS industry. The combination of typical MedTech applications with an ECS style platform approach will enhance the competitiveness for the emerging medical domains addressed in Moore4Medical. With value and IP moving from the technology level towards applications and solutions, defragmentation and open technology platforms will be key in acquiring and maintaining a premier position for Europe in the forefront of affordable healthcare.

IP	PHILIPS ELECTRONICS NEDERLAND B.V., Países Bajos
Socios	Países Bajos, Italia, España, Finlandia, Bélgica, Alemania, Austria, Suiza, Portugal, Hungría, Rumanía
Presupuesto total	17.000.000 €
Concedido ES	HOSPITAL UNIVERSITARIO MIGUEL SERVET 81.000 € + UNIVERSIDAD DEL PAÍS VASCO EUSKAL HERRIKO UNIBERTSITATEA 163.000 € + UNIVERSIDAD DE ZARAGOZA 80.500 €

PROYECTO 11 NEXT PERCEPTION. Next generation smart perception sensors and distributed intelligence for proactive human monitoring in health, wellbeing, and automotive systems

We put our lives increasingly in the hands of smart complex systems making decisions that directly affect our health and wellbeing. This is very evident in healthcare - where systems watch over your health - as well as in traffic – where autonomous driving solutions are gradually taking over control of the car. The accuracy and timeliness of the decisions depend on the systems’ ability to build a good understanding of both you and your environment, which relies on observations and the ability to reason on them.

This project will bring perception sensing technologies like Radar, LiDAR and Time of Flight cameras to the next level, enhancing their features to allow for more accurate detection of human behaviour and physiological parameters. Besides more accurate automotive solutions ensuring driver vigilance and pedestrian and cyclist safety, this innovation will open up new opportunities in health and wellbeing to monitor elderly people at home or unobtrusively assess health state.

To facilitate building the complex smart sensing systems envisioned and ensure their secure and reliable operation, the new Distributed Intelligence paradigm will be embraced, enhanced and supported by tools. It leverages the advantages of Edge and Cloud computing, building on the distributed computational resources increasingly available in sensors and edge components to distribute also the intelligence.

The goal of this project is to develop next generation smart perception sensors and enhance the distributed intelligence paradigm to build versatile, secure, reliable, and proactive human monitoring solutions for the health, wellbeing, and automotive domains. The project brings together major industrial players and research partners to address top challenges in health, wellbeing, and automotive domains through three use cases: integral vitality monitoring for elderly and exercise, driver monitoring, and providing safety and comfort for vulnerable road users at intersections.

IP	Teknologian tutkimuskeskus VTT Oy, Finlandia
Socios	Finlandia, España, Italia, Alemania, República Checa, Bélgica, Países Bajos
Presupuesto total	30.649.577 €
Concedido ES	INSTITUT DE RECERCA BIOMEDICA DE LLEIDA, FUNDACIO PRIVADA DR. PIFARRE 80.276 € + AGENCIA ESTATAL CONSEJO SUPERIOR DE INVESTIGACIONES CIENTIFICAS (CSIC) 161.000 € + UNIVERSIDAD DE VIGO 152.000 €

PROYECTO 12 PROGRESSUS. Highly efficient and trustworthy components and systems for the next generation energy supply infrastructure

Progressus supports the European climate targets for 2030 by proposing a next generation smart grid, demonstrated by the application example “smart charging infrastructure” that integrates seamlessly into the already existing concepts of smartgrid architectures keeping additional investments minimal. The expected high-power requirements for ultra fast charging stations lead to special challenges for designing and establishing an intelligent charge-infrastructure. As emission free traffic concepts are a nascent economic topic also the efficient use of charging infrastructure is still in its infancy. Thus, novel sensor types, hardware security modules, inexpensive high bandwidth technologies and block-chain technology as part of an independent, extendable charging energy-management and customer platform are researched for a charging-station energy-microgrid. Research of new efficient high-power voltage converters, which support bidirectional power flow and provide a new type of highly economical charging stations with connected storage and metering platform to locally monitor the grid state complements the activities. The stations are intended to exploit the grid infrastructure via broadband power-line as communication medium, removing the need for costly civil engineering activities and supplying information to the energy management solutions for utilization optimization. Smart-Contracts via block-chain offer a distributed framework for the proposed energy management and services platform. Furthermore hardware security hardens the concept against direct physical attacks such as infiltration of the network by gaining access to the encryption key material even when a charging station is compromised. Progressus solutions are estimated to enable a carbon dioxide saving of 800.000 tons per year for only Germany, will secure the competitiveness of European industry and research by extending the system know how and will thus safeguard employment and production in Europe.

IP	INFINEON TECHNOLOGIES AG, Alemania
Socios	Alemania, Países Bajos, España, Italia, Eslovaquia
Presupuesto total	19.000.000 €
Concedido ES	150.000 €

PROYECTO13 VALU3S. Verification and Validation of Automated Systems' Safety and Security

Manufacturers of automated systems and the manufacturers of the components used in these systems have been allocating an enormous amount of time and effort in the past years developing and conducting research on automated systems. The effort spent has resulted in the availability

of prototypes demonstrating new capabilities as well as the introduction of such systems to the market within different domains. Manufacturers of these systems need to make sure that the systems function in the intended way and according to specifications which is not a trivial task as system complexity rises dramatically the more integrated and interconnected these systems become with the addition of automated functionality and features to them.

With rising complexity, unknown emerging properties of the system may come to the Surface making it necessary to conduct thorough verification and validation (V&V) of these systems. VALU3S aims to design, implement and evaluate state-of-the-art V&V methods and tools in order to reduce the time and cost needed to verify and validate automated systems with respect to safety, cybersecurity and privacy (SCP) requirements. This will ensure that European manufacturers of automated systems remain competitive and that they remain world leaders. To this end, a multi-domain framework is designed and evaluated with the aim to create a clear structure around the components and elements needed to conduct V&V process through identification and classification of evaluation methods, tools, environments and concepts that are needed to verify and validate automated systems with respect to SCP requirements.

The implemented V&V methods as well as improved process workflows and tools will also be evaluated in the project using a comprehensive set of demonstrators built from 13 use cases with specific SCP requirements from 6 domains of automotive, industrial robotics, agriculture, Aerospace, railway and health.

IP	RISE RESEARCH INSTITUTES OF SWEDEN AB, Suecia
Socios	Suecia, Italia, España, Portugal, Turquía, Alemania, Austria, Irlanda, Francia
Presupuesto total	8.000.000 €
Concedido ES	120.000 €

QUANT-ERA - ERA-NET Cofund in Quantum Technologies

QuantERA es una red de 31 organizaciones de 26 países, coordinada por el Centro Nacional de Ciencias de Polonia, que apoya proyectos de investigación internacionales en el campo de las tecnologías cuánticas (QT). QuantERA responde a la creciente necesidad de esfuerzos de colaboración y un esquema de financiación común dentro de la investigación de QT, que debido a su naturaleza altamente interdisciplinaria no se puede limitar a una institución o estado individual. Gracias a la coordinación de los programas nacionales y regionales de financiación de la investigación, QuantERA evita el problema de la fragmentación de los esfuerzos nacionales, fomenta las colaboraciones transnacionales y aprovecha la ventaja competitiva de Europa. Unirse a la convocatoria de propuestas para grupos de investigación internacionales que operan en los países socios de QuantERA se convertirá en el primer paso para una mayor integración. El lanzamiento de la convocatoria de propuestas se complementará con una serie de actividades adicionales destinadas a estimular la cooperación dentro de la comunidad de investigación, crear y mantener vínculos entre el mundo académico y la industria, crear un conjunto de herramientas sobre investigación responsable e innovación en QT, intercambiar las mejores prácticas e involucrar en un diálogo con los responsables políticos sobre el diseño de futuros instrumentos de financiación. En conjunto, ayudará a tomar medidas adicionales en el camino para desbloquear el potencial industrial ampliamente reconocido de QT en respuesta a las necesidades actuales de la sociedad y en beneficio del público en general.

Socios: Coordinador: Polonia (National Science Centre (NCN), Austria (Austrian Research Promotion Agency (FFG), Austrian Science Fund (FWF), Bélgica (National Fund for Scientific Research (FNRS), Research Foundation Flanders (FWO), Bulgaria (National Science Fund of Bulgaria (BNSF), República Checa (Ministry of Education Youth and Sports (MEYS-MSMT), Dinamarca (Innovation Fund Denmark (Innofond), Finlandia (Academy of Finland (AKA), Francia (National Research Agency (ANR), Alemania (Federal Ministry of Education and Research (BMBF), VDI Technologiezentrum GmbH (VDI TZ), Grecia (General Secretariat for Research and Technology (GSRT), Hungría (National Research, Development and Innovation Office (NKFIH), Irlanda (Science Foundation Ireland (SFI), Israel (MATIMOP Israeli Industry Centre for R&D (OLD) (MATIMOP), Ministry of Science, Technology and Space), Italia (Italian National Research Council (CNR), Ministry of Education, University and Research (MIUR), Letonia (State Education Development Agency (VIAA), Países Bajos (Foundation for Fundamental Research on Matter (FOM), Noruega (Research Council of Norway (RCN), Polonia (National Centre for Research and Development (NCBiR), Portugal (Foundation for Science and Technology (FCT), Rumanía (Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI), Eslovaquia (Slovak Academy of Science (SAS/SAV), Eslovenia ((Ministry of Education, Science, Culture and Sport (MESCS/MIZS), **España (Agencia Estatal de Investigación (AEI)**, Suecia (Swedish Research Council (VR/SRC), Suiza (Swiss National Science Foundation (SNSF/SNF), Turquía (The Scientific and Technological Research Council of Turkey (TUBITAK), Reino Unido (Engineering and Physical Sciences Research Council (EPSRC), The Technology Strategy Board (TSB).

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjunta internacionales: 4 (2017, 2019, 2021, 2022)

Participación de AEI en convocatorias conjuntas: 4 (2017, 2019, 2021, 2022)

CONVOCATORIA CONJUNTA INTERNACIONAL 2017

Países participantes	Austria, Bélgica, Bulgaria, República Checa, Dinamarca, Finlandia, Francia, Alemania, Grecia, Hungría, Irlanda, Israel, Italia, Letonia, Países Bajos, Noruega, Polonia, Portugal, Rumanía
Temáticas	Quantum Information and Communication Sciences & Technologies 1. Quantum communication 2. Quantum simulation 3. Quantum computation 4. Quantum information sciences 5. Quantum metrology sensing and imaging 6. Novel ideas and applications in quantum science and technologies
Presupuesto total	34.000.000 €
Concedido ES	795.708 €
Proyectos aprobados	26
Proyectos con financiación AEI	6

No.	Acrónimo y título del proyecto	Países participantes
1	CEBBEC. Controlling EPR and Bell correlations in atomic Bose-Einstein condensates	Francia, Alemania, Austria, España, Italia
2	CUSPIDOR. CMOS Compatible Single Photon Sources based on SiGe Quantum Dots	Austria, Irlanda, Italia, República Checa
3	ERYQSenS. Entangled Rydberg matter for quantum sensing and simulations	Suecia, Alemania, Bulgaria, Francia, Reino Unido
4	HYPER-U-P-S. Hyper-entanglement from ultra-bright photon pair sources	Suecia, Alemania, Austria, Dinamarca, República Checa
5	HiPhoP. High dimensional quantum Photonic Platform	Francia, Austria, Italia, Reino Unido, Eslovaquia
6	InterPol. Polariton lattices: a solid-state platform for quantum simulations of correlated and topological states	Reino Unido, Alemania, Francia, Israel, Polonia
7	MICROSENS. Microwave quantum sensing with diamond color centers	Francia, Alemania, Austria
8	NAQUAS. Non-equilibrium dynamics in Atomic systems for QUAntum Simulation	Francia, Alemania, Italia, Polonia, Reino Unido, Suiza
9	NanoSpin. Spin-based nanolytics – Turning today’s quantum technology research frontier into tomorrow’s diagnostic devices	Alemania, Bélgica, Hungría, Países Bajos, República Checa

10	ORQUID. ORganic QUantum Integrated Devices	Italia , Alemania, España, Francia, Países Bajos, Polonia, Reino Unido
11	Q-Clocks. Cavity-Enhanced Quantum Optical Clocks	Italia , Dinamarca, España, Francia, Polonia
12	QCDA. Quantum Code Design and Architectures	Reino Unido , Alemania, Francia, Países Bajos
13	QTFLAG. Quantum Technologies For LAttice Gauge theories	Alemania , Austria, Bélgica, Italia, Polonia
14	QUANTOX. QUANTUM Technologies with 2D-Oxides	Italia , España, Francia, Israel, Países Bajos, Suecia
15	Q_Magine. Scalable Electrically Readout Diamond Spin Qubit Technology for Single Molecule Quantum Imagers	Bélgica , Alemania, Austria, Hungría
16	QuaSeRT. Optomechanical quantum sensors at room temperature	Italia , Alemania, Austria, Francia, Noruega, Países Bajos
17	QuantAlgo. Quantum algorithms and applications	Bélgica , Dinamarca, Francia, Letonia, Países Bajos, Reino Unido
18	QuompleX. Quantum Information Processing with Complex Media	Austria , Italia, Países Bajos
19	RouTe. Towards Room Temperature Quantum Technologies	Francia , Alemania, España, Finlandia, Polonia, Suiza
20	SQUARE. Silicon Photonics for Quantum Fibre Networks	Dinamarca , Francia, Italia, Reino Unido, Turquía
21	SUMO. Scaling Up quantum computation with MOlecular spins	España , Alemania, Austria, Italia, Reino Unido
22	Si QuBus. Long-range quantum bus for electron spin qubits in silicon	Alemania , Francia, Países Bajos, Polonia
23	SuperTop. Topologically protected states in double nanowire superconductor hybrids	Hungría , Dinamarca, Francia, Italia, Países Bajos, Suiza
24	TAIOL. Trapped Atom Interferometers in Optical Lattices	Francia , Alemania, Italia, Polonia
25	TheBlinQC. Theory Blind Quantum Control	Reino Unido , Alemania, Austria, Polonia, Portugal, República Checa
26	Topoquant. 2D hybrid materials as a platform for topological quantum computing	Suiza , Alemania, Dinamarca, Suecia

CONVOCATORIA NACIONAL APCIN 2018

PROYECTO 1 CEBBEC. Controlling EPR and Bell correlations in atomic Bose- Einstein condensates

Our purpose is both to gain a deeper understanding of quantum information in many body systems as well as to develop practical approaches for manipulating and exploiting it. The main targets are (i) to take advantage of this type of quantum correlation, (ii) to implement device-independent entanglement witnesses, (iii) to explore fundamental aspects of quantum mechanics,

and (iv) to realize proof-of-principle implementations of quantum information and quantum measurement protocols with atomic many-body systems. Atomic interactions in BEC's constitute a non-linearity highly analogous to four-wave mixing or parametric down-conversion in optics, and hence can create strong entanglement. Two separate lines of research have been pursued in the past, on the one hand, one can use the spin degrees of freedom of an atom to produce atom pairs whose spins are entangled, and on the other hand one can entangle the motional degrees of freedom in a spirit close to that of the original EPR proposal. In the CEBBEC project, these two lines of research will be brought together in both the technological sense (using one kind of entanglement to make another) and conceptual one (for example studying complex situations in which both spin and motion are entangled) giving rise to new possibilities for applications and new theoretical challenges. The participating partners have developed sophisticated detection technologies, which allow us to make new types of measurements. We intend to respond to the great need for theoretical work to understand and exploit them. Finally, we will address practical applications and explore their metrological validity.

IP	Insitut d'Optique Laboratoire Charles Fabry, Francia
Socios	Alemania (Institut für Quantenoptik, Universität Hannover), Austria (Technische Universität Wien), España (Universidad del País Vasco) , Italia (Consiglio Nazionale delle Ricerche)
Presupuesto total	1.326.878 €
Concedido ES	105.000 €

PROYECTO 10 ORQUID. ORganic QUantum Integrated Devices

ORQUID will explore the exciting new possibility of using single organic molecules as the interface between these three quanta so that they can work together as required. First, single molecules will interact with light in waveguides and cavities to generate and detect single photons, providing immediate impact in quantum photonics. Second, single molecules will detect single moving charges in nano-electronic circuits to provide quantum coherent information exchange between these charges and the external world. Third, molecules embedded in nanomechanical devices and two-dimensional materials will measure nanoscale forces and displacements, which are key to developing mechanical quantum systems and understanding nanomachinery. By developing these three interfaces on a common platform, we will create a versatile hybrid system. By allowing the user to draw simultaneously on the most sensitive quantum aspects of light, chargé and sound, we anticipate that this hybrid will be a major advance in the technology of quantum devices.

IP	Consiglio Nazionale delle Ricerche, Italia
Socios	Alemania (Westfaelische Wilhelms-Universitaet Muenster), España (Instituto de Ciencias Fotónicas), Francia (Centre National de la Recherche Scientifique), Países Bajos (Universiteit Leiden), Polonia (Institute of Physics, Polish Academy of Science), Reino Unido (Imperial College of Science Technology and Medicine)
Presupuesto total	1.675.446 €
Concedido ES	140.000 €

PROYECTO 11 Q-Clocks. Cavity-Enhanced Quantum Optical Clocks

Q-Clocks seeks to establish a new frontier in the quantum measurement of time by joining state-of-the-art optical lattice clocks and the quantized electromagnetic field provided by an optical cavity. The goal of the project is to apply advanced quantum techniques to state-of-the-art optical lattice clocks, demonstrating enhanced sensitivity while preserving long coherence times and the highest accuracy. A three-fold atom-cavity system approach will be employed: the dispersive quantum non-demolition (QND) system in the weak coupling regime, the QND system in the strong collective coupling regime, and the quantum enhancement of narrow-linewidth laser light generation towards a continuous active optical frequency standard. Cross-fertilization of such approaches will be granted by parallel theoretical investigations on the available and brand-new quantum protocols, providing cavity-assisted readout phase amplification, adaptive entanglement and squeezed state preparation protocols. Novel ideas on quantum state engineering of the clock states inside the optical lattice will be exploited to test possible quantum information and communication applications. By pushing the performance of optical atomic clocks toward the Heisenberg limit, Q-Clocks is expected to substantially enhance all utilizations of high precision atomic clocks, including tests of fundamental physics (test of the theory of relativity, physics beyond the standard model, variation of fundamental constants, search for dark matter) and applied physics (relativistic geophysics, chrono geodetic leveling, precision geodesy and timetagging in coherent high speed optical communication). Finally, active optical atomic clocks would have a potential to join large scale laser interferometers in gravitational waves detection.

IP	Istituto Nazionale di Ricerca Metrologica, Italia
Socios	Italia (Istituto Nazionale di Ottica CNR), Dinamarca (Kobenhavns Universitet), España (Instituto de Ciencias Fotónicas) , Francia (CNRS/SYRTE), Polonia (Nicolaus Copernicus University in Torun)
Presupuesto total	1.332.071 €
Concedido ES	147.705 €

PROYECTO 14 QUANTOX. QUANTum Technologies with 2D-Oxides

We propose two-dimensional oxides (2D-oxides) as an innovative technological platform for the realization of topological quantum systems. Our idea is to exploit the unique combination of unconventional Rashba spin-orbit coupling (SOC), 2D-magnetism, superconductivity (SC) and high-mobility in the 2D electron gas (2DEG) at the interface between oxide insulators, as for instance LaAlO3 (LAO) and SrTiO3 (STO). The basic element of this technology is a quasi-one dimensional nano-channel, whose properties can be locally tuned using electric field effect to create both topological and non-topological superconducting sections, and metallic or even insulating tunnelling barriers. This platform has all the characteristics for the practical realization of theory-based proposals for topological quantum computation, and important fundamental and technological advantages. 2D-oxides technology allows a top-down approach for nanodevices realization fully scalable to complex systems including a large number of qubits. All the ingredients necessary for creating, manipulating and braiding MZMs can be realized using the same material and incorporated in the device layout in a seamless way. Moreover, the strong sensitivity of oxide-2DEGs to the orbital splitting and occupation of the non-degenerate 3dxy and 3dxz, yz bands, allows the development of conceptual new methods for the realization of a topological quantum electronics

controlled by the orbital degrees of freedom. Our project is aimed at establishing oxide 2DEGs as a viable platform for the realization of topological quantum computers, thus launching a new technological approach to the realization of "fault tolerant" quantum computation technology.

IP	CNR-SPIN, Italia
Socios	España (Universidad Complutense de Madrid (UCM)), Francia (Unité mixte de physique CNRS/Thalès, ESPCI Paris), Israel (Bar Ilan University by Birad R&D Co. Ltd., IL), Países Bajos (Delft University of Technology), Suecia (halmers University of Technology)
Presupuesto total	1.126.409 €
Concedido ES	130.000 €

PROYECTO 19 RouTe. Towards Room Temperature Quantum Technologies

The goal of RouTe is to lay the foundations for a quantum technology that can operate at room temperature, thus taking a first major leap towards exploiting fundamental quantum phenomena in light-matter interaction for real-world applications. The enabling physical systems are organic materials that display quantum properties even at room temperature when coupled resonantly to cavity modes or plasmonic structures. Our objectives include the realization of: i) Room temperature quantum simulator setups for many-body lattice models and topological states of matter with polaritons, ii) Strongly coupled light-matter interfaces with applications to quantum communication and robust quantum information storage at room temperature, and iii) Enhanced material properties and chemical reactivity by making use of strong coupling of organic materials to photonic or phononic modes prepared in their vacuum state.

IP	University of Strasbourg & CNRS, Francia
Socios	Alemania (Max-Planck Institute), España (Universidad Autónoma de Madrid (UAM)), Finlandia (Aalto University), Polonia (Polish Academy of Sciences), Suiza (BM Research – Zurich Laboratory)
Presupuesto total	1.692.417 €
Concedido ES	100.500 €

PROYECTO 21 SUMO. Scaling Up quantum computation with MOlecular spins

SUMO aims to set the basis of a new architecture for quantum computation and simulation, in which information is encoded in molecular spin qubits that are read-out and communicate by coupling to a superconducting resonator. This technology has a high potential for robust scalability, based on the microscopic and reproducible nature of the molecules and on the possibilities they offer for embodying multiple qubits, which provide an extra dimension to increase computational resources and to implement noise-resilient logical qubits. The proposal focuses on two specific targets, which are crucial milestones for the realization of such magnetic quantum processor. The first is the implementation of active quantum error correction in magnetic molecules. The second is the attainment of strong coupling between individual molecular spins and single microwave photons. It involves cooperation between diverse disciplines and between experimental and theoretical methods and benefits from the European leadership in molecular

magnetism. Coordination and supramolecular chemistry will be combined to design and synthesize molecules hosting multiple (3 to 9) spin qubits.

IP	Fernando Luis, CSIC/Instituto de Ciencia de Materiales de Aragón, España
Socios	España (Universitat de Barcelona, Universitat de Valencia), Alemania (Universität Stuttgart), Austria (Wolfgang Pauli Institut/ Atominstitut, TU Wien), Italia (Consorzio Interuniversitario Nazionale per la Scienza e Tecnologia dei Materiali), Reino Unido (University of Manchester, University of Oxford)
Presupuesto total	1.114.545 €
Concedido ES	20.000 € + 140.503 € + 12.000 € = 172.503 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2019

Países participantes	Austria, Bélgica, Bulgaria, República Checa, Dinamarca, Estonia, Finlandia, Francia, Alemania, Grecia, Hungría, Irlanda, Israel, Italia, Letonia, Lituania, Países Bajos, Polonia, Portugal, Rumanía
Temáticas	Quantum Information and Communication Sciences & Technologies 1. Quantum communication 2. Quantum simulation 3. Quantum computation 4. Quantum information sciences 5. Quantum metrology sensing and imaging 6. Novel ideas and applications in quantum science and technologies
Presupuesto total	45.000.000 €
Concedido ES	597.300 €
Proyectos aprobados	12
Proyectos con MINECO/AEI	5

No.	Acrónimo y título del proyecto	Países participantes
1	ApresSF. Application-ready superresolution in space and frequency	Polonia, Francia, Alemania, España, República Checa
2	C'MON-QSENS!. Continuously Monitored Quantum Sensors: Smart Tools and Applications	España, Polonia, Dinamarca Reino Unido, Israel y Suecia
3	eDICT. Experimentally-oriented Device Independent Cryptography	Suiza, Polonia, Hungría, República Checa y Austria
4	MAQS. Magnetic-Atom Quantum Simulator	Francia, Austria, Italia, España, Polonia Alemania
5	PACE-IN. Photon-Atom Cooperative Effects at Interfaces	Francia, Austria, Grecia, Israel, Italia y República Checa

6	Qu3D. Quantum 3D Imaging at high speed and high resolution	Italia , Grecia, Suiza, República Checa.
7	QuantHEP. Quantum Computing Solutions for High-Energy Physics	Portugal , Italia y Letonia
8	QuCoS. Quantum Computation with Schrödinger cat states	Francia , Alemania, Rumanía e Israel
9	QuICHE. Quantum information and communication with high-dimensional encoding	Italia , Alemania, Reino Unido, Francia, Polonia
10	SECRET. SECuRe quantum communication based on Energy-Time/time-bin entanglement	Suecia , Italia y España
11	ShoQC. Short-range optical Quantum Connections	Alemania , Italia, Dinamarca, Bélgica, Francia, República Checa
12	SiUCs. Superinductor-based Quantum Technologies with Ultrastrong Couplings	España , Alemania, Francia, Italia y Eslovaquia

CONVOCATORIA NACIONAL APCIN 2019-2

PROYECTO 1 ApresSF. Application-ready superresolution in space and frequency

The wave-particle duality of light introduces two fundamental problems to imaging: the diffraction limit and photon shot noise. With quantum information theory one can tackle both of them with a single holistic formalism: model the light as a quantum object, consider any quantum measurement, and pick the one that gives the best statistics. While Helstrom pioneered the theory and first applied it to incoherent imaging back in the 1970s, it was not until recently that the approach offered genuine surprises on the age-old topic by predicting a new class of superior imaging methods.

For the resolution of two sub-Rayleigh sources, such as stars or microscopic fluorophores, novel methods have very recently been theoretically and experimentally shown to outperform direct imaging, reaching the true quantum limits. Further efforts to generalize the theory for arbitrary sources suggest that, despite the existence of harsh quantum limits, the quantum-inspired methods can still offer significant improvements over direct imaging, potentially rendering more applications in astronomy, as well as in fluorescence microscopy. Such protocols for quantum-enhanced parameter estimation can also be applied to measure time or frequency with very high accuracy.

Given the know-how of the partners, in the proposed project we plan to design, systematically study and implement engineered coherent measurements in order to push the metrological resolution in space, time and frequency to its limits, at the same time making it available for technological and industrial applications.

IP	University of Gdańsk, Polonia
Socios	University of Paderborn (Alemania), Palacky University (República Checa), Universidad Complutense (España), Sorbonne Université (Francia) y Cailabs (Francia)
Presupuesto total	925.505 €
Concedido ES	119.900 €

PROYECTO 2 C'MON-QSENS!. Continuously Monitored Quantum Sensors: Smart Tools and Applications

Acquiring and interpreting data about physical processes is vital for science and technology. C'MON-QSENS!'s targeted breakthrough is to develop tools to interpret data acquired from quantum sensors. Indeed, quantum-enhanced ultra-precise sensors are among the most disruptive quantum technologies with near-term applications in several disciplines, but with a limited reach so far.

Most efforts are devoted to the measurement of static properties by singleshot or repeated measurement schemes, while many real-world applications are concerned with dynamical signals. Extracting information from time-series of data needs sensors operating in the continuously monitored regime, and here is where the interdisciplinary approach of C'MON-QSENS! emerges. We aim to develop continuously monitored hot atomic ensembles and optomechanical devices, and we pursue their application in a collaboration with leading experimentalists and theory researchers in quantum information theory, statistical inference and classical signal processing. We will create a unique synergy to close the interdisciplinary gap, so modern methods of (classical) signal processing and data inference can be incorporated within the context of quantum metrology.

IP	Universitat Autònoma de Barcelona, España
Socios	University of Warsaw (Polonia), Aarhus University (Dinamarca), Weizmann Institute of Science (Israel), Chalmers University of Technology – (Suecia) y University of Nottingham (Reino Unido)
Presupuesto total	1.200.359 €
Concedido ES	138.000 €

PROYECTO 4 MAQS. Magnetic-Atom Quantum Simulator

We propose to realize a novel quantum simulator made of magnetic atoms in periodic potentials, which will enable the investigation of quantum-many body problems associated with long-range dipole-dipole interactions.

Our proposal is based on a series of key new developments. We will develop new tools to increase the strength of dipole-dipole interactions (shorter-period UV lattices, magneto-association of magnetic atoms into molecules with a stronger magnetic moment), and to control and measure their interaction at the nano-scale (using super-resolution techniques and narrow spectroscopic lines). We will develop new probes to certify the presence of quantum correlations, which are expected to be particularly strong in these many-body long-range interacting systems. We will either probe correlations in real space (microscope, double-well lattices), in momentum space (Doppler spectroscopy), or in the spin sector. These probes will be developed in a joint theory-experiment endeavor, to find the best ways to define and quantify entanglement.

IP	CNRS, Francia
Socios	ENS of Lyon (Francia), Institut für Quantenoptik und Quanten-information (Austria), Universität Stuttgart (Alemania), Istituto Nazionale di Ottica

	(Italia), Institute of Photonic Sciences (España) y Instytut Fizyki Polskiej Akademii Nauk (Polonia)
Presupuesto total	1.203.780 €
Concedido ES	120.000 €

PROYECTO 10 SECRET. SECuRe quantum communication based on Energy-Time/time-bin entanglement

Quantum communications (QC) is one of the main areas of the broader field of Quantum Technologies. The most well-known application of QC is in communication security, where huge progress has been observed since the first demonstrations of quantum key distribution (QKD). Another important application of QC is as the support backbone for future networks of quantum computers, the so-called Quantum Internet.

Entanglement is a crucial resource in both applications. It allows a higher level of security in QKD, as well as being a requirement in many Quantum Internet communication protocols. Therefore it is very important to ensure that entanglement can be certified, and a very popular way to do it is through a Bell inequality violation.

A particularly important type of photonic entanglement is called energy-time (ET). It has been very popular over the last 25 years or so, since it is very robust against disturbances that affect other types of entanglement over optical fibers. The downside has been that most experimental implementations employ the famous “Franson’s configuration”, which has an inherent flaw called the post-selection loophole that invalidates a Bell inequality violation, unless extra assumptions are present. All members of this consortium have been responsible for proposing and carrying out the first, and so far only performed, QC experiments based on ET (and its pulsed version called time-bin) entanglement that do not present the post-selection flaw, and thus can be used to perform experiments based on “genuine” ET/time-bin entanglement.

IP	Linköping University, Suecia
Socios	INFN (Italia) y Universidad de Sevilla (España)
Presupuesto total	340.000 €
Concedido ES	85.000 €

PROYECTO 12 SiUCs. Superinductor-based Quantum Technologies with Ultrastrong Couplings

Superconducting quantum circuits form one of the most promising solid state platforms for quantum computing. This success builds on the naturally large interaction between light, represented by microwave signals, and matter, embodied by superconducting qubits.

Microwave photons are used at every stage of quantum information protocols: qubit manipulation, qubit readout and qubit-qubit coupling. To describe this rich and ubiquitous light-matter interaction, the community has relied so far on the conceptual tools inherited from quantum optics. However, atoms and photons interact weakly, perfectly justifying the use of the rotating wave approximation (RWA), which states that non-resonant processes can be safely

neglected. The situation with superconducting circuits is quite different since qubits can literally be wired to transmission lines carrying microwave photons. And limitations of the RWA have already been pointed out for qubit readout or driven-dissipative protocols.

SiUCs will follow a radically new approach: we will harness the potentiality of very large light-matter coupling -often referred to as ultra-strong coupling- instead of fighting it. In order to address this challenging approach in a controlled way, we will develop an architecture based on superinductors. Resonators and transmission lines built from such components display impedances close to the quantum of resistance ($R_Q \sim 6.5 \text{ k}\Omega$) at gigahertz frequencies, with very low losses, allowing a boost in light-matter interaction. SiUCs will more specifically focus on improving the efficiency of qubit operations involving light-matter interactions. In addition, superinductors will be used to engineer a missing device of the superconducting quantum circuit toolbox: the microwave single photon detector. Finally, unique many-body physics associated to ultrastrong couplings will be investigated thanks to purposely designed quantum simulators.

IP	Barcelona Supercomputing Center, España
Socios	Institute of Technology (Alemania), Regensburg University (Alemania), Slovak Academy of Science, (Eslovaca), CNRS (Francia) y CNR (Italia)
Presupuesto total	1.285.917 €
Concedido ES	134.400 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2021

Países participantes	Austria, Bélgica, Bulgaria, Croacia, República Checa, Dinamarca, Estonia, Finlandia, Francia, Alemania, Grecia, Hungría, Irlanda, Israel, Italia, Letonia, Lituania, Luxemburgo, Malta, Noruega, Polonia, Portugal, Rumania, Eslovaquia, Eslovenia, España, Suecia, Suiza, Turquía, Reino Unido
Temáticas	Quantum Phenomena and Resources 1. Quantum communication 2. Quantum simulation 3. Quantum computation 4. Quantum information sciences 5. Quantum metrology sensing and imaging
Presupuesto total	43.493.955 €
Concedido ES	2.338.497 €
Proyectos aprobados	39
Proyectos con MINECO/AEI	12 (2 coordinados)

No.	Acrónimo y título del proyecto	Países participantes
1	ARTEMIS. Neural networks controlling superconducting quantum circuits	Francia, Alemania, Israel
2	ConSpiQuOS. Controlling Spins in Quantum systems in an Online Setting	Dinamarca, Israel y Noruega
3	CVSTAR. Continuous-Variable Multi-User Quantum Key Distribution for 5G and distributed storage applications	Dinamarca, Austria, República Checa
4	DISCO. Dicke-enhanced single-emitter strong coupling at ambient conditions as a quantum resource	Irlanda, Alemania, Polonia
5	DQUANT. Dissipative Quantum Chaos Perspective on Near-Term Quantum Computing	Portugal, Alemania, Noruega, Polonia, Eslovenia
6	DYNAMITE. Next Generation Quantum Simulators: From DYNAMIcal Gauge Fields to Lattice Gauge ThEory	España, Alemania, Italia, Polonia, Suiza
7	E2TPA. Exploiting Entangled two-photon absorption – E2TPA	Suiza, Alemania, Polonia, Reino Unido
8	EQUAISE. Enabling QUAntum Information by Scalability of Engineered quantum materials	Italia, Alemania, España, Polonia
9	EQUIP. Error Correction for Quantum Information Processing	Francia, España, Alemania, Finlandia
10	ExTRaQT. Experiment and Theory of Resources in Quantum Technologies	Polonia, Alemania, España
11	HQCC. Hybrid Quantum Classical Computation	Letonia, Alemania, Portugal, Hungría
12	InQuRe. Field testing an integrated quantum repeater node	Alemania, Francia, Suecia, Rumania
13	LEMAQUME. LEvitated MAgnets for QUantum MEtrology	Italia, Alemania, Estados Unidos, Francia, Israel, Letonia, Reino Unido
14	MAESTRO. Mastering Technologies for Scalable Spin-based Solid-State Quantum Processors	Bélgica, Alemania, Francia Hungría
15	MAGMA. Magnetic Topological Insulators for Robust Majorana Bound States	Luxemburgo, Alemania, España, Reino Unido
16	MENTA. Accessible Quantifiers of Multipartite Entanglement in Atomic Systems	Francia, Alemania, Italia, España, Austria
17	MF-QDS. Microfluidic Quantum Diamond Sensor	España, Alemania, Israel y Polonia
18	MOCA. Integrated microwave to optical conversion on a superconducting atom chip	Alemania, Francia, Grecia, Hungría, Italia
19	MQSens. Quantum sensing with nonclassical mechanical oscillators	Suiza, Finlandia, Noruega, España, Malta

20	NImSoQ. New Imaging and control Solutions for Quantum processors and metrology	Polonia, Alemania, Croacia
21	PhoMentor. Photonic Quantum Memristor Networks	Austria, Italia, Polonia
22	QATACOMB. Quantum correlAtions in TerAhertz qcl COMBs	Italia, Alemania, Francia
23	QD-E-QKD. Quantum Dots for Entanglement-based Quantum Key Distribution	Italia, Alemania, Austria, República Checa
24	QOPT. Quantum algorithms for optimization	Letonia, Bélgica, Francia, Alemania
25	QUANTAGENOMICS. Quantum Enabled Secure Multiparty Computation for Genomic Medicine	Portugal, Francia, España
26	QuantumGuide. Hollow-core fiber atom guide for quantum devices	Alemania, Austria, Polonia, Suiza
27	QuRAMAN. Quantum enhanced Raman spectroscopy for bioimaging applications	Dinamarca, Alemania, Estonia
28	QuSIED. Quantum simulation with engineered dissipation	Eslovenia, España, Alemania, Austria, Hungría
29	SensExtreme. Quantum sensing with diamond defects at extreme conditions	Lituania, Francia, Alemania, Hungría, Suiza
30	SIQCI. Scalable Architecture for Ion-Trap Quantum Computing Integration	Austria, Alemania, Polonia
31	SiQUOS. Superconducting Silicon Qubit in CMOS Technology	Francia, Hungría, Suecia
32	SPARQL. Sequential parametric amplification: quantum technology with multimode light	Alemania, Francia, Israel, República Checa
33	SQUEIS. Squeezing-Enhanced Inertial Sensing	Italia, Alemania, Francia, Polonia
34	STAQS. Shortcuts to Adiabaticity for Quantum Computation and Simulation	Austria, Italia, Alemania, Luxemburgo, Polonia
35	SuperLink. Superconducting quantum-classical linked computing systems	Italia, Israel, Suecia
36	T-NISQ. Tensor Networks in Simulation of Quantum matter	Italia, Alemania, Austria, España, Eslovenia
37	TOBITS. Non-Abelian anyons for topological qubits	Finlandia, Francia, Polonia, Suiza
38	uTP4Q. A versatile quantum photonic IC platform through micro-transfer printing	Bélgica, Alemania, Dinamarca, Eslovenia, Suiza
39	VERIqTAS. Verification of quantum technologies, systems and applications	Polonia, Bélgica, Austria, Dinamarca, España, Francia

CONVOCATORIA NACIONAL PCI 2022

PROYECTO 6 DYNAMITE. Next Generation Quantum Simulators: From DYNAMical Gauge Fields to Lattice Gauge ThEory

As of today, Quantum Simulators (QS) are the systems that can address, deepen our understanding of, and ultimately solve some of the most challenging problems of contemporary science: from quantum many body dynamics, through static and transient high T_c superconductivity, to the design of new materials. In DYNAMITE, we will design, realize in the labs, and characterize a new generation of QS with ultracold atoms and beyond. With ascending degree of experimental complexity this involves: (WP1) systems with statistical gauge fields, i.e. “single-component” lattice or continuum systems with density-dependent gauge fields changing the effective quantum statistics of the particles and realizing topological gauge theories; (WP2) systems in dynamical lattices, with “matter” living on the sites, and additional dynamical fields/particles living on the bonds; (WP3) lattice gauge theory models (LGT), from systems with Abelian (Z_2 , $U(1)$) to non-Abelian local gauge symmetry. Such systems address questions from condensed matter physics, nuclear physics, high energy physics, and material science: In particular, WP1 allows one to engineer topological gauge theories in the continuum, and to design and control novel types of topological and chiral order, with possible applications to quantum computing and quantum memories. The theoretical and experimental goal here is to tailor the proper matter dependence for the gauge fields, which corresponds to correctly imposing the local symmetry constraint of the gauge theory. WP2 allows one to design and study the interplay between topological order and symmetry breaking. Simpler systems without gauge invariance that are already simulated in the labs, permit us indeed to study the fundamental question of how gauge theory phenomena translate into systems of coupled degrees of freedom without explicit gauge symmetry and how gauge symmetry can emerge. WP3 allows us to study statics of the confinement-deconfinement transition, and more importantly its dynamics, relation to absence/presence of thermalization, the dynamical role of many body localization and quantum scars. While experimental work will focus on Abelian LGTs, theory will design as well scalable implementations of non-Abelian symmetries. In DYNAMITE, experiment and theory will be inseparably entangled. Its results will provide unprecedented control over salient phenomena at the frontier of quantum many-body physics.

IP	Agr-Instituto de Ciencias Fotónicas, España
Socios	Ludwig Maxmilians University Munich (Alemania), Heidelberg University (Alemania), Università degli Studi di Trento (Italia), Jagiellonian University in Krakow (Polonia), Eidgenössische Technische Hochschule Zürich (Suiza)
Presupuesto total	1.539.300 €
Concedido ES	249.952,48 €

PROYECTO 8 EQUAISE. Enabling QUAntum Information by Scalability of Engineered quantum materials

Future quantum applications require non-classical light sources that emit indistinguishable photons on-demand with high efficiency and purity. A stringent requirement for industrial applications is that these sources are fabricated via simple and cost-effective methods and, at the same time, be compatible with current photonic integration technologies. The performance of solid-state quantum emitters and single photon sources has been significantly improved, owing to almost 20 years of

extensive engineering efforts. However, bringing them out of research laboratories remains a grand challenge, mainly due to the difficulty of fulfilling the scalability requirement set by quantum technologies. Here, we propose a novel approach to fabricate arrays of near-ideal single-photon sources. The sources will be realized starting from two-dimensional materials made of transition metal dichalcogenides (TMDs). Atomically thin TMDs can be easily produced, are cost-effective and, thanks to their inherently flexible nature, their optical properties can be seamlessly tuned. Furthermore, the emission from these materials may cover the wavelength region of interest for signal transmission through optical fibers. We will combine mechanics and electrochemistry to deform and shape two-dimensional membranes made of TMDs at the nanoscale and transform them into site-controlled single photon sources. The fabrication of our source arrays in TMD membranes will be accomplished following two complementary procedures:

- i) mechanical nano-indentation
- ii) hydrogen-assisted formation of nanobubbles

In both instances, the sources will be created spatially and spectrally resonant with the electromagnetic field of a circular Bragg-grating microcavity to ensure efficient light extraction and single-mode fiber coupling. These hybrid structures will be integrated onto micro-machined piezoelectric devices for controlling their emission properties independently by strain engineering. A single chip hosting several non-classical light sources will be fabricated in scalable manner with each source being independently addressable by external bias. This will permit to perform photon processing involving two or more quantum emitters integrated in a single compact device reducing the operating costs dramatically and enhancing the opportunities to test complex arrangements within quantum communications and simulation.

IP	Dipartimento di Fisica, Sapienza Università di Roma. Italia
Socios	Institute for Photonics and Nanotechnologies (CNR-IFN) National Research Council (Italia), Institute of Physics, Carl von Ossietzky University of Oldenburg (Alemania), Institute for Theoretical Physics, University of Bremen (Alemania), nanoplus Nanosystems and Technologies GmbH (Alemania), Universidad de Oviedo (España), Faculty of Fundamental Problems of Technology, Wroclaw Univ. of Science and Technology (Polonia)
Presupuesto total	2.199.012,73 €
Concedido ES	174.800 €

PROYECTO 9 EQUIP. Error Correction for Quantum Information Processing

The last years have seen significant advances in the field of quantum technologies, consolidating the development of basic requirements for quantum computation. Protecting the quantum computation from noise and decoherence has become more topical than ever, challenging and bringing quantum error correction fairly close to the integration into practical quantum computers. To make such an integration viable, the EQUIP project aims at providing radically new solutions to fault tolerant quantum computation, covering both intermediate and large-scale quantum systems, and bridging the critical gap between algorithmic solutions and latency-power-scalability constrained hardware designs. To achieve these goals, the project brings together interdisciplinary expertise, extending from the computer science foundations of quantum error

correction and fault-tolerant computation to algorithmic aspects, computer architectures, and hardware designs.

The main contributions of the proposed research are as follows. First, the project will develop optimised low-qubit overhead solutions, suited but not restricted to intermediate scale quantum systems, including application-aware and software-based error mitigation techniques, and flag error correction protocols. Second, for large-scale systems, the project will develop thoroughly new approaches to accurate and hardware friendly decoding of quantum low-density parity-check codes and will explore pioneering approaches relying on quantum polar codes. Third, the effectiveness of the proposed solutions will be demonstrated through either their implementation into real intermediate-scale quantum devices and quantum simulators, or the hardware prototyping of the most promising decoding solutions for large-scale devices. The ambition of the proposed research is to cover the essential prerequisites for preparing the European industry for the forthcoming challenge of quantum technologies.

IP	Laboratoire d'Electronique et de Techlogie de l'Information. Francia
Socios	German Aerospace Center (Alemania), Universidad de Nebrija (España), Universidad Politécnica de Valencia (España), Aalto University (Finlandia)
Presupuesto total	1.328.720,36 €
Concedido ES	210.860,68€. (Universidad Complutense de Madrid 105.060,72 €), (Universidad Politécnica de Valencia 105.799,96 €)

PROYECTO 10 ExTRaQT. Experiment and Theory of Resources in Quantum Technologies

The emergence of quantum information science and the subsequent development of quantum technologies is firmly rooted in the newly found appreciation of physical properties such as coherent superposition, entanglement and entropy as resources. These resources provide the fuel for quantum technologies that enables them to achieve efficiencies beyond the limits imposed by classical physics. The optimal exploitation of resources in quantum technologies requires as a foundation both a firm mathematical framework for a rigorous characterisation, manipulation and verification of quantum resources and experimental technologies that can then design and realise protocols and devices to deliver optimised quantum technologies. ExTRaQT is a consortium of mathematicians, theoretical and experimental physicists as well as molecular spectroscopists with proven track record of collaboration that will take this route by developing the theoretical and experimental foundations for quantum resource manipulation and, in a close collaboration across these fields, demonstrate experimentally key elements of quantum scale heat engines and apply these concepts to gain new insights into quantum dynamics of bio-molecular systems. To this end, ExTRaQT will:

- i) Develop the mathematical foundations of resource theories for states, operations and dynamics and apply them specifically to the resources of coherence and to thermodynamic processes at the quantum scale. Key processes in these resource theories will be identified to use them as a basis on which to achieve their experimental realisation.
- ii) Design theoretically and optimise numerically experimental designs of key resource manipulation processes and quantum scale heat engines based on realistic experimental parameters of the experimental platforms of trapped ions and of bio-molecular systems.

- iii) Use trapped ion quantum technologies to realise atomic scale quantum heat engines in contact with classical and quantum heat baths and analyse their performance in terms of the resource theory of quantum thermodynamics. Design and realise a quantum simulator for open quantum systems in contact with structured reservoirs capable of emulating dynamics of bio-molecular systems.
- iv) Observe coherent electron-vibrational quantum transport dynamics in bio-molecular systems, assess the role of coherent dynamics and analyse these dynamics in terms of quantum heat engines. Electronic and vibrational structure of those systems will be tailored to achieve control over thermodynamic processes in such systems.

Individually, members of ExTRaQT have made fundamental contributions to all aspects of the project theme. In ExTRaQT, for the first time, they will form an integrated interdisciplinary collaboration to develop resource theories, apply them experimentally for enhanced quantum technologies as well as study of quantum dynamics in biological systems.

IP	University of Warsaw, Polonia
Socios	University of Gdansk (Polonia), University of Ulm (Alemania), University of Kassel (Alemania), Agr-Intstituto de Ciencias Fotónicas (España), Universidad Autónoma de Barcelona (España)
Presupuesto total	882.146,49€
Concedido ES	224.939,94 €. (Instituto de Ciencias Fónicas 112.814,96€), (Universidad Autónoma de Barcelona 112.124,98 €)

PROYECTO 15 MAGMA. Magnetic Topological Insulators for Robust Majorana Bound States

We propose to study the interplay between magnetism, band topology, and superconductivity with the aim of realizing robust topological states as future building blocks for quantum computation. Our project will combine experiments, materials simulations, and solid-state theory in order to study Majorana bound states based on magnetic topological insulators (MTIs) with proximity-induced superconductivity. This project will lead to important new insights, both in theory and experiment, about MTIs. The latter, in turn, will lead us to the ultimate goal of our project, which is to unambiguously identify Majorana bound states in MTI nanowires, and to pave the way for their future use in topological quantum computation.

IP	University of Luxembourg. Luxemburgo
Socios	Forschungszentrum Jülich (Alemania), Universidad de las Islas Baleares (España), Imperial College London (Reino Unido)
Presupuesto total	1.628.314,26 €
Concedido ES	128.799,96 €

PROYECTO 16 MENTA. Accessible Quantifiers of Multipartite Entanglement in Atomic Systems

The characterization and classification of multipartite entanglement is crucial for the investigation of many-body systems, foundational problems and quantum technologies. A central goal of the MENTA project is to discover robust, experimentally accessible criteria to witness and explore the

many facets of quantum correlations. Multipartite entanglement provides formidable challenges arising from the exponential increase of the Hilbert space dimension with the number of the quantum system constituents. For instance, the full classification of multipartite entanglement is missing in the literature, and the possibility to witness the classes of entangled states allowing quantum advantages in different quantum information applications is still largely unexplored. The experimental groups in this project have substantial infrastructure permitting the use of ultra-cold atoms and their detection. The techniques include: coherent spin manipulation, atom chips, Bose-Einstein condensates, atom interferometry and arrays of optical tweezers. They have already developed powerful atom detection techniques with: high quantum efficiency, a capacity for the detection of multiple atoms and their correlations as well as good spatial resolution, all of which will be used to develop experimental protocols for witnessing multipartite entanglement. A crucial asset is the dedicated collaboration of two theoretical groups to guide the exploration of the many possible experimental strategies to make these characterizations. The high degree of experimental control and detection efficiencies will permit the evaluation of Fisher information the Dyson rank and other multipartite entanglement witnesses based on the measurement of collective variables. Significant efforts will be dedicated to investigate novel quantifiers specifically tailored to the experimental platforms created in this project. Successful completion of this project will provide to the community a deeper understanding of multipartite entanglement and its relation with fundamental and technological applications.

IP	Laboratoire Charles Fabry de l'Institut d'Optique. Francia
Socios	Leibniz University Hannover (Alemania), Technische Universität Wien (Austria), Consiglio Nazionale delle Ricerche (Italia), Universidad del País Vasco (España)
Presupuesto total	1.800.254,24 €
Concedido ES	201.249,98 €

PROYECTO 17 MF-QDS. Microfluidic Quantum Diamond Sensor

The field of microfluidics has witnessed rapid growth in the recent years, and it is now ubiquitous in areas as diverse as biology, medicine, and chemistry. Today, microfluids are a paramount resource in blood testing, printing, and fuel cells, to cite but a few. The ability to estimate the main microfluid properties is crucial for the drug industry and in medicine where, for example, detection of free radicals in biological samples is critical to understanding processes such as the immune response. The most widespread platform, which has contributed to the greatest extent to the development of microfluidics is the Lab on a Chip approach to chemical and biological analysis. Since chips contain microfluid channels and integrated analysis tools, it is vital to have precise control over the physics of fluids in these microchannels. However, accumulating evidence has shown that the flow in these channels does not always obey macroscopic fluid laws, such as the no-slip boundary condition usually taken for granted when characterizing fluid properties. Though there have been advances in microscopic theory, a technology to accurately measure velocity has not yet been developed. This Mf-QDS presents a radically different approach to the measurement of velocity and diffusion properties in microfluid channels. Based on shallow Nitrogen Vacancy (NV) centers implanted in a diamond matrix positioned sufficiently close to the flowing liquid, we will use nano-NMR techniques to detect the statistical field produced by the nuclei in the vicinity of the NV. As the molecules flow through the channel, the magnetic noise

induced in the NV fluctuates. Tracking these fluctuations as changes in the NV state will provide an unprecedented level of accuracy in terms of the velocity flow profile of the microfluid and its temperature, while making it possible to differentiate between several component species. None of these parameters can be achieved with current classical methods although they are vital for the next generation of microfluid devices. We will design and implement an integrated tool containing the diamond with the NVs and microfluid channels that can be exported to any microfluidic device and provides a state-of-the-art resolution capacity.

IP	Universidad de Murcia. España
Socios	University of Ulm (Alemania), The Hebrew University Jerusalem (Israel), Jagiellonian University (Polonia)
Presupuesto total	872.758,35 €
Concedido ES	247.824,96 €

PROYECTO 19 MQSens. Quantum sensing with nonclassical mechanical oscillators

Recent breakthroughs have led to creating true quantum states of solid-state mechanical objects. Using cavity optomechanics, quantum acoustics, and nano-electro-mechanics, we will develop new protocols for sensing that make use of the unique properties of these states. While quantum limits to noise and sensitivity have long been an important consideration in optomechanical sensors, we aim to make use of distinctly quantum properties such as non-Gaussianity, multi-mode entanglement, and single-phonon nonlinearities to enhance the performance of these systems. In other words, analogously to what has long been done in atomic or spin-based sensors, we will explore using quantum states as a new resource for enhancing the capabilities of mechanical sensors. The goal of this project is to establish the usefulness of quantum states for mechanical sensing through new theoretical developments and experimental demonstrations in three complimentary physical platforms: high-overtone bulk acoustic wave resonators (HBARs), membrane resonators, and carbon nanotubes. We will begin by addressing three outstanding goals in the field: creating complex non-classical states of motion such as Schrödinger cat states, using feedback to stabilize squeezed and entangled mechanical states, and realizing a mechanical qubit. Achieving these goals will require us to advance the performance of all three mechanical systems and develop new theoretical ideas for dissipation engineering and quantum control. We will then use these capabilities to explore new protocols for quantum-enhanced measurements of force and frequency. Importantly, we will broadly consider these devices as open quantum systems that “sense” their environment and establish technical and conceptual connections to other fields such as quantum error correction and the study of quantum mechanical effects in macroscopic objects.

IP	Eidgenössische Technische Hochschule Zürich, Suiza
Socios	Aalto University (Finlandia), University of Malta (Malta), University of South-Eastern Norway (Noruega), Agr-Intstituto de Ciencias Fotónicas (España)
Presupuesto total	1.239.697,58 €
Concedido ES	174.914,98 €

PROYECTO 25 QUANTAGENOMICS. Quantum Enabled Secure Multiparty Computation for Genomic Medicine

Collaborative genomic medicine is on the verge to bring major advances to medical research and health care services. However, it also raises major ethical concerns if privacy is not strictly assured. By exploring the laws of quantum mechanics, a generic and broadly available secure multiparty computation (SMC) framework, targeting genomic medicine applications, is going to be carried out. The developed quantum SMC framework will provide unprecedented levels of security, without compromising the efficiency and availability of the system. As a proof-of-concept, a private data mining genomic medicine service, based on quantum SMC, will be implemented in the laboratory and validated in a field trial. In QuantaGENOMICS, we will prove that quantum technologies can play a major role in solving the conflict between privacy and utility of collecting and mining huge quantities of individuals' data.

To construct this quantum SMC framework, a practical secure random oblivious transfer protocol based on classical and quantum cryptographic primitives is going to be developed, implemented, and validated. The obtained random oblivious transfer protocol will be practically secure, even in the presence of a quantum computer. Several quantum resources, namely single-photon, coherent and entangled quantum states, are going to be used together with classical cryptographic resources to ensure that the system offers the desired level of security, without hampering its efficiency or availability. Based on this hybrid random oblivious transfer protocol, a generic, fast, and secure SMC framework will be achieved. On top of the quantum SMC framework, a collaborative genomic medicine service is going to be implemented. The obtained quantum resources and cryptographic protocols will be integrated into a big software-defined quantum optical network. A field trial will demonstrate that the developed quantum technologies and services can be integrated into deployed telecommunication infrastructures.

By combining new protocols in a groundbreaking way, QuantaGENOMICS will explore known quantum effects and concepts from quantum science and translate them to the development of radically new technological applications in quantum SMC, fostering the development of groundbreaking genomic-based clinical services, in which privacy is assured by quantum technologies. By enabling a disruption on the medical practice, by fostering its hyper-personalization, such services will demonstrate the huge positive impact on society of the developed quantum technologies and promote the rise of novel quantum-based applications.

IP	Instituto de Telecomunicações. Portugal
Socios	CBR Genomics (Portugal), Universidad Politécnica de Madrid (España), Instituto de Ciencias Fotónicas (España), Sorbonne Université (Francia), French National Institute for Research in Digital Science and Technology (Francia)
Presupuesto total	1.101.480,14 €
Concedido ES	255.138,96 €. (Instituto de Ciencias Fotónicas 131.226,48 €), (Universidad Politécnica de Madrid 123.912,48 €)

PROYECTO 28 QuSIED. Quantum simulation with engineered dissipation

In recent years, there has been significant progress in implementing strong, novel interactions (such as Rydberg) with ultracold atoms to realize exotic phases of strongly correlated matter and to perform quantum operations. However, there is still a frontier that largely remains unexplored,

associated with achieving strong interactions of long-range character. Although it is well-known that in principle, photon-mediated interactions provide an enabling route, in practice, large and uncontrolled dissipation in the form of atomic spontaneous emission greatly limits what is actually achievable. Our targeted breakthrough is to overcome this barrier by constructing a new platform consisting of a many-atom Ytterbium optical tweezer array integrated with a cavity QED setup. While spontaneous emission typically limits the interaction fidelities of light-matter coupled systems, our setup will instead harness spontaneous emission as a correlated form of dissipation, which can be suppressed and even utilized for dissipation engineering given the ability to controllably position atoms at sub-wavelength distances. The anticipated increases in interaction fidelities (to the ~99% level), along with the capabilities for long-range interactions, engineered dissipation and single-atom control and read-out, will make such a platform a leading candidate for future applications in quantum simulation and metrology to produce novel exotic dissipative phases of matter and to investigate entanglement and non-equilibrium dynamics of strongly correlated systems. Achieving this vision will require combining new experimental capabilities, a new conceptual paradigm of light-matter interactions, and novel theoretical advances, through the synergistic efforts and diverse expertise of the QuSiED partners.

Specific scientific breakthroughs targeted by QuSiED include:

- i) construction of an ambitious many-atom tweezer-cavity platform, through the shared expertise of the experimental PI's in the separate fields of ultracold atomic physics and cavity QED,
- ii) realization of emergent dissipative non-equilibrium phenomena showing spontaneous breaking of time translation symmetry, such as time-crystals and limit cycles,
- iii) generating metrologically useful states in a way that is protected from undesired dissipation,
- iv) exotic entanglement evolution in long-range dissipative settings,
- v) new theoretical tools for this hybrid platform at the interface of quantum optics, quantum information, and theoretical and computational many-body physics.

The realization of the unique tweezer-cavity platform will establish a significant advantage for the EU in the international race for quantum supremacy. We expect the project to generate a significant impact in terms of the new applications and physics that can be realized with long-range photon-mediated interactions, engineered dissipation, and single-atom control. The platform will attract a broad community of academic and industrial end-users, which QuSiED will efficiently engage through intense communication efforts. Furthermore, QuSiED empowers diverse new actors for future scientific leadership, including significant involvement from female scientists and young PIs, engaging researchers from a wide range of countries, and newcomers to QUANTERA, while pushing all researchers involved into new collaborative directions.

IP	Jožef Stefan Institute, Eslovenia
Socios	Universität Hamburg (Alemania), Johannes Gutenberg University (Alemania), University of Innsbruck (Austria), Budapest University of Technology and Economics (Hungría), Agr-Instituto de Ciencias Fotónicas (España)
Presupuesto total	1.103.066,31 €
Concedido ES	85.099,96 €

PROYECTO 36 T-NISQ.Tensor Networks in Simulation of Quantum matter

In the Quantum Science era where Noisy Intermediate-Scale Quantum (NISQ) devices are accessible, quantum information tools to guide their development play a fundamental role. With the foreseen increasing complexity of available NISQ devices, their classical simulations – that drove their development until now – will soon fail to keep up. There is thus an urgent need for increasingly powerful diagnostic tools that can be applied to quantum devices even in the quantum advantage regime. We plan to systematically develop quantum-inspired algorithms to benchmark, certify and validate quantum devices. At the center of the quantum-inspired algorithms lay tensor networks (TN), one of the most powerful paradigms for simulating quantum many-body lattice systems, both in- and out-of-equilibrium. Also exploiting TN algorithm, T-NiSQ will develop benchmarking tools for high-dimensional quantum systems in the presence of noise and test them in state-of-the-art quantum simulations and computations. The results of T-NiSQ will be an essential tool to advance our understanding of dynamical and strong- correlation effects in quantum matter also beyond the NISQ era. T-NiSQ's results will have applications ranging from condensed matter physics over high-energy physics, quantum information theory, the design of new materials, and efficient chemical reactions.

IP	National Institute for Nuclear Physics. Italia
Socios	Deutsches Elektronen Synchrotron & Max Planck Inst. Of Quantum Opt. (Alemania), University of Innsbruck (Austria), Universidad del País Vasco (España), Jožef Stefan Institute (Eslovenia)
Presupuesto total	1.225.416 €
Concedido ES	209.999,98 €

PROYECTO 39 VERIqTAS.Verification of quantum technologies, systems and applications

In recent years we observe a wave of novel quantum technologies such as quantum random number generators, quantum annealers or the first prototypes of quantum computers. These devices are believed to soon drastically change the way we process information and communicate, paving a way to important breakthroughs in many research disciplines, as diverse as mathematics, chemistry or even medicine. However, the promises of quantum technologies can be fulfilled only if the correct functioning of its components can be certified. This poses an extraordinary challenge to design suitable certification tools allowing the end-users to certify that the device they use operates according to its specification and generates the correct output. At the same time, it urges for thorough characterization of quantum phenomena from which these devices derive their power. In VERIqTAS, we address these challenges and develop versatile certification methods for current and future quantum technologies that: (I) are experimentally friendly, (II) are based on minimal sets of physically well-justified assumptions, (III) acknowledge all limitations imposed by the devices, and (IV) rely on information that is easily accessible in the underlying quantum systems. Our proposal is structured around three research lines. The first two are devoted to the most relevant scenarios for the successful deployment of quantum technologies: quantum networks, a very broad framework that models, for instance, quantum communication protocols; interacting quantum many-body systems, i.e., the support behind quantum computing devices. The third research line is transversal to the previous two and aims at providing novel tools and concepts

for certification of general applicability in quantum information applications. The obtained results will be crucial for a successful development, standardization, and deployment of quantum technologies in the future.

IP	Center for Theoretical Physics, Polish Academy of Sciences. Polonia
Socios	Institute of Quantum Optics and Quantum Information, Austrian Academy of Sciences (Austria), Université libre de Bruxelles (Bélgica), University of Copenhagen (Dinamarca), Centre de Recherche Inria Grenoble-Rhône-Alpes (Francia), Agr-Instituto de Ciencias Fotónicas (España)
Presupuesto total	929.943,44 €
Concedido ES	174.914,98 €

KDT JU. Key Digital Technologies Joint Undertaking

La Empresa Conjunta de Tecnologías Digitales Clave (la Asociación Público-Privada para la investigación, el desarrollo y la innovación) financia proyectos para garantizar una experiencia de primer nivel en estas tecnologías habilitadoras clave, esenciales para el liderazgo competitivo de Europa en la era de la economía digital. KDT JU es el sucesor del programa ECSEL JU y respalda sus proyectos en curso. A través de la KDT JU, la industria europea, las PYME y las organizaciones de investigación y tecnología (RTO), representadas por asociaciones industriales, reciben apoyo y cofinanciación de los Estados participantes del KDT y la Unión Europea. Los componentes y sistemas electrónicos sustentan todos los principales sectores económicos. La necesidad de dominar estas tecnologías en Europa, en particular en el contexto de la consecución de prioridades políticas europeas como el liderazgo digital, ha llevado a una firme resolución de crear una iniciativa estratégica europea líder (la KDT JU) para lograr objetivos centrados, coordinados y competitivos. actividades de investigación e innovación en el campo ECS. La KDT JU abordará temas claramente definidos que permitirían a las industrias europeas en general diseñar, fabricar y utilizar las tecnologías más innovadoras en componentes y sistemas electrónicos. A través de un apoyo financiero estructurado y coordinado a nivel europeo, se ayudará a los equipos de investigación y a las industrias europeas a mantener sus fortalezas actuales a la vanguardia en un contexto internacional altamente competitivo y cerrar la brecha en tecnologías que son críticas para una transformación digital en Europa que refleja los valores fundamentales de la UE, incluida la privacidad y la confianza, la seguridad y la protección. La colaboración entre las partes interesadas del ecosistema, que representan a todos los segmentos de las cadenas de valor, es esencial para el desarrollo de nuevas tecnologías y la rápida adopción de la innovación en el mercado. También son vitales la apertura y la flexibilidad para integrar a las partes interesadas pertinentes, incluidas en particular las PYME, en áreas tecnológicas emergentes o adyacentes, o en ambas. Todo esto representa el espíritu y el modus operandi de la nueva KDT JU.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjunta internacionales: 2 (2021, 2022)

Participación de AEI en convocatorias conjuntas: 2 (2021, 2022)

CONVOCATORIA CONJUNTA INTERNACIONAL 2021

Países participantes	Austria, Bélgica, Suiza, República Checa, Alemania, Estonia, Dinamarca, España, Finlandia, Francia, Hungría, Irlanda, Grecia, Israel, Italia, Lituania, Letonia, Países Bajos, Noruega, Polonia, Portugal, Rumania, Suecia, Eslovenia, Turquía, Reino Unido, Eslovaquia
Temáticas	• General according to SRIA 2021 • Development of open-sources RISC-V building blocks • General according to SRIA 2021 • Processing solutions for AI at the edge addressing the design • A Pan-European chip infrastructure for design innovation
Presupuesto total	208.000.000 €

Concedido ES	2.081.652 €
Proyectos aprobados	13
Proyectos con financiación AEI	5

No.	Acrónimo y título del proyecto	Países participantes
1	AGRARSENSE. Smart, Digitalized Components And Systems For Data-Based Agriculture And Forestry	Suecia , Austria, Suiza, República Checa, Alemania, Finlandia, España, Francia, Italia, Irlanda, Letonia, Países Bajos, Noruega, Polonia, Turquía
2	A-IQ Ready. Artificial Intelligence using Quantum measured Information for realtime distributed systems at the edge	Austria , República Checa, Alemania, Grecia, España, Finlandia, Francia, Italia, Letonia, Lituania, Países Bajos, Polonia, Portugal, Suecia, Turquía, Eslovaquia
3	BRIGHTER. Breakthrough in micro-bolometer imaging	Francia , Bélgica, España, Portugal, Turquía
4	CLEVER. Collaborative edge-cCloud continuum and Embedded AI for a Visionary industry of the future	Italia , Alemania, Dinamarca, Grecia, Irlanda, Países Bajos
5	EdgeAI. Technologies convergence to enhance intelligence for improved performance and efficiency at the edge	Noruega , Bélgica, Alemania, Francia, Suiza, Italia, Luxemburgo, Países Bajos, Letonia
6	HICONNECTS. Heterogeneous Integration for Connectivity and Sustainability	Alemania , Turquía, Rumania, Países Bajos, Suecia, Italia, Israel, Francia, Finlandia, Dinamarca, Bélgica, Austria, Turquía
7	Listen2Future. Acoustic Sensor Solutions Integrated With Digital Technologies As Key Enablers For Emerging Applications Fostering Society 5.0	Austria , Bélgica, Alemania, España, Países Bajos, Noruega, República Checa
8	Newlife. New remote non-invasive monitoring solutions for ensuring the health of mothers and babies before and after birth	Países Bajos , Irlanda, Alemania, Finlandia, Países, Suecia, Suiza
9	Powerized. Digitalization by Intelligence for Power Electronic within Value Chains	Alemania , Austria, Bélgica, Grecia, España, Finlandia, Hungría, Italia, Países Bajos, Rumania, Suecia, Letonia, Suiza
10	REBECCA. Reconfigurable Heterogeneous Highly Parallel Processing Platform For Safe And Secure AI	Grecia , Francia, Dinamarca, Países Bajos, España, Alemania, Italia, Turquía
11	SHIFT. Sustainable Technologies Enabling Future Telecom Applications	Francia , Austria, Bélgica, Suiza, Alemania, Grecia, Italia, Lituania

12	TRISTAN. Together for RISC-V Technology and ApplicationNs	Alemania, Austria, Bélgica, Suiza, Alemania, Grecia, Francia, Italia, Finlandia, Países Bajos, Polonia, Rumania, Turquía, Israel
13	RETICLES. Research, Entrepreneurship, Training, IP-exchange & Chip pLatform of EUROPRACTICE Services	Bélgica, Alemania, Francia, Reino Unido, Irlanda

CONVOCATORIA NACIONAL PCI 2022

PROYECTO 1 AGRARSENSE. Smart, Digitalized Components And Systems For Data-Based Agriculture And Forestry

"Food security is a global challenge and is impacted by, rapidly compounding effects including climate change, supply chains, human labour shortages, driving the need for traceability, and technological innovation and automation to name a few. The latest important price increases of agricultural row products show the limitations of the available resources. Through this Joint Undertaking, the AGRARSENSE consortium of 57 partners (including 4 affiliates) plan to take agricultural technology and productivity to the next level, beyond the State-of-the-Art, by combining some of the most advanced organisational capabilities from across European industrial 16 Large Enterprises, 25 SMEs and 16 Research & Technology Organisations (RTOs), from 15 countries. The development of the most advanced sensory and autonomous agricultural capabilities requires a sophisticated governance structure, ensuring that all partners are aligned across Use Cases and Work Package deliveries. The AGRARSENSE consortium has one of the world's leaders in Forestry automation, Komatsu, as Project Coordinator. The AGRARSENSE project goal of creating a holistic ecosystem of sensory and automated capabilities will further extend Europe's lead in optimizing and securing agricultural value chains. To drive such an ambitious impact agenda, we have selected seven Use Cases which will, collectively, contribute to solving the challenges outlined. These Use Cases are Greenhouses (UC1), Vertical Farming (UC2), Precision Viticulture (UC3), Agri robotics (UC4), Autoforest (UC5), Organic Soils & Fertilizers (UC6) and Water (UC7). These Use Cases are fused together by the most advanced hardware, software and system integration technologies, which will drive new solutions for partners and the collective AGRARSENSE impacts at scale."

IP	Komatsu Forest. Suecia
Socios	Dinamarca, Finlandia, Países Bajos, España, República Checa, Luxemburgo
Presupuesto total	57.196.944 €
Concedido ES	325.581 €

PROYECTO 2 A-IQ Ready. Artificial Intelligence using Quantum measured Information for realtime distributed systems at the edge

The onset of climate change and widespread geopolitical conflicts and social inequalities showcase the need for innovation and change that require a better world. Now technologies like artificial intelligence, the Internet of Things, robotics and other related technologies are making such a world all the more feasible. The A-IQ Ready project aims to introduce and materialise an

intelligent autonomous ECS fit for our digital age and utilise crucial technologies, like edge continuum orchestration for artificial intelligence, distributed collaborative intelligence and quantum sensing, which could prove revolutionary for most services and industries. These technologies and their combination will propel the transition to a Europe of Society 5.0

IP	AVL LIST GMBH. Austria
Socios	Dinamarca, Finlandia, Italia
Presupuesto total	38.009.752 €
Concedido ES	423.120 € (Universidad de Alcalá 118.695 €), (Universidad Politécnica de Madrid 304.425 €)

PROYECTO 7 Listen2Future. Acoustic Sensor Solutions Integrated With Digital Technologies As Key E

Listen2Future will boost the potential of piezoelectric acoustic transducers to provide new solutions in the key application areas of Health & Wellbeing and Digital Industry & Energy. Acoustic transducer solutions and the key underlying technologies are addressing many of the challenges in emerging applications towards a more digitalized society. Indeed, growing demand for MEMS-based acoustic transducers (microphones, ultrasonic transducers) in medical and industrial devices are creating a new high demand for miniaturized low power sensors. In combination with an intelligent signal processing system, algorithms and customized packaging, these technologies will be the key to achieve performant, low power consuming, miniaturized and cost-saving systems. The demonstrators will address 14 use-cases in LISTEN2FUTURE with their benchmark in low power consumption, small size and low cost to open the door for disruptive acoustic applications. Major impact on quality of live for humans as well as on industrial and medical appliances can be expected. The European Position in Acoustic Sensors will be therefore strengthened by new piezoelectric materials and technologies with the capability to outperform the existing ones that are based on capacitive MEMS technologies. This will contribute to reinforcing the Union's strategic autonomy in electronic components and systems to support future needs of vertical industries and the economy at large. The growth of the microphone market (8 - > 14bio. units in 5 years) and the growth of the Ultrasound sensing modules market (500mio -> 800mio in 3 years) should be predominantly covered with acoustic sensors made in Europe. The double transition of European Union toward digital and greener society there poses a high demand for reliable and secure data. Our integral acoustic sensor solutions are listening to these needs and mapping the acoustic senses and perceptions into Society 5.0.

IP	Infineon Technologies. Austria
Socios	Dinamarca, Bélgica, República Checa
Presupuesto total	29.587.783,25 €
Concedido ES	655.467 € (Universidad de Granada 375.567 €), (Agencia Estatal Consejo Superior de Investigaciones Científicas-CSIC 282.900 €)

PROYECTO 9 Powerized. Digitalization by Intelligence for Power Electronic within Value Chains

"The overarching goal of PowerizedD is to develop breakthrough technologies of digitalized and intelligent power electronics, in order to enable sustainable and resilient energy generation, transmission and applications. PowerizedD enhances the level of mechanical and electrical integration of new driver circuits into power electronics and allows for the first time common optimization of all power switch functionalities. Regarding data sharing along the value chain, PowerizedD drives the novel approach of Federated Learning as a methodical approach to an intrinsically encrypted transfer of confidential and proprietary data. Also new is the usage of detailed electrical physical models in digital twins of real time digitally monitored and controlled power electronic devices. Unlike other projects focusing on competence and technology with limited effort on demonstration, this project will start from vital societal needs, by identifying and analyzing the key generic technology challenges from broad application scopes. Major effort will be spent on cross-domain research and innovation. The developed technologies will be demonstrated and evaluated via a large number of universally applicable results. To realize this ambition, a large project consortium will incorporate the needed competencies and resources along the whole value chain. 24 Large Entities, 19 Small Medium Enterprises and 22 research partners from 12 EU countries – representing the entire value chain from materials to “system of systems” – strive to demonstrate the applicability of these innovative approaches to multiple industrial domains. Among the concrete objectives are a 25% reduction or power losses, a device and system lifetime increase of 30%, a chip size reduction of at least 10% and a shortening of the design time by 50%. By this, PowerizedD addresses the three megatrends Independence, Sustainability and Digitalization, thereby opening pathways to massive economic and societal benefits for the EU."

IP	Infineon Technologies. Alemania
Socios	Dinamarca, Finlandia, España, Países Bajos, Suecia
Presupuesto total	73.279.555,51 €
Concedido ES	497.412 € (Universidad de Oviedo 221.154 €), (Agencia Estatal Consejo Superior de Investigaciones Científicas-CSIC 276.258 €)

PROYECTO 10 Rebecca. Reconfigurable Heterogeneous Highly Parallel Processing Platform For Safe And Secure Ai

"REBECCA, a heavily SME-driven project, will democratize the development of novel edge AI systems. Towards this aim, REBECCA will develop a purely European complete Hardware(HW) and Software(SW) stack around a RISC-V CPU, which will provide significantly higher levels of a) performance (e.g., inferences per second), b) energy/power efficiency (e.g., inferences per joule/watt), c) safety and d) security than the existing ones. This will be achieved by utilizing state-of-the-art technologies and by making significant scientific and technological advances in several key relevant domains, including a) processing units, b) hardware accelerators, c) reconfigurable hardware, d) tightly coupled interconnected chiplets e) HW/SW co-design and co-development tools, f) system software, g) middleware, and h) AI libraries and frameworks. REBECCA will significantly contribute to realizing business and societal opportunities by validating and demonstrating its approach on 4 real-world use cases and 2 benchmarks based on real-world

applications from the Smart appliances, Energy Generation, Infrastructure Inspection, Avionics Automotive and Health domains. In terms of HW, REBECCA will develop a novel chip consisting of two tightly coupled chiplets which will incorporate: a) RISC-V multicore, b) Neuromorphic AI Accelerator, c) Programmable array AI Accelerator, d) AI Accelerator utilizing a hierarchical processing architecture, e) DNN Accelerator, f) Reconfigurable hardware, g) Near-Memory-Processing, h) Memory Encryption. In terms of SW, REBECCA will implement optimized system SW, middleware, and AI libraries that will take full advantage of the underlying novel HW. The REBECCA platform will be complemented by a novel HW/SW Design Space Exploration tool which will allow the development of highly efficient REBECCA-based systems. REBECCA will additionally provide the means for safety and security modeling and verification for the developed HW and SW from the very early design stages".

IP	Telecommunication Systems Institute. Grecia
Socios	Francia, Dinamarca, Países Bajos
Presupuesto total	15.820.410,50 €
Concedido ES	180.072 € (Centro de Supercomputación de Barcelona 91.881 €), (Universidad de Castilla La Mancha 88.191 €)

CONVOCATORIA CONJUNTA INTERNACIONAL 2022

Países participantes	Austria, Bélgica, Chipre, República Checa, Dinamarca, Estonia, Finlandia, Francia, Alemania, Grecia, Hungría, Irlanda, Israel, Italia, Letonia, Luxemburgo, Países Bajos, Noruega, Polonia, Portugal, Eslovaquia, España, Suecia, Turquía
Temáticas	• Digital Society • Agrifood and Natural Resources • Health & WellBeing • Digital Industry • Energy • Mobility
Presupuesto total	409.526.920 €
Concedido ES	2.117.500 €
Proyectos aprobados	18
Proyectos con financiación AEI	7

No.	Acrónimo y título del proyecto	Países participantes
1	14AMI 14 Angstroms Module Integration	Países Bajos , Austria, Bélgica, Suiza, Alemania, Francia, Israel, Rumania
2	AIMS5.0 Artificial Intelligence in Manufacturing leading to Sustainability and Industry5.0	Alemania , Austria, Grecia, España, Francia, Italia, Letonia, Hungría, Países Bajos, Polonia, Suecia, Turquía
3	ALL2GaN Affordable smart GaN IC solutions as enabler of greener applications	Austria , Bélgica, Suiza, República Checa, Alemania, Dinamarca, España, Noruega, Países Bajos, Grecia, Suecia, Eslovaquia
4	ARCHIMEDES Trusted lifetime in operation for a circular economy	Austria , Grecia, República Checa, Alemania, Francia, Irlanda, Italia, Lituania, Letonia
5	EcoMobility Intelligent, Safe and secure connected Electrical Mobility solutions: Towards European Green Deal and Seamless Mobility	Alemania , Austria, Bélgica, Grecia, España, Italia, Letonia, Países Bajos, Turquía
6	EECONE European ECOSystem for greenN Electronics	Francia , Austria, Bélgica, Suiza, República Checa, Alemania, Dinamarca, Grecia, España, Israel, Italia, Letonia, Países Bajos, Polonia, Suecia, Turquía
7	ISOLDE High performance, safe, secure, open-source leveraged risc-v domain- specific ecosystems	Alemania , Austria, Suiza, República Checa, Francia, España, Rumanía, Italia, Suecia
8	LoLiPoP IoT Long Life Power Platforms for Internet of Things	República Checa , Suiza, Alemania, España, Finlandia, Irlanda, Italia, Países Bajos, Suecia, Turquía, Polonia
9	NerveRepack Intelligent neural system for bidirectional connection with exoprostheses and exoskeletons	Rumania , Grecia, Suiza, Alemania, Italia, España, Países Bajos, Noruega, Polonia, Portugal, Rumania
10	Neurokit2E Open-Source Deep Learning Platform dedicated to Embedded Hardware and Europe	Francia , Austria, Alemania, Italia, Países Bajos
11	PhotonixFAB Building a European industrial supply chain for SOI- and SiN-based silicon photonics, including heterogeneous integration to support emerging markets	Francia , Bélgica, Alemania, Francia, Israel, Irlanda, Países Bajos
12	SUSTRONICS Sustainable and green electronics for circular economy	Países Bajos , Austria, Suiza, Francia, España, Alemania, Finlandia, Letonia, Polonia, Portugal, Suecia

13	R-PODID Reliable Powerdown for Industrial Drives	Alemania , Grecia, Austria, República Checa, Italia, Letonia, Lituania, Países Bajos, Portugal, Rumania, Turquía
14	Resilient Trust Trusted SMEs for Sustainable Growth of Europeans Economical Backbone to Strengthen the Digital Sovereignty	Francia , Suiza, Italia, Alemania, Países Bajos, Polonia, Suecia

CONVOCATORIA NACIONAL PCI 2023

PROYECTO 2 AIMS5.0. Artificial Intelligence in Manufacturing leading to Sustainability and Industry5.0"

AIMS5.0, a collaborative Innovation Action aims at strengthening European digital sovereignty in comprehensively sustainable production, by adopting, extending and implementing AI-enabled hardware and software components and systems across the whole industrial value chain to further increase the overall efficiency. Vulnerability of existing supply chains in crisis shows the need for shorter supply chains and for keeping production in Europe. AI enabled fabs will be given more output and higher sustainability, which makes them more competitive on a global scale. New technologies from IoT and based on semantic web ontologies, ML and AI will help to enable the transformation from Industry4.0 to Industry5.0, to create human-centric workplace conditions and to enable the transformation of European industry to climate-friendly production. Above all, sustainability and resilience will be improved. In essence, AIMS5.0 will deliver: - AI-enabled electronic hardware components & systems for sustainable production - AI tools, methods & algorithms for sustainable industrial processes - SoS-based architectures & micro-services for AI-supported sustainable production - Semantic modelling & data integration for an open access productive sustainability platform - Acceptance, trust & ethics for explainable industrial AI leading to human-centered sustainable manufacturing 20 use cases in 9 industrial domains resulting in high TRLs will validate the project's findings in an interdisciplinary manner. A professional dissemination, communication, exploitation and standardisation will ensure the highest impact possible. For the first time a joint approach for implementing AI and AI-enabled hardware will be developed that overarches different industrial domains. AIMS5.0 will result in lower manufacturing costs, increased product quality through AI-enabled innovation, decreased time-to-market and increased user acceptance of versatile technology offerings. They will foster a sustainable development, in an economical, ecological and societal sense and act as enablers for the Green Deal and push the industry towards Industry5.0. The innovations will leverage the experience of the 53 partners, such as renowned OEMs, Tier-1 and Tier-2 suppliers, technology and application large enterprises and SMEs, supported by academic research specialists in fields like AI, industrial hard-ware and software, decision making and management algorithms. Specific outcomes of the project are - 20% faster time to market, - Participation of disabled people in the factory environment > 5% (in relation to the total number of employees employed in production), - AI based MES capability > 10 %, - Increased user awareness and trust by 10%, - Subsequent reduction of environmental footprint for wafer transport, handling and storage > 20 %, - 50% reduction of time for monitoring industrial equipment. AIMS5.0 is a pan-European initiative to boost industrial competitiveness through interdisciplinary innovations, establishing sustainable ECS value chains and therefore contribute to European Digital Sovereignty addressing urgent issues like Security of Supply, Monitoring and Crisis Response, and Chip Shortage.

IP	Infineon Technologies AG. Alemania
Socios	Austria, Grecia, España, Francia, Italia, Letonia, Hungría, Países Bajos, Polonia, Suecia, Turquía
Presupuesto total	70.309.974,50 €
Concedido ES	329.120 €

PROYECTO 3 ALL2GAN. Affordable smart gan ic solutions for greener applications

"ALL2GaN will be the backbone for the European Power Electronics Industry by offering an EU-born smart GaN Integration Toolbox. The project will provide the base for applications with significantly increased material- and energy efficiency, thus meeting the global energy needs while keeping the CO2 footprint to the minimum. The collaboration in ALL2GaN is based on a work package structure covering activities on novel power- and RF-GaN technologies for various voltage classes, latest packaging technologies, research on reliability and demonstration in 11 Use Cases. With ambitious goals and a clear vision, ALL2GaN will unleash the energy saving and material efficiency potential of GaN semiconductors for a broad field of applications, thus being in line with the major challenges outlined in the ECS-SRIA. ALL2GaN technology will directly contribute to energy saving and cutting-edge green technology innovation as...Every Watt counts!"

IP	Infineon Technologies Austria AG. Austria
Socios	Bélgica, Suiza, República Checa, Alemania, Dinamarca, España, Noruega, Países Bajos, Grecia, Suecia, Eslovaquia
Presupuesto total	60.195.595,75 €
Concedido ES	177.870 €

PROYECTO 5 ECOMOBILITY. EcoMobility Intelligent, Safe and Secure Connect Electrical Mobility Solutions: Towards European Green and Seamless Mobility

In the heart of Europe's bustling cities, transportation demands intensify. However, our current transportation systems are isolated, inflexible and far from sustainable. Traffic congestion and environmental concerns are an urban reality. In this context, the EU-funded C-EcoMobility project aims to transform European cities, facilitating a seamless transition to a service-centric, interconnected mobility ecosystem. By sharing data and services among key stakeholders, EcoMobility promises a sustainable solution to the current transportation conundrum, bolstering efficiency, safety, and environmental impact, with the ultimate goal of zero road fatalities by 2050. Additionally, the project aims to enhance public acceptance of electrified autonomous vehicles while bridging the gap between technological advancements and legal frameworks.

IP	Tttech Auto Germany GMBH. Alemania
Socios	Austria, Bélgica, Grecia, España, Italia, Letonia, Países Bajos, Turquía
Presupuesto total	36.602.197,50 €
Concedido ES	216.590€

PROYECTO 6 EECONE. European ECOsystem for green Electronics

This project has the main goal to reduce E-waste in Europe in working on already existing E-waste, developing new tooling to extend lifetime and recyclability of E-waste, deploy at European level the new best practices and more important to develop a strong European ecosystem in this domain.

IP	Stemicroelectronics Grenoble 2 SAS. Francia
Socios	Austria, Bélgica, Suiza, República Checa, Alemania, Dinamarca, Grecia, España, Israel, Italia, Letonia, Países Bajos, Polonia, Suecia, Turquía
Presupuesto total	39.341.480,50 €
Concedido ES	199.650 €

PROYECTO 7 ISOLDE. High performance, safe, secure, open-source lever-aged risc-v domain- specific ecosystems.

The ISOLDE project aims to significantly support the digital transformation of all economic and societal sectors, to speed up the transition towards a green, climate neutral and digital Europe, to strengthen the design capacity and to achieving digital autonomy EU wide. By the end of our project, we will have high performance RISC-V processing systems and platforms at least at TRL 7 for the vast majority of building blocks, demonstrated for key European application domains such as automotive, space and IoT with the expectation that two years after completion ISOLDE's high performance components will be used in industrial quality products. To achieve such an ambitious goal, an industrial-grade open-source support for development, verification, and maintenance will be provided. The customizable IPs will be hosted on physically located European servers to address the European digital sovereignty requirement that the ISOLDE project will support. This way, ISOLDE will have delivered a major contribution to the unification and focus of the full-fledged – industry-supported – eco-system for RISC-V open-source architecture, especially in the area of embedded high-performance computing, and thus to the creation of a breakthrough design capacity across the EU microelectronics industry.

IP	Infineon Technologies AG. Alemania
Socios	Austria, Suiza, República Checa, Francia, España, Rumanía, Italia, Suecia
Presupuesto total	42.376.575,50 €
Concedido ES	638.880 € (Universitat Politècnica de Valencia 300.080 €) y (Centro Nacional de Supercomputación Barcelona 338.800 €)

PROYECTO 8 LOLIPOP IOT. Long Life Power Platforms for Internet of Things

In LoLiPoP IoT innovative Long Life Power Platforms will be developed to enable retrofitting of wireless sensor network (WSN) modules in IoT applications. This includes the development of algorithms to perform FUNCTIONALITIES like asset tracking and condition monitoring (for predictive maintenance). They can be used in APPLICATIONS such as industry 4.0, smart mobility

and energy efficient buildings. LoLiPoP IoT creates an ecosystem of developers, integrators and users to develop these platforms thinking about power/battery life, ease of installation and maintenance. The project is driven by 12 laboratory- and field-based use cases to initially demonstrate their technical viability and then potential impact. Expected impacts from the LoLiPoP IoT use cases include; a) typical battery life increase from ~18 months to >5 years, b) Reduced maintenance overhead of mobile and fixed assets from >30% to <15%, c) Reduced costs related to location of assets typ. by €100Ks PA per use case, d) Optimised flow, management and throughput of assets through the identification of bottlenecks, yielding reductions of >10% in production time, cycle time and inventory costs, e) Improved comfort levels and well-being of building occupants whilst reducing energy footprint by >20% and f) Revenues of >€10M PA for LoLiPoP IoT industry partners offering asset tracking & condition monitoring services. All of this is achieved by developing and integrating: a) Multi-source Energy Harvesting solutions (vibrational and photovoltaic transducers, PMICs and discrete circuits), b) Digital interfacing to contextually adapt mode settings of WSN devices and connected systems to minimise power drain, c) Ultra low power components for WSN, d) Innovative Architectures for wireless data collection that minimize battery power drain, e) Simulation Models to optimise component design and integration and f) embedded AI/ML in IoT devices, for lower latency and power consumption and higher robustness.

IP	Cognitechna SRO. República Checa
Socios	Suiza, Alemania, España, Finlandia, Irlanda, Italia, Países Bajos, Suecia, Turquía, Polonia
Presupuesto total	28.778.521,25 €
Concedido ES	189.970 €

PROYECTO 12 SUSTRONICS. Sustainable and Green Electronics for Circular Economy

The EU requires also electronics industry to achieve the ambitious goals of the EU Green Deal, Circular Economy Action Plan and Industrial Strategy for reduction of energy and material consumption, and utilization of circular value chains. Sustronics project is targeting to improve capabilities of **European** electronics industry to meet these goals and develop new business opportunities from sustainable and greener electronics combined with increase in productivity and new functionalities. The current electronic industry poses significant environmental impacts, such as increasing amount of e-waste, great demand for critical raw materials, and high energy consumption during manufacturing. Electronics industry can specifically decrease its environmental burden by shifting from fossil-based materials to bio-based materials, decreasing use of metals, utilizing additive manufacturing processes, and developing miniaturized and integrated components, but also in broader scope by utilizing efficient circular economy business models that enable reuse, recycle and repair of critical materials and components. Sustronics main goal is to support renewal of European electronics industry towards circular economy, eco-design, bio-based materials, and material- and energy-efficient manufacturing processes. Thereby, Sustronics will re-design electronics products into circular, compostable and reusable products, and demonstrate that there are business opportunities in sustainable electronics. Quantification of environmental impact, definition of business models, involvement of external stakeholders, and

means to guarantee compatibility with policies and standards will guide the project implementation. The pilots will focus on healthcare, diagnostics, and industrial sectors, including topics such as medical and personal health devices, single-use and wearable diagnostics, sustainable lighting solutions and embedded electronics for automotive.

IP	Philips Electronics Netherlands B.V. Países Bajos
Socios	Austria, Suiza, Francia, España, Alemania, Finlandia, Letonia, Polonia, Portugal, Suecia
Presupuesto total	30.154.508 €
Concedido ES	365.420 € (Universitat Rovira I Virgili 147.620 €) y (Agencia Estatal Consejo Superior de Investigaciones Científicas- CSIC 217.800 €)

EuroHPC JU. The European High Performance Computing Joint Undertaking

La EuroHPC JU permite a la Unión Europea y a los países participantes en la EuroHPC JU coordinar sus esfuerzos y aunar sus recursos para hacer de Europa un líder mundial en supercomputación. Esto impulsa la excelencia científica y la fortaleza industrial de Europa, apoya la transformación digital de su economía y garantiza al mismo tiempo su soberanía tecnológica. La Empresa Común EuroHPC tiene como objetivo:

- desarrollar, desplegar, ampliar y mantener en la UE un ecosistema de infraestructura de datos, servicios y supercomputación, computación cuántica, federado, seguro e hiperconectado líder en el mundo;
- apoyar el desarrollo y la adopción de un sistema de supercomputación innovador y competitivo orientado a la demanda e impulsado por el usuario, basado en una cadena de suministro que garantice componentes, tecnologías y conocimientos que limiten el riesgo de perturbaciones y el desarrollo de una amplia gama de aplicaciones optimizadas para estos sistemas;
- ampliar el uso de esa infraestructura de supercomputación a un gran número de usuarios públicos y privados y apoyar el desarrollo de habilidades clave de HPC para la ciencia y la industria europeas.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjunta internacionales: 3 (2020, 2021, 2022)

Participación de AEI en convocatorias conjuntas: 3 (2020, 2021, 2022)

CONVOCATORIA CONJUNTA INTERNACIONAL 2020

Países participantes	Italia, España, Eslovenia, Suecia, Alemania, Polonia, Bélgica, Países Bajos, Francia, Islandia, República Checa, Dinamarca, Grecia, Finlandia, Hungría, Noruega, Reino Unido, Chipre
Temáticas	• National Competence Centres for High Performance Computing • Networking and coordination of national HPC Competence Centres and Centres of Excellence
Presupuesto total	41.999.925 €
Concedido ES	5.505.679,30 €
Proyectos aprobados	3
Proyectos con financiación AEI	3 (1 coordinado)

No.	Acrónimo y título del proyecto	Países participantes
1	HPCQS. High Performance Computer And Quantum Simulator Hybrid	España , Italia, Suiza, Alemania, Francia, Grecia, Suecia, Croacia, Turquía
2	EPI. The European Processor Initiative	Francia , España, Croacia, Alemania, Grecia, Italia, Países Bajos, Portugal, Suecia, Suiza
3	EU-PILOT. The European Pilot Using Independent Local And Open Technologies	España , Italia, Suiza, Alemania, Francia, Grecia, Suecia, Croacia, Turquía

CONVOCATORIA NACIONAL PCI 2021

PROYECTO 1 HPCQS. High Performance Computer And Quantum Simulator Hybrid

The integration of quantum simulators in existing European supercomputers is the aim of the HPCQS project, funded by the European High Performance Computing Joint Undertaking (EuroHPC JU). Using an innovative approach to prepare Europe for the post-exascale era, the project will integrate two quantum simulators (each controlling about 100+ quantum bits) in two supercomputers. The first is the Joliot Curie of GENCI, the French national High Performance Computing organisation. The second is the JUWELS of Germany's Jülich Supercomputing Centre. By integrating quantum hardware with classical computing resources, research entities and industries will be able to solve complex challenges in areas such as materials and drug design, logistics and transportation.

IP	Jülich Supercomputing Centre (JSC). Alemania
Socios	ParTec (Alemania), Commissariat à l'énergie atomique et aux énergies alternatives (CEA) (Francia), Grand équipement national de calcul intensif (GENCI) (Francia), Barcelona Supercomputing Centre (BSC) (Barcelona), CINECA - Consorzio Interuniversitario (Italia), Irish Centre for High End Computing (ICHEC) (Irlanda), BULL SAS (ATOS) (Francia), FlySight (Italia), ParityQC (Francia), Sorbonne Université (Francia), CentraleSupélec (Francia), INRIA (Francia), Consiglio Nazionale delle Ricerche (CNR) (Italia), The University of Innsbruck (Austria), Fraunhofer IAF (Alemania), Eurice - European Research and Project Office GmbH (Alemania)
Presupuesto total	12.000.000 €
Concedido ES	20.200 €

PROYECTO 2 EPI (SGA2). The European Processor Initiative

The European Processor Initiative (EPI) is a cornerstone of the European initiative towards strategic autonomy in HPC, chip technologies and infrastructure. The project has completed its first three-year phase (2018-2021), delivering cutting-edge technologies for European sovereignty such as the Rhea General-Purpose Processor (GPP) and a proof-of-concept implementation of European accelerator technology. The second phase of the project will build on the achievements of the first phase with the following objectives:

- Finalise the development and the bring-up of the first generation of low-power processor units;
- Develop the second generation of the GPP applying technological enhancements targeting the European Exascale machines;
- Develop the second generation of low power accelerator test chips, usable by the HPC community for tests;
- Develop sound and realistic industrialisation & commercialisation paths and enable the long-term economical sustainability with an industrialisation path in the edge computing area, demonstrated in a few well-chosen proofs of concept like autonomous shuttles or video surveillance.

EPI focuses on processor technologies based on ARM and RISC-V instruction set architectures (ISA) to address the central challenge of developing a competitive European microprocessor and accelerator including the required technology to integrate and use the resulting products for HPC and other applications.

IP	BULL SAS. Francia
Socios	Barcelona Supercomputing Center -BSC (España), Infineon Technologies AG (Alemania), Semidynamics Technology Services S.L (España), Commissariat à l'Energie Atomique et aux Energies Alternatives-CEA (Francia), Chalmers Tekniska Högskola AB (Suecia), Eidgenössische Technische Hochschule Zürich -ETHZ (Suiza), Foundation for Research and Technology, Hellas- FORTH (Grecia), Grand Equipement National De Calcul Intensif- GENCI (Francia)
Presupuesto total	70.000.000 €
Concedido ES	2.628.879,30 €

PROYECTO 3 EU-PILOT. The European PILOT

The European PILOT project (Pilot using Independent, Local and Open Technologies) aims at showcasing an European accelerator, designed, implemented, manufactured, and owned by Europe and based on open source and open standards.

IP	Barcelona Supercomputing Center - Centro Nacional De Supercomputacion. España
Socios	Semidynamics Technology Services (España), Submer Technologies (España), Università Di Bologna (Italia), CINECA - Consorzio Interuniversitario (Italia), Leonardo (Italia), Eidgenössische Technische Hochschule Zürich (ETHZ) (Suiza), Extoll (Alemania), Fraunhofer IIS (Alemania), 2CRSI (Francia), Foundation for Research and Technology Hellas (FORTH) (Grecia), PLDA (Francia), Commissariat À L'Energie Atomique Et Aux Energies Alternatives (CEA) (Grecia), Exascale Performance Systems (EXAPSYS) (Grecia), Chalmers Tekniska Högskola (Suecia), KTH Royal Institute of Technology (KTH) (Suecia), Sveučilište u Zagrebu Fakultet Elektrotehnike i Računarstva (FER) (Croacia), Türkiye Bilimsel Ve Teknolojik Arastırma Kurumu (TUBITAK) (Turquía)
Presupuesto total	29.999.925 €
Concedido ES	2.856.600 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2021

Países participantes	Italia, España, Eslovenia, Suecia, Alemania, Polonia, Bélgica, Países Bajos, Francia, Islandia, República Checa, Dinamarca, Grecia, Finlandia, Hungría, Noruega, Reino Unido, Chipre
Temáticas	• National Competence Centres for High Performance Computing • Networking and coordination of national HPC Competence Centres and Centres of Excellence
Presupuesto total	108.052.287,75 €
Concedido ES	4.200.819 €
Proyectos aprobados	9
Proyectos con financiación AEI	9 (2 coordinados)

No.	Acrónimo y título del proyecto	Países participantes
1	BIOEXCEL-3: Bioexcel-3 Centre of Excellence for Computational Biomolecular Research	Suecia, Países Bajos, Alemania, Noruega, España
2	CEEC. Center of Excellence for Exascale CFD	Suecia, Grecia, Alemania, Dinamarca, España
3	ChEESE-2P. Center of Excellence in Solid Earth	España, Italia, Islandia, Alemania, Noruega, Francia, Finlandia, Croacia
4	ESIWACE3. Centre of Excellence in Simulation of Weather and Climate in Europe	España, Países Bajos, Alemania, Finlandia, Reino Unido, Suecia, Francia
5	EXCELLERAT P2, The European Centre of Excellence for Engineering Applications	Alemania, España, Francia, Italia, Eslovenia, Suecia
6	MaX. Materials design at the eXascale	Italia, España, Alemania, Francia, República Checa, Eslovenia
7	MultiXscale. Centre of Excellence in exascale-oriented application co-design and delivery for multiscale simulations	Eslovenia, Alemania, Países Bajos, Bélgica, Noruega, Italia, España
8	Plasma-PEPSC. Plasma Exascale-Performance Simulations Centre of Excellence	Alemania, República Checa, Grecia, Francia, España, Finlandia, Eslovenia
9	SPACE. Scalable Parallel Astrophysical Codes for Exascale	Italia, Bélgica, República Checa, Alemania, Francia, Noruega, Grecia, España

CONVOCATORIA NACIONAL PCI 2022

PROYECTO 1 BIOEXCEL-3: Bioexcel-3 Centre Of Excellence For Computational Biomolecular Research

BioExcel is the leading European Centre of Excellence for Computational Biomolecular Research and a major innovation hub for scientific computing. Software development roadmaps incorporate feedback gathered from the thousands of worldwide users and ensure that highly desired functionality is given a priority. Comprehensive training programmes and engagement with industry help address the skills gap among Life Sciences researchers and supports global efforts towards global challenges such as pandemic preparedness. Since 2015, BioExcel has built an extensive partner network of related organisations, resource providers, hardware vendors, software developer teams, user communities and industry. The EU-funded BioExcel-3 project will capitalise on the centre's former success and further develop the sustainable HPC community in Europe.

IP	KTH Royal Institute of Technology. Suecia
Socios	University of Utrecht (Países Bajos), MPG Max Planck (Alemania), Fundacio Institut de Recerca Biomedica (IRB Barcelona) (España), Barcelona Supercomputing Center (BSC) (España), Nostrum Biodiscovery SL (España), Norman Consulting (Noruega)
Presupuesto total	5.873.754,50 €
Concedido ES	514.263 € (Fundacio Institut De Recerca Biomedica-Barcelona 336.897 €), (Barcelona Supercomputing Center - Centro. Nacional De Supercomputacion 177.366 €)

PROYECTO 2 CEEC Center of Excellence for Exascale CFD

For many centuries, scientific discovery relied on performing experiments and the subsequent deduction of new theoretical models. The advent of powerful computers, coupled with new and ever more efficient numerical algorithms, makes it possible to simulate complex systems with increasing realism, and to automatize even model discovery using artificial intelligence (AI) technologies. Computational Fluid Dynamics (CFD) is one of the most prominent areas that clearly requires, and even motivate exascale computing to be part of the engineering and academic workflows. Given the physical scaling and the availability of highly efficient simulation codes, CFD has the potential of reaching exascale performance, as one of the few application areas. This center will implement exascale ready workflows for addressing relevant challenges for future exascale systems, including those procured by EuroHPC. The significant improvement in energy efficiency will be facilitated through efficient exploitation of accelerated hardware architectures (GPUs) and novel adaptive mixed-precision calculations. Emphasis is furthermore given to new or improved algorithms that are needed to exploit upcoming exascale architectures. The efforts of the center are driven by a collection of five different lighthouse cases of physical and engineering interest, ranging from aeronautical to atmospheric flows, with the goal of reaching TRL 4 and even 5 for selected cases. All development is done in five European HPC codes which span the entire spectrum of CFD applications, including compressible, incompressible and multiphase flows.

IP	KTH Royal Institute of Technology. Suecia
Socios	Aristotle University of Thessaloniki (Grecia), Barcelona Supercomputing Center (España), Friedrich-Alexander-Universität Erlangen-Nürnberg (Alemania), University of Stuttgart (Alemania), Umea University (Alemania), DTU Technical University of Denmark (Dinamarca), Bundesanstalt für Materialforschung und -prüfung (BAM) (Alemania)
Presupuesto total	7.812.711,25 €
Concedido ES	555.714 €

PROYECTO 3 ChEESE-2P – Center of Excellence in Solid Earth

The scientific ambition of ChEESE-2P is to prepare 11 community flagship codes to address 12 domain-specific Exascale Computational Challenges (ECC), enlarging the areas covered during the first implementation phase (computational seismology, magnetohydrodynamics, physical volcanology, and tsunamis) with two additional disciplines (geodynamics and modeling of glacier hazards). Codes will be optimized in terms of performance on different types of accelerators, scalability, deployment, containerization, and portability across current pre-exascale systems and hardware architectures emerging from the EuroHPC Pilots by co-designing with mini-apps. Optimization will also include heterogeneous single-node and multi-node performance, as well as continuous efficiency monitoring using the Performance Optimisation and Productivity (POP) metrics. Emphasis will be given on the uptake by science, public administration and industry, including training and capacity building in cooperation with National Competence Centers (NCCs). Codes and workflows will combine to form a new generation of 9 Pilot Demonstrators (PDs) underpinned by concepts like multi-scale, multi-source, and multi-physics. The PDs will materialise in 15 Simulation Cases (SCs) representing capability and capacity use cases of particular relevance in terms of science, social relevance, or urgency (the capability SCs include 4 potential Scientific Grand Challenges, i.e. cases that can require an extreme-scale access mode). The SCs will produce relevant EOSC-enabled datasets and enable services on aspects of geohazards like urgent computing, early warning forecast, hazard assessment, or fostering an emergency access mode in EuroHPC tier-0/tier-1 systems for geohazardous events (earthquakes, tsunamis and volcanoes), including access policy recommendations. Finally, ChEESE-2P will liaise, align, and synergize with other domain-specific European projects and longer-term mission-like initiatives like Destination Earth.

IP	Consejo Superior de Investigaciones Científicas-CSIC. España
Socios	Barcelona Supercomputing Center- BSC (España). Istituto Nazionale di Geofisica e Vulcanologia (Italia). Vedrustofa Islands (Islandia). University of Stuttgart (Alemania). CINECA (Italia), Technical University of Munich (Alemania), Ludwig-Maximilians-Universität München (Alemania), University of Malaga (Málaga), Stiftelsen Norges Geotekniske Institutt (NGI) (Noruega). Centre National de la Recherche Scientifique (Francia). Institut de Physique du Globe de Paris (IPGP) (Francia). BULL SAS (Francia). CSC (Finlandia). Ruder Boskovic Institute (Croacia). Johannes Gutenberg University of Mainz (Alemania), Sorbonne University (Francia)

Presupuesto total	7.690.590 €
Concedido ES	967.149 € (Agencia Estatal Consejo Superior De Investigaciones Científicas – CSIC 454.116 €), Barcelona Supercomputing Center Centro Nacional De Supercomputacion 325.335 €), (Universidad de Málaga 187.698 €)

PROYECTO 4 ESIWACE3. Centre of Excellence in Simulation of Weather and Climate in Europe

This proposal shapes the next (third) phase of the ESIWACE Centre of Excellence. As the ability to run Earth system models at ~1km resolution efficiently on EuroHPC supercomputers has already been established in previous phases for specific model configurations, and as developments are now picked up by science-driven projects, this proposal will focus on the support of the community to reach a higher readiness level regarding exascale supercomputing and knowledge transfer between the different Earth system modelling centres and teams across Europe. The project will focus on three main aims that are essential to prepare existing, operational weather and climate prediction systems for the exascale era through (i) the transfer and establishment of knowledge and technology for efficient and scalable simulations of weather and climate across the Earth system modelling community, (ii) closing common technology knowledge gaps and by providing toolboxes for high-resolution Earth system modelling via joint developments and (iii) by serving as a sustainable community hub for training, communication and dissemination for high-performance computing for weather and climate modelling in Europe. ESIWACE3 will bring the various approaches to address these challenges from the different modelling groups together to transfer knowledge across the weather and climate domain, to generate synergies between the local efforts, to provide targeted support of modelling groups via customised high-performance computing services, and to provide training to educate the next generation of researchers.

IP	Barcelona Supercomputing Center-BSC (Barcelona)
Socios	Stichting Netherlands EScience Center (Países Bajos), Deutsche Klimarechenzentrum (Alemania), University of Helsinki (Finlandia), European Centre for Medium-range Weather Forecasts -ECMWF (Reino Unido), Sveriges Meteorologiska och Hydrologiska Institut-SMHI (Suecia), CSC (Finlandia), Max Planck Gesellschaft -MPG (Alemania), Centro Euro-Mediterraneo sui Cambiamenti Climatici- CMCC (Italia), Latest Thinking (Suecia), BULL SAS (Francia), Jülich (Alemania)
Presupuesto total	6.081.340 €
Concedido ES	491.754 €

PROYECTO 5 EXCELLERAT P2. The European Centre of Excellence for Engineering Applications

EXCELLERAT P2 continues the fruitful partnership of Europe's leading HPC centres, application specialists and supporting partners who have worked with and offered their expertise and knowledge to engineering companies and researchers from across industry and academia for the past three decades.

A key strength of EXCELLERAT P2 is that it will build on the achievements of EXCELLERAT P1, including the available service portal as a baseline for impact and awareness creation. Furthermore, the critical mass, knowledge and expertise of Europe is re-united and extended by

additional experts, to continue the Centre of Excellence, which will span the whole domain of engineering – ensuring that innovations produced are applicable to other engineering challenges, that co-design is handled properly, that success stories are created and distributed, all in all to support best the European HPC strategy. EXCELLERAT P2 will base its evolution and developments on six chosen use cases, requiring the full range of HPC usage profiles, from small scale capacity type applications, all the way to hero run type large scale applications. The advancements the use cases as well as further applications will make beyond the state of the art, as well as the results, which will be derived by the execution of the use cases and the further applications, will have a clear impact in Europe. EXCELLERAT P2 (and the brand) strives to show the contribution of HPC, HPDA and AI in engineering to a low-carbon, more environmentally friendly and socially responsible product development and manufacturing as well as the mobility and energy sector. The holistic view of EXCELLERAT P2 to the usage of HPC (and HPDA and AI) is needed, if engineering applications shall be supported to increase the European competitiveness. Thus, the developments done in EXCELLERAT P2 will increase the European competitiveness in HPC-applications, hardware-design and HPC-service provisioning to a new level.

IP	EUROCC. Alemania
Socios	Arctur (Eslovenia), Barcelona Supercomputing Center (España), Centre Européen de Recherche et de Formation Avancée en Calcul Scientifique-CERFACS (Francia), CINECA (Italia), Deutsches Zentrum für Luft-und Raumfahrt-DLR (Alemania), Fraunhofer Institute for Algorithms and Scientific Computing SCAI (Alemania), High-Performance Computing Center Stuttgart-HLRS (Alemania), KTH Royal Institute of Technology (Suecia), RWTH Aachen University (Alemania), Sicos (Alemania), SiPearl (Francia), SSC (Alemania), Teratec (France), University of Ljubljana (Eslovenia), Sapienza Università di Roma (Italia)
Presupuesto total	5.982.988,75 €
Concedido ES	204.549 €

PROYECTO 6 MaX. Materials design at the eXascale

Understanding, predicting, and discovering the properties and performance of materials is key to delivering the technologies that power our economy and provide a sustainable development to our society. For this reason, materials simulations have become one of the most intensive and fast growing domains for high-performance computing worldwide, with a recognized European leadership in developing and innovating the ecosystem of quantum simulation codes. MaX will target these lighthouse codes to address the challenges and leverage the opportunities arising from future exascale and post-exascale architectures, and to offer powerful paths to discovery and innovation serving both scientific and industrial applications. MaX includes (1) the core developing teams of the European lighthouse codes; (2) the HPC centres designing and hosting pre-exascale and exascale systems; (3) the main European companies engaged in the development of exascale technologies; and it brings (4) a sustained record in training and educating the community, and (5) in disseminating its resources under an extensive open-source model that includes codes, workflows, and FAIR data. These synergies will underpin the objectives of the present proposal, that aims to upscale the MaX codes and their performance to multiple heterogeneous exascale architectures; to endow these codes with innovative capabilities enabled by such architectures; to co-design the hardware and software in collaboration with the relevant

European stakeholders; to enable turn-key simulation capabilities that meet the power of exascale resources and deliver the resilience needed; to disseminate the entire ecosystem of codes, workflows, and data; and to train and engage developers and users in fully leveraging such powerful instruments for discovery and innovation.

IP	Consiglio Nazionale delle Ricerche (CNR). Italia
Socios	Universita degli studi di Modena e Reggio Emilia (Italia), Scuola Internazionale Superiore di Studi Avanzati di Trieste (Italia), Institut Catala de Nanociencia i Nanotecnologia (España), CSIC (España), Forschungszentrum Julich (Alemania), Commissariat a l'Energie Atomique et Aux Energies Alternatives (Francia), University of Bremen (Alemania), CINECA (Italia), Barcelona Supercomputing Center (España), VSB - Technical University of Ostrava (República Checa), Institut Jozef Stefan (Eslovenia), BULL SAS (Francia), Si Pearl (Francia), E4 Computer Engineering SPA (Italia), Leonardo (Italia)
Presupuesto total	8.496.392,50 €
Concedido ES	593.352 €

PROYECTO 7 MultiXscale. Centre of Excellence in exascale-oriented application co-design and delivery for multiscale simulations

The MultiXscale Centre of Excellence will increase performance, productivity and portability (“the Three P’s”) across the entire spectrum of scientists active in the domain of multiscale simulation. It couples the scientific expertise of the CECAM network, represented by leading experts in multiscale simulations from different European institutions, with the technical expertise of the EESSI collaboration, and targets the computational laboratories of EuroHPC and beyond. It will shoulder much of the technical burden of developing and distributing domain-relevant applications for (pre-)exascale through application co-design for exascale technologies, and the provisioning of exascale-oriented libraries and services that nudge the community to adopt battle-tested, future-oriented, scalable workflows and portable technologies. Together, these will allow application developers to pursue domain-relevant scientific innovation without being overburdened by technical detail, and empower industrial and academic application users to painlessly adopt bleeding-edge technologies from the domain on whatever computational resource they may have access to. To drive the development of the libraries and services, and to showcase the scientific and industrial potential of truly multiscale approaches, MultiXscale will pursue three pilot use cases of societal and industrial significance:

- helicopter design and certification for civil transport,
- battery applications to support the sustainable energy transition,
- ultrasound for non-invasive diagnostics and biomedical applications.

MultiXscale will extend the applications, user-base and domains actively engaged in the current CoE and EuroHPC ecosystem by addressing specific and critical needs, and advancing the transition towards use of exascale resources by scientific and industrial users in the community of multiscale modelling.

IP	Kemijski Institut. Eslovenia
Socios	Forschungszentrum Julich (Alemania), University of Stuttgart (Alemania), University of Barcelona (España), Surf BV (Alemania), University of Barcelona (España), Surf BV (Países Bajos), University of Groningen (Países Bajos), University of Gent (Bélgica), University of Bergen (Noruega), Barcelona Supercomputing Center (España), Sorbonne University (Francia), HPC Now Consulting (España), Leonardo - Societa per Azioni (Italia), Fondazione Istituto Italiano di Tecnologia (IIT) (Italia)
Presupuesto total	5.981.110 €
Concedido ES	276.996€ (Barcelona Supercomputing Center Centro Nacional De Supercomputacion 77.244 €), (Univesidad de Barcelona 199.752 €)

PROYECTO 8 Plasma-PEPSC. Plasma Exascale-Performance Simulations Centre of Excellenc

Plasma science has been at the forefront of HPC for several decades, driving and at the same time benefiting greatly from innovative hardware and software developments. The overall goal of Plasma-PEPSC is to take this development to the next level, enabling scientific breakthroughs in plasma science Grand Challenges through exascale computing and extreme-scale data analytics. Specifically, we aim to enable unprecedented simulations on current pre-exascale and future exascale platforms in Europe to control plasma-material interfaces, optimize magnetically confined fusion plasmas, design next-generation plasma accelerators and predict space plasma dynamics in the Earth's magnetosphere. We achieve these goals by maximizing the parallel performance and efficiency of four European flagship plasma codes with a large user base: BIT, GENE, PIconGPU, and Vlasiator. Here, we will build on algorithmic advances (regarding load balancing, resilience, and data compression) as well as on programming model and library developments (MPI, accelerator and data movement APIs and runtimes, in-situ data analysis). We ensure an integrated HPC software engineering approach for deploying, verifying, and validating extreme-scale kinetic plasma simulations that can serve as a community standard. We will establish a continuous and integrated co-design methodology to provide/receive direct input to/from the design and development of the EPI Processor and accelerator, will exploit synergies through collaborations with other CoEs, EuroHPC, and Competence Centers for cross-fertilization, adoption and full exploitation of the Plasma-PEPSC codes. Plasma-PEPSC brings together an exceptional, interdisciplinary group of highly-recognized leading scientists from academia, research centres, and HPC centres, with decades of experience in algorithmic and method developments, extreme-scale plasma simulations, and application optimizations with high involvement in strategic EuroHPC projects and initiatives.

IP	KTH Royal Institute of Technology (Alemania)
Socios	Max Planck Gesellschaft (MPG) (Alemania), Institute of Plasma Physics (IPP) (República Checa), Foundation for Research and Technology - Hellas (FORTH) (Grecia), Si Pearl (Francia), Barcelona Supercomputing Center (BSC) (España), University of Helsinki (Finlandia), University of Ljubljana (Eslovenia), HZDR Helmholtz-Zentrum Dresden-Rossendorf (Alemania), Technical University of Munich (Alemania)
Presupuesto total	7.919.660 €
Concedido ES	307.746 €

PROYECTO 9 SPACE - Scalable Parallel Astrophysical Codes for Exascale

In Astrophysics and Cosmology (A&C) today, High Performance Computing (HPC)-based numerical simulations are outstanding instruments for scientific discovery. They represent essential tools and theoretical laboratories able to investigate, interpret and understand the physical processes behind the observed sky. For these laboratories, the efficient and effective exploitation of exascale computing capabilities is essential. Exascale systems, however, are expected to have a heterogeneous unprecedented architectural complexity, with a significant impact on simulation codes. Consequently, the proposed SPACE CoE aims to extensively re-engineer the target codes to engage with new computational solutions and adopt innovative programming paradigms, software solutions, and libraries. SPACE aims to foster the reuse and sharing of algorithms and software components in the A&C application domain. The proposed SPACE CoE will address this action through co-design activities that bring together scientists, code developers, HPC experts, HW manufacturers and SW developers, advancing lighthouse exascale A&C applications, codes, services and know-how promoting the use of upcoming exascale and post-exascale computing capabilities. In addition, SPACE will address the high-performance data analysis of the data torrent produced by exascale A&C simulation applications, also with machine-learning and visualization tools. The deployment of applications running on different platforms will be facilitated by federating capabilities focusing on code repositories and data sharing, and integrating European astrophysical communities around exascale computing by adopting software and data standards and interoperability protocols.

IP	Università degli Studi di Torino. Italia
Socios	Istituto Nazionale di Astrofisica (Italia), CINECA (Italia), KU Leuven (Bélgica), VSB - Technical University of Ostrava (República Checa), LMU University of Munich (Alemania), Centre National de la Recherche Scientifique – CNRS (Bélgica), Johann Wolfgang Goethe Universitaet Frankfurt am Main (Alemania), University of Oslo (Noruega), Foundation for Research and Technology- Hellas (Grecia), E4 Computer Engineering SPA (Italia), EnginSoft (Italia), BULL SAS (Francia), HITS - Heidelberg Institute for Theoretical Studies (Alemania), Barcelona Supercomputing Center (España)
Presupuesto total	7.994.812,50 €
Concedido ES	289.296 €



Iniciativas Geográficas





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CYTED - Programa Iberoamericano de Ciencia y Tecnología para el Desarrollo

CYTED es el Programa Iberoamericano de Ciencia y Tecnología para el Desarrollo, creado por los gobiernos de los países iberoamericanos para promover la cooperación en temas de ciencia, tecnología e innovación para el desarrollo armónico de Iberoamérica.

Cyted logra sus objetivos a través de diferentes instrumentos de financiación que movilizan empresarios, investigadores y expertos iberoamericanos y les permiten capacitarse y generar proyectos conjuntos de investigación, desarrollo e innovación. Es así que los países que integran el Programa CYTED logran mantenerse actualizados en los más recientes avances y desarrollos científico-tecnológicos.

Desde su creación en 1984 han participado en el Programa más de 28.000 empresarios, investigadores y expertos iberoamericanos en áreas prioritarias del conocimiento.

Los resultados del Programa incluyen la generación de proyectos de I+D estratégicos donde participan empresas y expertos que desde la plataforma de cooperación de CYTED acceden a importantes fondos internacionales.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número de convocatorias conjuntas: 4(2016; 2017; 2018; 2019)

Participación de MINECO-AEI en convocatorias conjuntas: 4(2016; 2017; 2018; 2019)

CONVOCATORIA CONJUNTA 2016: CONVOCATORIA DE “PROYECTOS EN TEMAS ESTRATÉGICOS”

Países participantes	Tema 1: Alimentos Funcionales: Argentina, España, Guatemala, México, Nicaragua y Perú Tema 2: Cambio Climático y desarrollo socio-económico marino-costero: Argentina, Cuba, España, Guatemala, México, Nicaragua, Perú y Portugal
Temáticas	1) Alimentos funcionales. 2) Cambio climático y desarrollo socioeconómico marino-costero.
Concedido ES	223.820 €
Proyectos aprobados	2
Proyectos con MINECO/AEI	2 (2 coordinados)

CONVOCATORIA APCIN 2017

PROYECTO 1 PROINFANT. Alimentos vegetales con funcionalidad probiótica para poblaciones infantiles desnutridas

El concepto de “Alimento Funcional” surge en países desarrollados en los que los consumidores demandan alimentos que, además de sus cualidades nutricionales, promuevan un mejor estado de salud y bienestar y/o reduzcan el riesgo de padecer enfermedades. En el ámbito de actuación

sobre poblaciones que sufren carencias nutricionales crónicas, como ciertos colectivos infantiles de estratos sociales desfavorecidos, el desarrollo de un alimento funcional permitirá, por un lado, paliar la falta de nutrientes si la materia prima autóctona seleccionada es rica en macro- y micro-nutrientes, y por otro, mejorar el estado de salud al incluir ingredientes funcionales que supongan un beneficio para la misma. En este contexto pretendemos, como objetivo general, desarrollar alimentos vegetales de funcionalidad probiótica para paliar carencias nutricionales crónicas y problemas de salud en poblaciones infantiles iberoamericanas desfavorecidas.

IP	Patricia Ruas Madiedo, Instituto de Productos Lácteos de Asturias (IPLA-CSIC), España
Socios	Argentina (INTA-FAMAILLA, IBR-CONICET, CERELA-CONICET, INQUINOA - CONICET), Colombia (UDEA), España (UCM, UV), Guatemala (INCAP), Italia (UNIFG, UCSC), México (CIAD, ITV, ITESM), Nicaragua (UNAN) y Perú (UCSS)
Concedido ES	40.000 € + 85.000 € = 125.000 €

PROYECTO 2 PROTOCOL. Protección de frentes urbanos costeros frente al calentamiento global

Con este proyecto se pretende desarrollar una metodología de cálculo y establecer unas recomendaciones técnicas para el diseño de las protecciones costeras en frentes urbanos basándose en la cuantificación (1) de los agentes y acciones considerando sus diferentes escalas de afección y los escenarios previstos de ascenso del nivel del mar, (2) del riesgo en el frente urbano y (3) del rebase en función de las tipologías de protección y los escenarios previstos.

IP	Miguel Ortega Sánchez, Universidad de Granada, España
Socios	Chile (PUCV, UCM, UNAB, UPLA, UV), México (UNAM), Portugal (LNEC), Uruguay (Universidad de la República)
Concedido ES	98.820 €

CONVOCATORIA CONJUNTA 2017

Países participantes	
Temáticas	Investigación en diabetes y obesidad en Iberoamérica: desarrollo de tecnologías para prevención, diagnóstico y tratamiento. Línea; Utilización de residuos de biomasa en la producción de combustibles de transporte
Presupuesto total	
Concedido ES	223.820 €
Proyectos aprobados	
Proyectos con MINECO/AEI	2 (2 coordinados)

CONVOCATORIA APCIN 2018

PROYECTO 1 IBEROBDIA. Obesidad y Diabetes: Factores de Riesgo y Nuevos Biomarcadores Patogénicos y Predictivos

IP	Alberto Cepeda Saez, Universidade de Santiago de Compostela, España
Socios	Argentina (CENEXA, CIDCA), Chile (UV, UCHILE), Colombia (UNAL), España (Universidade da Coruña), México (Centro de Atención al Diabético, UAEH).
Concedido ES	88.000 € + 12.000 € = 100.000 €

PROYECTO 2 BIOMETRANS. Producción de Biometano para Combustible de Transporte a partir de Residuos de Biomasa

El proyecto BIOMETRANS busca fomentar la valorización de los residuos de biomasa seca y húmeda que se generan en la Región Iberoamericana, mediante la producción de biometano, y fomentar su empleo como biocombustible de transporte. El objetivo general es valorizar los residuos de biomasa residual mediante la producción de biocombustibles de transporte, evaluando y haciendo disponible este recurso renovable, aplicando tecnologías y procesos innovadores de producción de biocombustibles que están próximos a su comercialización.

IP	María Dolores Hidalgo Barrio, Cartif, España
Socios	Colombia (UDES), México (CIATEJ), Perú (UCSM), Uruguay (IPTP), Guatemala (INGENIO LA UNION, S.A.)
Concedido ES	99.175€

CONVOCATORIA CONJUNTA 2018

Países participantes	
Temáticas	
Presupuesto total	
Concedido ES	187.600 €
Proyectos aprobados	
Proyectos con MINECO/AEI	2 (1 coordinados)

CONVOCATORIA APCIN 2019

PROYECTO 1 PLADEMI. Plataforma de Desarrollo de Microrredes como Solución Base para Enclaves Estratégicos

En virtud de disponer de una estrategia base para formular soluciones energéticas sostenibles en Enclaves Estratégicos (EE) de Iberoamérica, se presenta una plataforma para diseño, implementación y validación de soluciones tipo microrred que atiendan las necesidades de estos enclaves con característica de suministro energético seguro, eficiente y resiliente. Para alcanzar este producto global se formula una metodología que incluye un proceso de identificación enclaves según criterios de localización, riesgo, vocación productiva y condición de suministro. Ya identificados los EE, se formula un proceso para su diseño y valorización, lo que a su vez es insumo para la implementación de dos pilotos en los que se aportará en el desarrollo de dispositivos de control local, sistema de monitoreo y control y un sistema de gestión de energía que indique las decisiones a tomar en busca del suministro energético de las características propuestas. Dichos pilotos se probarán y validarán bajo diferentes condiciones de operación asociadas a los EE ya identificados. Todo el proceso se acompaña de un seguimiento sobre el cual se elaborará una guía de buenas prácticas para el planeamiento, diseño e implementación de este tipo de soluciones.

IP	Guillermo Jiménez Estévez, Universidad de Chile, Chile
Socios	España (CARTIF)
Concedido ES	90.600 €

PROYECTO 2 MICROPROD-SOLAR. Microrredes para el Autoabastecimiento Solar de Entornos Productivos Aislados

Este proyecto tiene como objetivo desarrollar un conjunto de instrumentos de análisis y toma de decisiones que justifiquen y favorezcan la implantación de microrredes energéticas distribuidas para el autoabastecimiento de enclaves productivos aislados en Iberoamérica. El tipo de suministro a considerar incluirá tanto el de electricidad como el de calor de proceso y frío industrial, en ambos casos de origen solar, sin perjuicio de otras aportaciones renovables en aquellos casos que el recurso disponible lo permita. Este objetivo se desarrollará a través de una intensificación inicial en las siguientes actividades productivas, seleccionadas en base a la experiencia y capacidades de los miembros de consorcio (CIESOL, CSET, Inventive Power y SOLATOM) y a su pertinencia por su localización geográfica y potencial de desarrollo en los países a los estos miembros pertenecen (España, Chile y México): 1) el autoabastecimiento energético de pequeñas industrias o comunidades dedicadas a la elaboración del vino y destilados, 2) granjas pecuarias dedicadas al tratamiento y conservación de la leche y sus derivados y 3) industrias conserveras cultivos tradicionales (espárrago, frijol,...).

IP	Manuel Pérez García, Universidad de Almería, España
Socios	España (SOLATOM), México (INVENTIVE POWER), Chile (CSET)
Concedido ES	97.000 €

CONVOCATORIA CONJUNTA 2019

Países participantes	España, Colombia, México, Perú, Chile
Temáticas	Técnicas avanzadas para el tratamiento del agua: vida y sostenibilidad Enfermedades cardiovasculares
Presupuesto total	520.000
Concedido ES	100.000 €
Proyectos aprobados	3
Proyectos con MINECO/AEI	1 (1 proyecto coordinado)

No.	Acrónimo y título del proyecto	Países participantes
1	TALGENTOX. Análisis y gestión de los riesgos asociados a la presencia de cianotoxinas en aguas y desarrollo de tecnologías limpias para su eliminación: hacia una mejora de la salud pública	España, Colombia, México, Perú, Chile
2	P919PTE0038. Utilización de un modelo innovador basado en comunidad, para el manejo y el seguimiento por personal de salud no médicos (PSNM), para mejorar la conciencia, el tratamiento y el control de la Hipertensión Arterial (HTA)	Chile, Perú, España, Paraguay, República Dominicana
3	P919PTE0021. Aislamiento y obtención de análogos de metabolitos activos para el escalamiento de un prototipo farmacológico con efectos cardiovasculares	España, Paraguay

CONVOCATORIA NACIONAL PCI 2020-1

PROYECTO 1 TALGENTOX. Análisis y gestión de los riesgos asociados a la presencia de cianotoxinas en aguas y desarrollo de tecnologías limpias para su eliminación: hacia una mejora de la salud pública

Los procesos de eutrofización y cambio climático están provocando la aparición y proliferación masiva de cianobacterias y, por consiguiente, de cianotoxinas en las aguas de casi todos los ecosistemas y climas de la Tierra, por lo que se ha convertido en un problema de relevancia global. Ante esta situación, el proyecto TalGEnTox plantea el desarrollo de un sistema sostenible de gestión del riesgo a la exposición de cianotoxinas contenidas en el agua incluyendo, a su vez, la propuesta de tratamientos eficientes, respetuosos con el medio ambiente y económicos para eliminar dichos compuestos del recurso hídrico considerado. La consecución de este objetivo garantizaría una mejora en la calidad del agua y, por tanto, de la salud pública, favoreciendo el

crecimiento sostenible de la población. En este contexto, el proyecto propone la estandarización de una metodología que permita determinar inicialmente y predecir en una etapa de desarrollo del proyecto más avanzada, la presencia de cianotoxinas en una amplia variedad de enclaves acuáticos. Asimismo, se aborda la selección, desarrollo y optimización de la tecnología (basada en procesos de oxidación avanzada) para garantizar la completa eliminación de cianobacterias y cianotoxinas en los diferentes escenarios evaluados.

IP	Universidad Autónoma de Madrid, España
Socios	España, Colombia, México, Perú, Chile
Concedido	100.000 €
Concedido ES	229.600 €



Convocatoria de Proyectos conjuntos España - Japón

El Ministerio de Economía, Industria y Competitividad, a través de la **Agencia Estatal de Investigación (AEI)**, participa en la convocatoria 2018 de proyectos conjuntos de investigación sobre nanomedicina, en el marco del Memorando de cooperación entre la Agencia de Investigación Médica de Japón (AMED) y la Secretaría de Estado de Investigación, Desarrollo e Innovación del Ministerio de Economía, Industria y Competitividad.

La convocatoria está dirigida a jóvenes investigadores y contempla las siguientes líneas de investigación:

- a) Diagnóstico;
- b) Nuevos tratamientos, compuestos y sistemas de liberación dirigida.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número de convocatorias conjuntas: 5 (2016, 2017, 2018, 2019, 2020)

Participación de MINECO-AEI en convocatorias conjuntas: 5 (2016, 2017, 2018, 2019, 2020)

CONVOCATORIA INTERNACIONAL CONJUNTA 2018

Países participantes	España, Japón
Temáticas	Nanomedicine
Presupuesto total	867.723 €
Concedido ES	389.000 €
Proyectos aprobados	3
Proyectos con MINECO/AEI	3

No.	Acrónimo y título del proyecto	Países participantes
1	AMYLIGHT. Development of phototherapeutic strategies for amyloid-related diseases enabled by a nanoscale view of amyloid photodamage	Japón, España
2	COnCorD. Drug delivery targeting Brain CPT1: a novel nanomedicine-based approach to fight obesity and cancer	Japón, España
3	Nano-ReBrain. Nano-scaffolding for neuronal migration and regeneration	Japón, España



CONVOCATORIA NACIONAL APCIN 2018

PROYECTO 1 AMYLIGHT. Development of phototherapeutic strategies for amyloid-related diseases enabled by a nanoscale view of amyloid photodamage

IP	
Socios	Japón (University of Tokyo), España (IMDEA Nanociencia)
Presupuesto total	309.028 €
Concedido ES	146.500 €

PROYECTO 2 COnCorD. Drug delivery targeting Brain CPT1: a novel nanomedicine-based approach to fight obesity and cancer

IP	
Socios	Japón (Innovation Centre of Nanomedicine (iCONM)), España (Universidad Internacional de Cataluña)
Presupuesto total	308.434 €
Concedido ES	147.500 €

PROYECTO 3 Nano-ReBrain. Nano-scaffolding for neuronal migration and regeneration

IP	
Socios	Japón (Nagoya City University), España (Network Center for Biomedical Research in Neurodegenerative Diseases (CIBERNED))
Presupuesto total	256.028 €
Concedido ES	95.000 €

CONVOCATORIA CONJUNTA 2020-2

Países participantes	España, Japón, Polonia, Turquía, Francia, Noruega, Alemania, República Checa, Hungría, Lituania, Eslovaquia
Temáticas	EIG-CONCERT JAPAN A focus on a specific scientific or technological domain e.g. nanotechnology, chemistry, etc. A focus on a specific policy issue area (e.g. Water, climate change, etc.) A focus on a particular region (e.g. Mediterranean, Balkan etc.)
Presupuesto total	
Concedido ES	630.000 €
Proyectos aprobados	5
Proyectos con MINECO/AEI	5



No.	Acrónimo y título del proyecto	Países participantes
1	DISSIMILAR. Detection of fake news on social media platforms	España, Japón, Polonia
2	ORACLE. Organically resilient and secure wireless networks for next generation iot technologies to serve future connected societies	Alemania, Japón, España, Turquía
3	DARUMA. Deep learning anticipated urban mobility peaks	Alemania, Japón, España, Hungría
4	FAVPQC. Formal analysis and verification of post-quantum cryptographic protocols	España, Japón, Francia, Turquía
5	3VRUT. Assessment of transformations in vitality, vulnerability and versatility of rural towns	Alemania, Japón, Polonia, España

CONVOCATORIA NACIONAL APCIN 2020-2

PROYECTO 1 **DISSIMILAR. Detection of fake news on social media platforms**

Los medios digitales han cambiado el modelo clásico de los medios de comunicación, que considera el emisor de un mensaje y un receptor pasivo, a un modelo en que los usuarios de los medios digitales son capaces de apropiarse de los contenidos, recrearlos y hacerlos circular. En este contexto, las redes sociales en línea son un circuito adecuado para la distribución de noticias falsas y la difusión de desinformación. En particular, las herramientas de edición de fotos y videos y los avances recientes en inteligencia artificial permiten a los no profesionales editar fácilmente documentos multimedia y crear falsificaciones profundas. Para evitar la propagación de la desinformación, algunas redes sociales en línea implementan métodos para filtrar el contenido falso. Aunque este puede ser un método eficaz, su enfoque centralizado otorga un enorme poder al administrador de estos servicios. Alineado con los objetivos de desarrollo sostenible (ODS) de las Naciones Unidas, más concretamente con los objetivos 9 (Industria, innovación e infraestructura) y 16 (Paz, justicia e instituciones sólidas), este proyecto está dirigido a proporcionar a los creadores de contenidos herramientas para marcar sus creaciones y hacer que cualquier modificación sea fácilmente detectable. Además, este proyecto ofrecerá a los usuarios de redes sociales en línea herramientas basadas en el procesamiento de señales de última generación y métodos de aprendizaje automático para detectar contenido falso. La combinación de las herramientas de detección y marcas de agua permitirá a los usuarios discernir entre contenidos multimedia originales y falsos sin la necesidad de evaluación y control de ningún servicio centralizado. Además, este proyecto se desarrollará utilizando un enfoque de diseño centrado en el usuario. Para construir las herramientas más efectivas y tener en cuenta la dimensión cultural y la diversidad de usuarios finales, este proyecto llevara a cabo un estudio integral de la experiencia del usuario.



IP	Fundació per a la Universitat Oberta de Catalunya. España
Socios	Japón, Polonia
Presupuesto total	
Concedido ES	120.000 €

PROYECTO 2 ORACLE. Organically resilient and secure wireless networks for next generation IOT technologies to serve future connected societies

La internet de las cosas de nueva generación (ng-iot), impulsada por la flexibilidad, la amplia gama de velocidades de datos, la heterogeneidad, latencia ultra baja, inteligencia y capacidades de usuario masivas ofrecidas por las redes 5g y 6g, será el principal motor del crecimiento económico y del desarrollo humano en las próximas décadas. Un impacto importante de 5g/6g y ng-iot, entre otros, es que estas tecnologías permitirán al usuario emplear sensores y dispositivos móviles de forma más eficaz y eficiente, de acuerdo con sus necesidades y con las características del entorno de operación. Mientras que hoy en día se accede a la mayoría de los servicios conectados desde una aplicación o sitio web con un teléfono inteligente, con la ng-iot estos servicios serán proporcionados por una multitud de dispositivos integrados en el propio ambiente. Sin embargo, en tal escenario, la seguridad –y en particular, la seguridad ligera, integrada, inteligente y ubicua– se convierte en una necesidad absoluta, sin la cual la ng-iot es inviable ya que la información sensible de los usuarios, como datos personales, relacionados con la salud y financieros, quedaría expuesta.

En un entorno como en el descrito, el acceso seguro a la información requiere una autenticación continua de los usuarios y la proliferación de servicios hace que la autenticación basada en contraseñas degrade la experiencia del usuario y provoque malas prácticas en la generación y custodia de las mismas. A lo anterior se puede añadir el hecho de que con la ng-iot, los usuarios interactuarán diariamente con innumerables dispositivos, muchos de los cuales se comportarán de manera autónoma, y el potencial riesgo en términos de vulnerabilidades de información privada y sensible es claro.

IP	acobs University Bremen. Alemania
Socios	Japón, España (CSIC), Turquía
Presupuesto total	
Concedido ES	120.000 €

PROYECTO 3 DARUMA. Deep learning anticipated urban mobility peaks

Este proyecto describe la propuesta científico – técnica del equipo español dentro del proyecto colaborativo DARUMA (deep learning anticipated urban mobility peaks), en el marco del grupo de interés EIG Concert-Japan.

La propuesta general del proyecto tiene como referencia la crisis del covid-19 y los profundos cambios que ha provocado en nuestra forma de vida y en los patrones de movilidad urbana.



Algunos de estos cambios han sido repentinos, mientras otros se están produciendo durante un periodo más amplio de adaptación a la nueva situación. Los factores desencadenantes del cambio se pueden calificar como "hard" y "soft". Con la noción de "hard" nos referimos a las regulaciones y actuaciones tomadas por las diversas autoridades tanto a nivel local, como regional o nacional. "soft" se refieren a los cambios Como consecuencia de la información que se difunde dentro de la propia sociedad, incluyendo las tendencias de las redes sociales y otras informaciones (falsas o verdaderas) que se difunde rápidamente. El objetivo de este proyecto es relacionar la aparición de tales tendencias con patrones de movilidad.

IP	Technical University of Munich. Alemania
Socios	Japón, España (Universidad Complutense de Madrid) y Hungría
Presupuesto total	309.028 €
Concedido ES	120.000 €

PROYECTO 4 FAVPQC. Formal analysis and verification of post-quantum cryptographic protocols

En este proyecto, desarrollamos protocolos criptográficos post-cuánticos y los analizamos formalmente usando un software, llamado Maude-NPA (http://maude.cs.illinois.edu/w/index.php/maude_tools:_maude-npa). Maude-NPA es una herramienta gratuita de análisis de protocolos de seguridad criptográficos que tiene en cuenta las propiedades algebraicas del criptosistema. A veces, las propiedades algebraicas pueden descubrir debilidades de los criptosistemas y, en otros casos, son parte de los supuestos de seguridad del protocolo. Maude-npa tiene una base teórica en la lógica de reescritura, la unificación de ecuaciones y el estrechamiento. Se puede usar para razonar sobre una amplia gama de propiedades criptográficas, incluida la cancelación del cifrado y el descifrado, exponenciación Diffie-Hellman, emparejamientos bilineales o o-exclusivo y algunas aproximaciones del cifrado homomórfico. El proyecto tiene como objetivo el análisis formal de protocolos criptograficos post-cuanticos centrandose en los basados en reticulos y en codigo. Por lo que sabemos, no existe una herramienta de analisis formal conocida para estos protocolos. Además, se sabe que el analisis formal de los criptosistemas post-cuanticos no se ha estudiado en profundidad.

IP	Polytechnic University of Valencia. España
Socios	Japón, Francia, Turquía
Concedido ES	150.000 €

PROYECTO 5 3VRUT. Assessment of transformations in vitality, vulnerability and versatility of rural towns

Las regiones rurales, tanto de Europa como de Japón, están bajo presión por crisis globales emergentes, como pandemias globales, migración relacionada con refugiados, despoblación rural relacionada con la economía, y cambio climático relacionado con el medio ambiente. Las comunidades de las regiones rurales necesitan con urgencia estrategias para mejorar su resiliencia. Sin embargo, dichas estrategias aparecen dispersas y, a menudo, se basan solo en síntomas e indicadores tangibles y visibles, por lo que se descuidan muchos aspectos intangibles pero cruciales.



El propósito de 3VRUT es desarrollar una metodología para evaluar, cuantificar y clasificar los riesgos y amenazas que existen en la relación entre el ciberespacio y el espacio físico en entornos rurales del mundo desarrollado. Para ello, es fundamental comprender las 3 V (vitalidad, vulnerabilidad y versatilidad) de las sociedades rurales. Su evaluación se realizará mediante una combinación de enfoques para estudiar las tendencias de la población, el envejecimiento, el transporte y los desplazamientos, la agricultura y la disponibilidad de alimentos, la morfología urbana y la transición del paisaje, la electricidad, el agua y la conectividad digital en dos pueblos rurales por país en Japón, Alemania, Polonia y España. El objetivo directo del estudio es combinar tecnologías de teledetección con tecnologías de aprendizaje automático e inteligencia artificial (IA) para detectar y predecir cambios en el comportamiento socioeconómico y las oportunidades del entorno rural.

IP	Technical University of Munich.Alemania
Socios	Japón, Polonia, España (Universitat Politecnica De Catalunya)
Presupuesto total	
Concedido ES	120.000 €

EIG-Concert Japan

Esta convocatoria de propuestas invita a investigadores de Japón y Europa a desarrollar tecnologías basadas en hidrógeno más eficientes, confiables, flexibles y limpias. En el centro de este llamamiento está el reconocimiento de que las tecnologías de hidrógeno alimentadas con energía limpia y asequible pueden contribuir a construir una sociedad mejor y ayudar a mitigar el cambio climático y otros impactos ambientales causados por la dependencia humana cada vez mayor de la energía.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número de convocatorias conjuntas: 2 (2021, 2022)

Participación de AEI en convocatorias conjuntas: 2 (2021, 2022)

CONVOCATORIA INTERNACIONAL CONJUNTA 2021

Países participantes	Francia, Noruega, Polonia, Suiza, Japón, Eslovaquia, República Checa, Alemania, España, Turquía
Temáticas	Sustainability development and cost-reduction of hybrid renewable energies powered hydrogen stations by risk-based multidisciplinary approach
Presupuesto total	6,74 M €
Concedido ES	115.275 €
Proyectos aprobados	6
Proyectos con MINECO/AEI	1

No.	Acrónimo y título del proyecto	Países participantes
1	ADONIS. Ammonia- Hydrogen Combustion in Micro Gas Turbines	Francia, Japón, Noruega, Polonia, Suiza
2	EHSAL. Enhancement of Hydrogen Storage Properties of AlTiVCr Light Weight High Entropy Alloys (HEA) by Ti3C2 - Mxene and Several Plastic Deformation	Republica Checa, Japón, Eslovaquia
3	H2M. Structure-based metabolic engineering of algal H2 production	Alemania, Japón, Francia
4	NADC-FC. Japanese-European Research Collaboration of New Affordable and Durable Electrocatalysts for Fuel Cells	Alemania, Japón, Suiza
5	STACY. Towards Safe Storage and Transportation of Cryogenic Hydrogen	Alemania, Japón, Francia
6	SUSHy. SUStainability development and cost-reduction of hybrid renewable energies powered Hydrogen stations by risk-based multidisciplinary approaches	Noruega, Japón, España, Polonia, Turquía

CONVOCATORIA NACIONAL PCI 2022

PROYECTO 6 SUSHy. SUSTainability development and cost-reduction of hybrid renewable energies powered Hydrogen stations by risk-based multidisciplinary approaches

SUSHy Project—short for SUSTainability and cost-reduction of Hydrogen stations through risk-based, multidisciplinary approaches—is a European-Japanese research project for the advancement of sustainable hydrogen technologies. SUSHy Project is funded through the European Interest Group (EIG) CONCERT-Japan platform and it was launched in the spring of 2022.

IP	University of Science and Technology. Noruega
Socios	Nagoya University (Japón), Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (España), University of Technology (Polonia), Nigde Ömer Halisdemir University (Turquía)
Presupuesto total	697.237 €
Concedido ES	115.275 €

CONVOCATORIA INTERNACIONAL CONJUNTA 2022

Países participantes	Bulgaria, República Checa, Hungría, Japón, Polonia, Eslovaquia, Turquía, España
Temáticas	Design of Materials with Atomic Precision
Presupuesto total	3,9 M €
Concedido ES	550.550 €
Proyectos aprobados	5
Proyectos con MINECO/AEI	4 (2 coordinados)

No.	Acrónimo y título del proyecto	Países participantes
1	DECOSMOL Design and Control of Single Molecule Junctions	República Checa, Japón, España
2	FerroFluid Epoch-making ferroic fluids based multi-functional materials	Hungría, Japón, República Checa, Polonia
3	MLALH Machine-learning-driven bottom-up design of atomically layered heterostructures for green H2 production	España, Japón, Turquía
4	PCON-M3 Precise Control of Nanoporous Materials in Multi-dimensional Morphology	República Checa, Japón, España
5	PETITE Phonon engineering in precisely assembled atomically thin layers	España, Japón, Polonia

CONVOCATORIA NACIONAL PCI 2023

PROYECTO 1 DECOSMOL. Design and Control of Single Molecule Junctions

Single molecule junctions, where individual molecules are placed between two nano-electrodes, are ideal systems to create molecular-scale functional materials with the desired electronic properties. The flow of an electrical current across the junction depends on molecular chemical properties and on the atomistic details of the contacts to the electrodes, which are thus essential to characterize. This project will design and characterize single molecule circuits with tailored mechanical, conducting and thermoelectric properties. To achieve this, we will combine chemical synthesis, atomistic simulations, and a series of experimental measurements including electron transport break-junction methods and optical spectroscopies. To better describe the conditions of any potential technological applications in nanoelectronics, they will study these materials at room temperature. They expect the project to deepen the understanding into the fundamental mechanisms governing current flow, to generate insight into the atomic-scale structure at the interface, and to develop experimental techniques to manipulate the junctions and tune their conducting properties. These findings will chart new pathways for delivering molecular junctions with tailored properties.

IP	Fyzikalni Ustav. República Checa
Socios	España, Japón
Presupuesto total	281.650 €
Concedido ES	116.160 €

PROYECTO 3 MLALH. Machine-learning-driven bottom-up design of atomically-layered heterostructures for green H2 production

The field of catalytic green hydrogen production, although indispensable for the transition to a renewable future, still suffers from widespread irreproducibility of results that limit its full commercialisation. The largest obstacle lies in the methods widely employed in synthesising the active catalysts, which impede unambiguously identifying the property-structure relationship. The vast catalytic samples reported in the literature lack uniformity in shape, size, growth orientation of particles, and composition. In an atomically imprecise material, the observed catalytic activity may well be from a subset of the various particles in the sample, which bring about uncertainty in linking the functional properties to a specific atomic level characteristic of the material. This piece of insight is critical for any further improvement in the field.

IP	Centro Nacional de Supercomputación Barcelona. España
Socios	Japón, Turquía
Presupuesto total	319.794 €
Concedido ES	157.300 €

PROYECTO 4 PCON-M3. Precise Control of Nanoporous Materials in Multi-dimensional Morpholog

Porous materials are widely used as catalysts and adsorbents, and are important materials for solving environmental and energy sustainable issues. In order to achieve excellent performance, it is essential to control the morphology of porous materials like nanoparticles and nanosheets. However, it is still difficult to design and control the defects and arrangement at the atomic level, and thus, sufficient performance and durability cannot be obtained. This research project aims to achieve designable synthesis and performance improvement of porous materials with various morphologies by precise control at the atomic level. The Japanese group is an expert in synthesis and can synthesize various porous materials using their own technology. The Czech and Spanish groups, on the other hand, are capable of advanced structural/textural analysis and performing catalytic tests. The collaboration within this consortium will enable, for the first time, the precise control of the synthesis of novel porous catalysts at the atomic level and their exploration in catalysis. The relevant topic of plastic wastes conversion by chemical recycling has been selected to explore the performance of the catalysts.

IP	Charles University. República Checa
Socios	Japón, España
Presupuesto total	385.879 €
Concedido ES	125.840 €

PROYECTO 5 PETITE. Phonon engineering in precisely assembled atomically thin layers

Van der Waals materials (vdW), such as graphene and transition metal dichalcogenides (TMDs), have attracted remarkable attention due to their thickness-dependent electrical, optical and thermal properties. Since the discovery of superconductivity in twisted bilayer graphene stacked at a precise 'magic' angle of 1.1 degrees, the relative layer orientation is considered a new degree of freedom in material design. Therefore, in vdW systems, atomic precision control can be achieved in both the number of layers and their relative orientation. As a consequence, by precisely controlling the twist angle between the layers of 2D materials, we can obtain new, multi-functional materials tailored for specific applications. Since it is known that more than 50% of failures of electronic devices are related to overheating, novel 2D materials are already envisaged and actively investigated to advance 3D integration, and these include graphene and TMDCs. In this project, anisotropic thermal conductors will be realised to guide heat flow in a given direction. In practice, this would mean that heat will be evacuated from hotspots only through a predefined path without affecting adjacent structures and sensitive components, a functionality which is currently very limited and far below requirements with the standard heat spreading materials.

IP	Instituto Catalán de Nanociencia y Tecnología. España
Socios	Japón, Polonia
Presupuesto total	456.000 €
Concedido ES	151.250 €

PRIMA - Partnership for Research and Innovation in the Mediterranean Area

La propuesta del Partenariado para la Investigación e Innovación en el Área del Mediterráneo (PRIMA) tiene como objetivo desarrollar soluciones innovadoras para mejorar la eficiencia y la sostenibilidad de las producciones alimentarias y la calidad / disponibilidad del agua, con el fin de apoyar el bienestar inclusivo y el desarrollo socioeconómico en la zona mediterránea y contribuir a los objetivos de adaptación al cambio climático de la UE. Los Estados miembros que participan en la propuesta de programa conjunto son Croacia, Chipre, Francia, Grecia, Italia, Malta, Portugal, Eslovenia y España. Los participantes de terceros países son: Argelia, Egipto, Jordania, Líbano, Marruecos, Túnez y Turquía.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas: 6 (2018, 2019, 2020, 2021, 2022, 2023)

Participación de MINECO-AEI en convocatorias conjuntas: 6 (2018, 2019, 2020, 2021, 2022, 2023)

CONVOCATORIA CONJUNTA INTERNACIONAL 2018

Países participantes	Argelia, Croacia, Chipre, Egipto, Francia, Alemania, Grecia, Israel, Italia, Jordania, Líbano, Luxemburgo, Malta, Portugal, Eslovenia, España, Túnez, Turquía
Temáticas:	1.1 Water resources availability and quality within catments and aquifers 1.2 Sustainable, integrated water management 1.3 Irrigation technologies and practices 2.1 Adaptation of agriculture to climate change 2.2 Preventing and controlling emergence of animal and plant pests and diseases. 2.3 Developing farming systems able to generate income, to create employment and to contribute to a balanced territorial development 3.1 Valorising food products from traditional Mediterranean diet 3.2 Food safety in local food chains 3.3 Implications of dietary shifts and sustainable diets for the Med populations and food industry
Presupuesto total	34.435.000 €
Presupuesto ES	2.164.700 €
Proyectos aprobados	27
Proyectos con financiación AEI	12 (1 coordinado)

No.	Acrónimo y título del proyecto	Países participantes
1	CONSIRS. A novel Condensation Supported Greenhouse Irrigation System	Alemania, Argelia, Egipto, Túnez
2	MEDWATERICE. Towards a sustainable water use in Mediterranean rice-based agro-ecosystems	Italia, Egipto, España, Israel, Portugal, Turquía

3	PRECIMED. Precision Irrigation Management to Improve Water Use Efficiency in the Mediterranean Region	España, Argelia, Grecia, Túnez
4	INWAT. Quality and management of intermittent rivers and associated groundwaters in the Mediterranean basins (INWAT)	España, Argelia, Alemania, Francia, Italia, Jordania, Túnez, Turquía
5	Sustain-COAST. Sustainable coastal groundwater management and pollution reduction through innovative governance in a changing climate	Grecia, Alemania, Francia, Italia, Túnez, Turquía
6	SWATCH. Strategies for increasing the WATER use efficiency of semi-arid Mediterranean watersheds and agrosilvopastoral systems under climate CHange	Italia, Argelia, Chipre, Egipto, España, Francia, Túnez
7	ALTOS. Managing water resources within Mediterranean agrosystems by accounting for spatial structures and connectivities	Francia, España, Italia, Líbano, Marruecos, Túnez
8	KARMA. Karst Aquifer Resources availability and quality in the Mediterranean Area	Alemania, España, Francia, Italia, Líbano, Túnez
9	MEDSAL. Salinization of critical groundwater reserves in coastal Mediterranean areas: Identification, Risk Assessment and Sustainable Management with the use of integrated modelling and smart ICT tools	Grecia, Argelia, Alemania, Chipre, Italia, Túnez, Turquía
10	ADAPT-HERD. Management strategies to improve herd resilience and efficiency by harnessing the adaptive capacities of small ruminants	Francia, Egipto, España, Túnez
11	FREECLIMB. Fruit crops adaptation to climate change in the mediterranean basin	Italia, Argelia, Egipto, España, Francia, Grecia, Marruecos, Túnez, Turquía
12	GENDIBAR. Utilization of local genetic diversity to understand and exploit barley adaptation to harsh environments and for pre-breeding	Italia, Argelia, Alemania, Egipto, España, Túnez, Turquía
13	IMPRESA. IMProving RESilience to Abiotic stresses in durum wheat: enhancing knowledge by genetic, physiological and "omics" approaches and increasing Mediterranean germplasm biodiversity by crop wild relatives-based introgressiomics	Italia, Argelia, Túnez, Turquía
14	VEG-ADAPT. Adapting mediterranean vegetable crops to climate change-induced multiple stress	Italia, Alemania, España, Francia, Grecia, Jordania, Marruecos, Turquía
15	SIMTAP. Self-sufficient Integrated Multi-Trophic AquaPonic systems for improving food production sustainability and brackish water use and recycling	Italia, Alemania, Francia, Malta, Turquía

Blue-Med.		
16	A novel integrated and sustainable approach to monitor and control Bluetongue in the Mediterranean region	Italia, Egipto, Francia, Túnez
GeMed.		
17	Prevention and control of new and invasive geminiviruses infecting vegetables in the Mediterranean	Francia, Italia, Jordania, Marruecos, Túnez
INTOMED.		
18	Innovative tools to combat crop pests in the Mediterranean	Grecia, España, Francia, Marruecos, Portugal, Túnez
LAGMED.		
19	Improvement of preventive actions to emerging LAGoviruses in the MEDiterranean basin: development and optimisation of methodologies for pathogen detection and control	Portugal, Argelia, España, Francia, Italia, Túnez
Med-Berry.		
20	Developing new strategies to protect strawberry crop in Mediterranean countries	Italia, España, Francia, Marruecos, Turquía
ZeroParasitic.		
21	Innovative sustainable solutions for broomrapes: prevention and integrated pest management approaches to overcome parasitism in Mediterranean cropping systems	Grecia, Alemania, Egipto, España, Jordania, Malta, Marruecos, Túnez
ArtiSaneFood.		
22	Innovative Bio-interventions and Risk Modelling Approaches for Ensuring Microbial Safety and Quality of Mediterranean Artisanal Fermented Foods	Portugal, Argelia, España, Estados Unidos, Francia, Grecia, Italia, Marruecos, Túnez
MILKQUA.		
23	Milk quality all along the dairy chain for a sustainable MILK	Francia, España, Italia, Portugal, Túnez
MED4YOUTH.		
24	Mediterranean Enriched Diet for tackling Youth Obesity	España, Israel, Italia, Jordania, Portugal
BOOMERANG.		
25	Healthier bio-fortified Mediterranean grains	España, Argelia, Alemania, Egipto, Italia, Túnez, Turquía
SAFFROMFOOD.		
26	Valorisation of saffron and its floral by-products as sustainable innovative sources for the development of high added-value food products	España, Argelia, Alemania, Francia, Italia, Portugal
VEGGIE-MED-CHEESES.		
27	Valorisation of thistle-curdled CHEESES in MEDiterranean marginal areas	Italia, España, Grecia, Túnez

CONVOCATORIA NACIONAL: APCIN 2019

PROYECTO 2 MEDWATERICE. Towards a sustainable water use in Mediterranean rice-based agro-ecosystems

The project aims at exploring sustainability of innovative irrigation options, to reduce rice water consumption and environmental impacts, and to extend rice cultivation outside of traditional paddy areas to meet the escalating demand. The MEDWATERICE consortium includes universities, research centres and private companies operating in the Mediterranean area (IT, ES, PT, EG, TR, IL). Case

studies will be conducted in pilot farms of the countries involved in the project. Alternative irrigation methods to be tested will be tailored to local conditions using a participatory action research approach through the establishment of Stake-Holder Panels (SHPs) in each country, which will include regional authorities, water managers, farmers' associations and consultants, and private companies of the rice production chain. For each irrigation solution, innovative technologies and the most appropriate rice varieties and agronomic practices will be adopted to minimize impacts on yield quantity and quality. Data collected at the farm level will be extrapolated to the irrigation district level to support water management decisions and policies. Indicators for quantitative assessment of environmental, economic and social sustainability of the irrigation options will be defined.

IP	Università degli Studi di Milano, Italia
Socios	Italia (Ente Nazionale Risi, Università Cattolica del Sacro Cuore), Egipto (Agricultural Research Center), España (Universitat de Girona, Agencia Estatal Consejo Superior de Investigaciones Científicas, Tepro Consultores Agrícolas S.L.), Israel (Netafim), Portugal (Instituto Politécnico de Coimbra, Universidade de Coimbra), Turquía (Black Sea Agricultural Research Institute)
Presupuesto total	1.441.218 €
Concedido ES	105.000 € + 105.000 € = 210.000 €

PROYECTO 3 PRECIMED. Precision Irrigation Management to Improve Water Use Efficiency in the Mediterranean Region

Implement a data-driven irrigation management system to improve efficiency in the use of water in the Mediterranean area, integrating knowledge on fertilizers and irrigation systems with Technologies of Information and Communication (ICTs). Such a system will easily accessible and usable by end consumers through interfaces such as mobile phones, tablets or computers. The Project will be able to collect one large amount of data, which will be processed and analyzed by the system; after that, it will provide feedback on what the needs of the crops are and recommendations to farmers with regards to vouchers irrigation and fertilization practices. The application of this irrigation technology will improve the lives of farmers in the Mediterranean and will also save water and fertilizers in a region with major water stress and contamination problems of the soil.

IP	Agencia Estatal Consejo Superior de Investigaciones Científicas, España
Socios	España (Odin Solutions), Argelia (National Institute of Agronomic Research of Algeria), Grecia (University of Thessaly), Túnez (University of Sfax)
Presupuesto total	810.780 €
Concedido ES	230.000 €

PROYECTO 7 ALTOS. Managing water resources within Mediterranean agrosystems by accounting for spatial structures and connectivities

The ALTOS project aims to improve water management models for rainfed and irrigated agriculture, by considering the modulation of spatial structures and connectivities induced by hydro-agricultural infrastructures and practices (e.g., modulating regional land use to drive upstream / downstream water repartition). Four study sites are considered for integrated analysis in Morocco, Lebanon and Tunisia; and two study sites are considered for methodological developments in Spain and Italy.

WP1 deals with monitoring and modelling tools for characterizing spatial structures. It includes the use of innovative sensors for structure observations, and of innovative methods for data processing. WP2 addresses innovative monitoring tools for characterizing processes induced by spatial structures (e.g., water flows). It includes several protocols relying on complementary measurements. WP3 addresses innovative modelling for simulating individual (e.g., evapotranspiration) and combined (e.g., hydrological cycle) processes. It includes multi-objectives/multi-criteria calibration procedures relying on distributed/nested measurements. WP4 simulates matter fluxes and storages for possible structure modulations, to next conduct an integrated analysis with end-users on the basis of participative seminars. It also cross-analyses irrigated and rainfed agrosystems, by addressing vulnerabilities and adaptation margins. WP5 deals with (1) the sharing of data and methods within the ALTOS consortium, and (2) the results dissemination and exploitation. For this latter item, we rely on long-term collaborations with several stakeholders (farmer associations, resource managers, engineering offices). Expected outcomes are related to SDG #2 (sustainable agriculture), #6 (water supply services), and #12 (responsible consumption and production). ALTOS contributes to PRIMA outcome indicators, including (1) newly modelling routines, (2) new irrigation technologies, and (3) innovative farming system.

IP	Laboratoire d'Étude des Interactions Sol Agrosystème Hydrosystème (LISAH), Francia
Socios	Francia (Centre d'études spatiales de la biosphère), España (Institut de Recerca i Tecnologia Agroalimentàries), Italia (Università di Cagliari), Líbano (National Council for Scientific Research, Lebanese Agricultural Research Institute), Marruecos (Unversité Caddi Ayyad), Túnez (Institut National Agronomique de Tunisie Rim Institut National de Recherche en Génie Rural, Eaux et Forêts Ecole Supérieure des Communications de Tunis Centre des Recherches et des Technologies des Eaux)
Presupuesto total	1.114.235 €
Concedido ES	170.000 €

PROYECTO 8 KARMA. Karst Aquifer Resources availability and quality in the Mediterranean Area

The overarching objective of the proposed KARMA project is to achieve substantial progress in the hydrogeological understanding and sustainable management of karst groundwater resources in the Mediterranean area in terms of water availability and quality. KARMA will contribute to the development and adoption of innovative and sustainable solutions for water management and, consequently, to the implementation of the UN SDG. Possible socio-economic benefits include creation of new jobs (in the field of water resources management), increased competitiveness of companies (sensor development, data processing for monitoring, early-warning systems), as well as social and environmental impacts (water availability and quality for humans and ecosystems). At catchment scale, five karst systems in Spain, France, Italy, Lebanon and Tunisia will serve as field observatories.

IP	Karlsruhe Institute of Technology, Alemania
Socios	Alemania (Bundesanstalt für Geowissenschaften und Rohstoffe), España (Universidad de Málaga), Francia (University of Montpellier), Italia (Università di Roma "La Sapienza"), Líbano (American University of Beirut), Túnez (Ecole National d'Ingénieurs de Tunis)
Presupuesto total	1.457.224 €

Concedido ES 165.000 €

PROYECTO 10 ADAPT-HERD. Management strategies to improve herd resilience and efficiency by harnessing the adaptive capacities of small ruminants

The objective of the ADAPT-HERD project is to develop simulation tools capable of evaluating the consequences of management strategies at the herd level, under contrasting and varying environments (Egypt, France, Spain and Tunisia). Our approach considers that biological adaptive capacities of small ruminants can be fully integrated within management strategies to improve R and E by: i) using reproduction practices that provide the best match between herd demand and feed supply; ii) managing groups of animals based on their adaptive capacities (targeting interventions) and iii) managing herd demography to adapt animal numbers to future feed resources. The project will implement data acquisition at animal level (fine-grained experiments on adaptive capacities and phenotyping of local breeds) and at production system level (herd management, feed resource, climate, and market conditions). Data will be combined and used in computer simulations to explore different climate change scenarios and management strategies and evaluate their effects on herd R and E. Interfacing modelling tools will be a key aspect of the project, fostering knowledge exchange and collaboration, especially with ongoing projects focusing on genetic selection and breeding solutions to improve R&E in small ruminants.

IP	Modélisation Systémique Appliquée aux Ruminants (MoSAR), Francia
Socios	Francia (Systèmes d'Elevage Méditerranéens et Tropicaux, Génétique Physiologie et Systèmes d'Elevage), Egipto (Animal Production Research Institute), España (Centro de Investigación y Tecnología Agroalimentaria), Túnez (Institut National de la Recherche Agronomique de Tunisie, Ecole Supérieure d'Agriculture du Kef)
Presupuesto total	707.278 €
Concedido ES	170.000 €

PROYECTO 11 FREECLIMB. Fruit crops adaptation to climate change in the mediterranean basin

The FREECLIMB project is built to match topic 1.2.1 of the PRIMA (Sect. 2) framework in developing smart and sustainable farming systems in Mediterranean countries, to preserve natural resources (water and land use) by increasing production efficiency. This will be pursued by advancing knowledge on mechanisms of plant environmental adaptation and biotic/abiotic stress resilience. The project targets major fruit tree species with the aim of improving the availability of breeding and germplasm material adapted to limited external resources (input) and future climatic scenarios predicted for the Mediterranean area, through the characterization and exploitation of local biodiversity. The project will focus on key ideotypes elaborated in collaboration with Fruit Farming Actors (FFAs, breeders, nurseries, growers) with the core objective of providing a toolkit (diverse germplasm, tools and methods) to accelerate exploitation, breeding and selection of resilient varieties in key traditional fruit crops of Mediterranean agriculture (stone fruits such as peach, apricot and almond; Citrus spp.; grape and olive).

IP	Università degli Studi di Milano (La Statale), Italia
Socios	Italia (Consiglio per la Ricerca in Agricoltura e l'Analisi dell'Economia Agraria, Università di Catania, CNR), Argelia (Ecole Nationale Supérieure, Agronomique Université Freres Mentouri Constantine I), Egipto (Agricultural Research Center), España (Centre de Recerca en Agrigenòmica), Francia (Génétique et

	Amélioration des Fruits et Légumes), Grecia (Institute of Plant Breeding and Genetic Resources, Hellenic Agricultural Organization Demeter), Marruecos (Institut National de la Recherche Agronomique), Túnez (Institut de l'olivier), Turquía (Cukurova University)
Presupuesto total	1.763.450 €
Concedido ES	170.000 €

PROYECTO 12 GENDIBAR. Utilization of local genetic diversity to understand and exploit barley adaptation to harsh environments and for pre-breeding

GENDIBAR aims to achieve the following objectives: (i) harnessing barley diversity to detect new alleles that have the potential to cope with projected climate change, shifts of agroecological zones of the Mediterranean and resistance to powdery mildew, (ii) creating new knowledge and molecular tools to assess and appraise the genetic bases of heat tolerance and intolerance at vulnerable stages of barley development, (iii) providing new hypotheses for adopting better agricultural practices to minimize the effects of climate change in current and future Mediterranean environments, (iv) improving model-aided ideotype design for the different agro-ecological zones, (v) enabling the creation of tolerant and resilient barley varieties exploiting barley diversity. To reach the aforementioned objectives, GENDIBAR will (i) exploit the pattern of genetic variants detected in selected panels of barley landraces, (ii) combine morphological and RNA expression analyses to identify key genes involved in the differential response to heat stress during sensitive stages of barley development in field and controlled conditions, (iii) exploit morphological and physiological traits measured in Mediterranean landraces to improve crop simulation models for designing heat tolerant ideotypes and (iv) identifying other possible agricultural practices for barley farming, (v) conduct pre-breeding programs using cutting-edge technologies. Overall, GENDIBAR will provide new knowledge to fill the existing research gaps to adapt barley farming in relation to the projected climate change and shifts of the Mediterranean agroecological zones and will valorise barley biodiversity applying targeted pre-breeding.

IP	Consiglio per la Ricerca in Agricoltura e l'analisi dell'economia agraria (CREA), Italia
Socios	Italia (Università degli Studi di Milano), Argelia (École Nationale Supérieure Agronomique), Alemania (Max Planck Institut für Pflanzenzüchtungsforschung), Egipto (Ain Shams University), España (Universidad de Lleida, Agencia Estatal Consejo Superior de Investigaciones Científicas-Estación Experimental Aula Dei), Túnez (University of Sfax Institute of Biotechnology), Turquía (TEKFEN Tarim)
Presupuesto total	1.239.967 €
Concedido ES	128.000 € + 85.000 € = 213.000 €

PROYECTO 14 VEG-ADAPT. Adapting mediterranean vegetable crops to climate change-induced multiple stress

The main goal of our research is to understand how primary nitrogen and sulphur metabolism is regulated and coordinated and how they modulate growth and development. We are especially interested in the way other adverse environmental conditions like extreme temperatures and drought modulate nutrient status and nutrient stress responses. We are conducting different high throughput genetic strategies, developing system biology tools, and a set of growth conditions to

dissect the signalling pathways and the molecular and genetic mechanisms involved in the control of the nutrient status on growth and development. Arabidopsis and tomato and their relative wild species are used as models in the different research lines.

IP	Università degli Studi di Torin, Italia
Socios	Alemania (Leibniz Institute of Vegetable and Ornamental Crops), España (Universidad de las Islas Baleares, Instituto Nacional de Investigación y Tecnología, Abiopep S.L.), Francia (Génétique et Amélioration des Fruits et Légumes), Grecia (Agricultural University of Athens, Agricultural Cooperative Notos), Jordania (National Agricultural Research Center), Marruecos (Institut National de la Recherche Agronomique Maroc), Turquía (Ege University, Menemen Chamber of Agriculture)
Presupuesto total	2.041.695 €
Concedido ES	130.000 € + 86.000 € = 216.000 €

PROYECTO 19 LAGMED. Improvement of preventive actions to emerging LAGoviruses in the MEDiterranean basin: development and optimisation of methodologies for pathogen detection and control

In this project we will monitor Rabbits haemorrhagic disease (RHD) epidemiology in the Mediterranean basin and perform a genomic characterization of circulating strains. We will collect samples from wild rabbits and hares found dead in the field, through current collaborations and ongoing monitoring activities, but also from farm animals. Genomes of the strains will be used to develop more accurate, rapid and sensitive diagnostic tools, especially relevant for the rabbit-related industry, and develop cheaper and more efficient vaccines. Considering the dynamics of the strains, we expect to test and apply biosecurity measures to prevent outbreaks and better contain the disease in the field and in rabbit-production systems. Serological status of leporid populations will also be determined. We further expect to determine the role of the rabbit immune system for vaccine design. This might be useful for containing disease outbreaks in rabbit production systems, particularly in countries located south to the Mediterranean basin. Information gathered within this proposal will be used to advise and train stakeholders and our partners in Africa on disease diagnosis and prophylaxis, and technical management. We expect to contribute to sustainable farming systems, particularly in Africa, by developing containing measures against a still emergent animal disease.

IP	CIBIO/InBIO-UP, Rede de Investigação em Biodiversidade e Biologia Evolutiva, Portugal
Socios	Argelia (Ecole Nationale Supérieure Vétérinaire - ENSV), España (Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria, Universidad de Córdoba), Francia (Agence nationale de sécurité sanitaire de l'alimentation, de l'environnement et du travail, Office national de la chasse et de la faune sauvage, Institut National de la Recherche Agronomique), Italia (Istituto zooprofilattico sperimentale della Lombardia e dell'Emilia Romagna), Túnez (École Nationale de Médecine Vétérinaire de Sidi Thabet)
Presupuesto total	902.400 €
Concedido ES	120.000 € + 95.000 € = 215.000 €

PROYECTO 20 Med-Berry. Developing new strategies to protect strawberry crop in Mediterranean countries

Med-Berry will develop new strategies, materials and molecules to control strawberry fungal diseases in Mediterranean countries. For this Med-Berry Consortium will valorize local resistant germplasm, test new breeding technologies and RNAi based methods and assess their sustainability.

IP	Alma Mater Studiorum University of Bologna, Italia
Socios	Italia (Polytechnic University of Marche, University of Milan), España (Universidad de Córdoba, Círef, Viveros California), Francia (INRA), Marruecos (IAV), Turquía (University of Cukurova)
Presupuesto total	1.290.000 €
Concedido ES	170.000 €

PROYECTO 22 ArtiSaneFood. Innovative Bio-interventions and Risk Modelling Approaches for Ensuring Microbial Safety and Quality of Mediterranean Artisanal Fermented Foods

The objective of this project is to develop efficient bio-intervention strategies, enhanced process criteria, and an easy-to-use food safety decision support IT tool for participating artisanal food producers, aiming to the reduction and control of food-borne pathogens in 15 artisanal fermented foods of meat or dairy origin produced in Portugal, Spain, Italy, France, Greece, Morocco, Tunisia and Algeria. The project will be developed through an integrated risk-based approach sustained by the concepts of (i) extensive tracking surveys in the artisanal food chains, in order to identify origin, routes of contamination, risk factors favouring pathogens' survival, and technological causes for lack of homogeneity in the quality/ safety of end-products; (ii) biopreservation, whereby functional starter cultures and natural extracts will be assessed as extra hurdles to ensure safety and extend shelf-life; (iii) fate studies of pathogens, and (iv) risk process modelling, for the delineation of the most effective bio-interventions, optimisation of process variables and norms/standards, and design of quality monitoring tools.

IP	Polytechnic Institute of Bragança, Portugal
Socios	Argelia (University of Oran I Ahmed BENBELLA), España (Universidad de Córdoba), Estados Unidos (USDA Agricultural Research Service), Francia (Centre National Interprofessionnel de l'Economie Laitière, French Agency for Food, Environmental and Occupational Health and Safety), Grecia (Agricultural University of Athens), Italia (Università di Bologna), Marruecos (University Ibn Zohr), Túnez (MIHOUBI University of Manouba)
Presupuesto total	1.451.806 €
Concedido ES	115.000 €

PROYECTO 27 VEGGIE-MED-CHEESES. Valorisation of thistle-curdled CHEESES in MEDiterranean marginal areas

The aim of Veggie Med Cheeses is to study and build upon existing cheese making technologies in order to: valorize traditional and typical local cheeses by meeting the world-wide increase demand of cheeses made by non-animal rennet; assess the technological and socio-economic viability of the utilization and valorization of spontaneous herbaceous plans in the Mediterranean as traditional alternatives to animal rennet; build up traditional knowledge and culinary heritage while establishing the conditions for better control of safety and quality of these traditional cheese and then to improve the traditional cheese-making value chain.

IP	Universita' Politecnica Delle Marche, Italia
Socios	Italia (Consiglio per la Ricerca in Agricoltura e l'Analisi dell'Economia Agraria), España (Universidad Católica San Antonio de Murcia), Grecia (Hellenic Agricultural Organization Demeter), Túnez (High Institute of Agronomy of Chott-Mariem Sousse University)
Presupuesto total	989.750 €
Concedido ES	120.700 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2019

Países participantes	Alemania, Argelia, Argentina, Chipre, Croacia, Egipto, Eslovenia, España, Francia, Grecia, Israel, Italia, Líbano, Luxemburgo, Marruecos, Portugal, Túnez, Turquía
Temáticas	1- Thematic Area 1-Water management: Topic 2.1.1 RIA Bridging the gap between potential and actual irrigation performance in the Mediterranean Topic 2.1.2 RIA Management of low quality waters under water scarcity and climate change conditions 2- Thematic Area 2-Farming systems: Topic 2.2.1 RIA Small scale farming systems innovation. Topic 2.2.2 RIA Use and management of biodiversity as a major lever of sustainability in farming systems 2- Thematic Area 3-Agrofood chain: Topic 2.3.1 RIA Extending shelf-life of perishable Mediterranean food products Topic 2.3.2 RIA Enhancing horizontal and vertical integration in Mediterranean agro-food value-chains
Presupuesto total	38 M €
Presupuesto ES	2.722.000 €
Proyectos aprobados	30
Proyectos con financiación AEI	17 (2 proyectos coordinados)

No.	Acrónimo y título del proyecto	Países participantes
1	AdaMedOr.	Alemania, España, Marruecos, Túnez

Adapting Mediterranean Orchards-science-based desing of resilient furit tree portfolios for the Mediterranean region.		
Biodiversify.		Argelia, Alemania, España, Francia, Grecia, Italia, Túnez
2 Boost ecosystem services through highly Biodiversity-based Mediterranean Farming System.		
BIOFRESHCLOUD.		
3 Enhancing Mediterranean Fresh Produce Shelf-life using Sustainable Preservative Technologies and communicating knowledge on dynamic shelf-life using Food Cloud Services and Predictive Modelling.		Turquía, Alemania, Marruecos, Argentina
BioProMedFood.		
4 Bio-protective cultures and bioactive extracts as sustainable combined strategies to improve the shelf-life of perishable Mediterranean food		Croacia, España, Italia, Eslovenia, Turquía
BIORANGEPACK.		
5 Smart and innovative packaging, post-harvest rot management and shipping of organic citrus fruit		Italia, Túnez, España, Argelia, Turquía, Francia
BrasExplor.		
6 Smart and innovative packaging, post-harvest rot management and shipping of organic citrus fruit		Argelia, España, Francia, Italia, Túnez, Turquía
CAMEL-SHIELD.		
7 Camel breeding systems: actors in the sustainale economic development of the northern Sahara territories through innovative strategies for natural resource management and marketing		Argelia, Francia, Italia, Marruecos
CEREALMED.		
8 Enhancing diversity in Mediterranean cereal farming systems		Italia, Egipto, España, Grecia, Líbano, Marruecos, Turquía
DIVICIA.		
9 Use and management of Vicia species for sustainability		Francia, Argelia, Italia, Líbano, Marruecos, España, Portugal, Túnez
EADANMBRT.		
10 Evaluation and development of anaerobic membrane bioreactor (AnMBR) technology to promote unrestricted wastewater reuse and mitigate compromised surface water quality in the Mediterranean region		Egipto, Francia, España
EXPLOWHEAT.		
11 Exploring durum wheat genotypes to minimize drought stress impact on grain yield and nutritional quality		Argelia, España, Italia, Túnez
FEDKITO.		
12 FrEsh FooD sustainable paKaging in the circular ecOnomy		Francia, Grecia, Italia, Marruecos, Túnez
FIGGEN.		
13 Valorising the diversity of the fig tree, an ancient fruit crop for sustainable Mediterranean agriculture		España, Italia, Túnez, Turquía
Fish-PhotoCAT.		
14 Photocatalytic water remediation for sustainable fish farming		Egipto, Italia, Túnez
FRUALGAE.		
15 Sustainable technologies and methodologies to improve quality and extend product shelf life in the Mediterranean agrofood supply chain		Alemania, Egipto, Grecia, Italia, Portugal, Líbano

GREENPALM.		
16	Development of sustainable date palm-based agro systems by preserving their biodiversity.	Italia, Portugal, Túnez, Argelia
HALOFARMS.		
17	Development and optimization of halophyte-based farming systems in salt-affected Mediterranean soils	Túnez, Egipto, España, Francia, Italia, Portugal
HUBIS.		
18	Open innovation Hub for Irrigation Systems in Mediterranean agriculture	Francia, Argelia, Grecia, Marruecos, Portugal, España, Túnez
IDEWA.		
19	Irrigation and Drainage monitoring by remote sensing for Ecosystems and Water resources management	España, Italia, Marruecos
LEGU-MED.		
20	Legumes in biodiversity-based farming systems in Mediterranean basin	Italia, Alemania, Argelia, Croacia, Líbano, Túnez, España, Turquía
MEDISMART.		
21	Mediterranean Citrus: innovative soft processing solutions for S.M.A.R.T. (Sustainable, Mediterranean, Agronomically evolved, nutritionally enriched, Traditional) products	Egipto, España, Italia, Portugal, Turquía
Nano4Fresh.		
22	Nanomaterials for an environmentally friendly and sustainable handling of perishable products	España, Italia, Marruecos, Portugal
Pulping.		
23	Development of Pumpkin Pulp Formulation using a Sustainable Integrated Strategy	Argelia, Alemania, Egipto, Grecia, Portugal, Túnez
RESIDUE.		
24	Risk reduction of chemical residues in soils and crops – impact due to wastewater used for irrigation	Israel, España, Alemania, Italia
SmaCuMed.		
25	Smart irrigation cube for sustainable agriculture in the Mediterranean region	Alemania, Marruecos, Portugal, Túnez
SMARTIES.		
26	Real time smart irrigation management at multiple stakeholders' levels	Egipto, España, Francia, Italia, Luxemburgo, Marruecos, Túnez
StopMedWaste.		
27	Innovative Sustainable technologies to extend the shelf-life of Perishable MEDiterranean fresh fruit, vegetables and aromatic plants and to reduce WASTE	Italia, Chipre, Túnez, Turquía, España
SUPERTROUT.		
28	Improving Sustainability and PERFORMANCE of aquaculture farming system: breeding for lactococcosis resistance in rainbow TROUT	España, Grecia, Italia, Turquía
VALUEFARM.		
29	Valorization of Mediterranean small-scale FARMS by cropping wild UnExploited species	Portugal, Chipre, Turquía, España, Alemania, Egipto, Argelia, Grecia

WILDFOOD.	España, Italia,
30 Eating the wild: improving the value chain of Mediterranean Wild Food Products (WFP)	Portugal, Túnez, Argelia, Eslovenia

CONVOCATORIA NACIONAL: APCIN 2020

PROYECTO 1 AdaMedOr. Adapting Mediterranean Orchards-science-based desing of resilient furit tree portfolios for the Mediterranean region

AdaMedOr aims to assess the current agro-biodiversity of temperate fruit trees in the Mediterranean area (Objective 1) by mapping cultivar distributions, identifying promising cultivars and assembling a database on cultivar phenology and performance.

We will anticipate future tree performance with a novel state-of-the-art phenology modeling and climate impact projection framework (Objective 2), which will be used to estimate the thermal needs of Mediterranean tree cultivars, anticipate their future suitable ranges and map present and future chill and heat availability.

Controlled experiments will facilitate model refinement.

IP	Universidad de Bonn, Alemania
Socios	España, Túnez, Marruecos
Concedido ES	Centro De Investigación Y Tecnología Agroalimentaria de Aragón (Cita) 93.000 € + Agencia Estatal Consejo Superior De Investigaciones Científicas (CSIC) 95.000 €
Presupuesto total	738.000 €

PROYECTO 2 Biodiversify. Boost ecosystem services through highly Biodiversity-based Mediterranean Farming System

Biodiversify will implement a co-design approach, incorporating local experts and scientific knowledge, organised in 8 regional case studies that represent a wide range of systems and pedo-climatic conditions of the Mediterranean basin, such as:

Algeria: Diversified arable rotation and intercropping in the Setif Plain.

France:

- 1) Agroecological vineyard with multiservice cover crops in the Languedoc area;
- 2) Agroforestry systems in the Occitanie region.

Greece:

- 1) Agroecological vineyard with multiservice cover crop in the Central Macedonia region;
- 2) Intercropping of cereal and legumes in the Thessaloniki region.

Italy: Olive groves with multiservice cover crops and grazed crops in the Umbria region.

Spain: Biodiversified arable rotations in the Ebro valley region.

IP	Centre de Coopération Internationale en Recherche Agronomique pour le Développement - CIRAD, Francia
Socios	Francia, Argelia, Alemania, Grecia, Italia, España, Túnez
Concedido ES	95.000 €
Presupuesto total	1.273.600 €

PROYECTO 3 BIOFRESHCLOUD. Enhancing Mediterranean Fresh Produce Shelf-life using Sustainable Preservative Technologies and communicating knowledge on dynamic shelf-life using Food Cloud Services and Predictive Modelling

The proposal aims to develop an integrated, innovative, and eco-friendly approach to assess optimal shelf-life and minimize food losses of strawberries and tomatoes produced in the Mediterranean region, by combining food bio-preservation technologies, food modelling, and Food Cloud tools.

IP	Universidad de Córdoba, España
Socios	Turquía, Alemania, Marruecos, Argentina
Concedido ES	195.000 €
Presupuesto total	704.000 €

PROYECTO 5 BIORANGEPACK. Smart and innovative packaging, post-harvest rot management and shipping of organic citrus fruit

The overall objective of the project is to increase the efficiency, sustainability and competitiveness of the post-farming processing chain of organic citrus fruit, by intervening in points of weakness and the unresolved problems of this supply chain. Consistently with the scope, specific objectives include:

- i) Reduction of losses caused by post-harvest rots during storage and transportation, by treating the fruits with non-toxic, eco-friendly substances and bio-products
- ii) raising of the quality standards of fresh fruits and juice by using molecular diagnostics for the detection of pathogenic quarantine fungi and mycotoxins and excluding fruits that do not comply with EU and EPPO phytopathological and toxicological standards;
- iii) extension of the shelf-life of fresh fruit using biodegradable active biocoating and smart packaging;
- iv) application of smart technologies (ICT-based technologies and machine learning techniques) to reduce shipping times and optimize the delivery of fruits to the targeted markets (20% increase in shipment efficiency and exclusion of complaints or cuts by GDO;
- v) minimizing the waste of the industrial fruit transformation by recycling and exploiting the most of citrus pulp, the major by-product of juice and essence industry, by utilizing it as a raw material to produce a biodegradable and natural biocoating of fruit packaging, in accordance with the principles of circular economy and the standards of organic food.

IP	Università degli Studi di Catania, Italia
Socios	Italia, Túnez, España, Argelia, Francia, Turquía

Concedido ES	Universidad de Valencia 95.000 € + Asoc. de Investigación de Materiales Plásticos (Instituto Tecnológico del Plástico) 95.000 €
Presupuesto total	1.282.397 €

PROYECTO 8 CEREALMED. Enhancing diversity in Mediterranean cereal farming systems

CerealMed will pursue and achieve the following specific objectives: evaluate the available wheat, lentil and chickpea biodiversity, both domesticated relatives and landraces, by testing collections/populations for adaptation to different environmental conditions, disease resistance and quality traits across the Mediterranean region, create new wheat, lentil and chickpea-related biodiversity through the development of “new germplasm” by inter-generic and interspecific crosses such the example of Tritordeum.

Valorise the wheat, lentil and chickpea biodiversity by re-designing and optimizing a sustainable wheat-based cropping system. Biodiversity-based agriculture practices considering the spatial and temporal combinations of wheat and legumes (rotation/consociation) will be tested under conservative agriculture management, together with the use of tailored microorganisms applications, to achieve relevant ecosystem targets.

Agricultural targets: new high nutritional, value-added food products as well as new alternative products from cereal straw or farming side products; Environmental targets: restoration of soil fertility, enrichment of soil biodiversity, reduction of chemical input (mineral fertilizer, pesticides). compare the different options of biodiversity-based wheat farming in respect to more traditional/local agricultural systems in term of environmental and technical-economic outcomes/consequences to assess their profitability and their sustainability at regional level.

Implement an integrated bioeconomic model for the assessment of the sustainability at farming level.

IP	Università degli Studi di Bari Aldo Moro, Italia
Socios	Italia, Egipto, España, Grecia, Líbano, Marruecos, Turquía
Concedido ES	Universidade de Santiago De Compostela 95.000 € + Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC) 95.000 €
Presupuesto total	1.198.570 €

PROYECTO 9 DIVICIA. Use and management of Vicia species for sustainability

The project aims to exploit key agro-ecological functions of legumes to restore agro-biodiversity and improve sustainability and resilience of Mediterranean cereal cropping systems. The identification of a wide range of promising landraces and new productive drought-adapted genotypes of Vicia species will help to implement best practices of rotations, intercropping or mix-cropping. DiVicia will mitigate, through a participatory process, the downward spiral of soil fertility decline and food insecurity, with a major impact on improving the livelihoods of the rural populations. The project consortium will make use of its multidisciplinary expertise together with stakeholders, integrating tacit and scientific knowledge to propose innovative agronomic practices, new local and drought-adapted germplasms, and tools to support farmers in such transition.

IP	Groupe Ecole Supérieure d'Agricultures d'Angers Loire, ESA, Francia
Socios	Francia, Argelia, Italia, Líbano, Marruecos, España, Portugal, Túnez
Concedido ES	148.000 €
Presupuesto total	1.000.000 €

PROYECTO 10 EADANMBRT. Evaluation and development of anaerobic membrane bioreactor (AnMBR) technology to promote unrestricted wastewater reuse and mitigate compromised surface water quality in the Mediterranean region

The technologies necessary for widespread unrestricted irrigation reuse across the Mediterranean are not at a level ready for municipal or market application.

Based on this, the project team will focus on development, advancement, and application of the emerging technology known as the anaerobic membrane bioreactor (AnMBR) for unrestricted wastewater reuse. Integrated testing of AnMBR technology for treatment of wastewaters in multiple participating countries will be performed, with a specific focus on mitigation of contaminants of emerging concern (CECs). In order to broaden the potential reuse application scenarios, low-impact membrane-based tertiary treatment will also be investigated and applied for these systems. Scale-up of AnMBR technology will be addressed using a pilot-scale system, specifically focusing on practical operational strategies to reduce greenhouse gas emissions and enhance energy recovery efficiency. Specific objectives of pilot-scale assessments will include increasing influent waste stream diversification and effluent methane valorization strategies. Operational practicality will be assessed by incorporating life cycle assessment analyses using collected data. Based on the experiments conducted, we will implement a plan for advancing AnMBR technology to a point where technology transfer to local/national stakeholders and responsible governance agencies can occur.

IP	Lebanese American University, LAU. Líbano
Socios	Egipto, Francia, España
Concedido ES	140.000 €
Concedido total	415.000 €

PROYECTO 16 GREENPALM. Development of sustainable date palm-based agro systems by preserving their biodiversity

The main objective of this proposal is to conserve the biodiversity and improve the sustainability of Mediterranean date-palm agrosystems by genetic, microbiological and technological approaches.

GreenPalm focuses not only on conservation of genetic diversity of date palm cultivars with high added value, but also considers underexploited and neglected cultivars with culinary, cosmetics or medicinal roles.

IP	Consejo Superior de Investigaciones Científicas CSIC, España
Socios	Italia, Portugal, Túnez, Argelia
Concedido ES	176.000 €

Concedido total	703.600€

PROYECTO 17 HALOFARMS. Development and optimization of halophyte-based farming systems in salt-affected Mediterranean soils

The overall objective of HaloFarMs is to develop and optimise sustainable and environmentally friendly new farming practices and producing systems based on the cultivation of halophytes, able to cope with soil and water salinization and to restore biodiversity. HaloFarMs will optimize The produced halophytes will be biochemically characterized for nutritional profile and functional properties; since these high added-value products can be used in the cosmetic, food and veterinary industries.

IP	Centre de Biotechnologie deBorj Cédria, CBBC, Túnez
Socios	Túnez, Egipto, España, Francia, Italia, Portugal
Concedido	176.000 €
Concedido ES	145.000 €
Presupuesto total	847.872 €

PROYECTO 18 HUBIS. Open innovation Hub for Irrigation Systems in Mediterranean agriculture

The main objective is to favour the emergence, evaluate and boost innovations aiming at reducing the performance gap and thus improve the sustainability of irrigation systems in the Mediterranean region. The innovations comprise new tools and services for farmers and water users associations, designed to increase water, nutrient and energy use efficiency.

IP	Institut National d'Etudes Superieures Agronomiques de Montpellier, Francia
Socios	Francia, Argelia, Grecia, Marruecos, Portugal, España, Túnez
Concedido ES	Instituto Andaluz de Investigación y Formación Agraria Pesquera Alimentaria y de La Produccion Ecológica 57.000 € + Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC) 128.000 €
Presupuesto total	1.170.706 €

PROYECTO 19 IDEWA. Irrigation and Drainage monitoring by remote sensing for Ecosystems and Water resources management

Retrieving drainage from remote sensing is not an easy task since there is no direct measurement of soil water transfers from space. However, the water Budget modeling can be constrained from the remotely sensed crop evapotranspiration (ET), soil moisture (SM) and vegetation water stress (VEG) indices. The main idea is to assimilate remotely sensed ET, SM and VEG data in land surface models at multiple (field, sub-basin and basin) scales. Moreover, the impact of drainage on ecosystems will be measured by remotely sensed water quality indices.

The project will be implemented in two Mediterranean representative case and well-monitored study areas in the Ebro (Spain) and Tensift (Morocco) basins. In particular, the drainage retrieval approach will be tested over the Algerri-Balaguer district, where drainage is actually measured at an integrated spatial scale. Since the land consolidation twenty years ago, this irrigated area has been drained by a network of constructed ditches and buried pipelines feeding a general outlet in a 3-meter deep well, which now allows for continuously monitoring the flow rate and electrical conductivity. This configuration, resembling a huge passive lysimeter of 3500 ha, thus represents a unique opportunity to develop and test the satellite-based drainage retrieval.

IP	Centre d'Etudes Spatiales de la Biosphère, CESBIO, Francia
Socios	España, Italia Marruecos
Concedido ES	UNIVERSIDAD DE LLEIDA 95.000 € + UNIVERSITAT RAMON LLULL, FUNDACIO PRIVADA 95.000 €
Presupuesto total	645.240 €

PROYECTO 20 LEGU-MED. Legumes in biodiversity-based farming systems in Mediterranean basin

Future Mediterranean farming systems with enhanced environmental sustainability.

We have assembled a multi-disciplinary consortium composed by 11 partners from 8 countries and consisting of 5 public universities, 5 research centers and 1 company. Our activities are designed to increase ecosystem services, maintain soil fertility, minimize the use of synthetic chemical compounds, and maintain a satisfactory and steady income for growers. LEGU-MED will use a participatory process where a subset of stakeholder's community will be involved in the co-creation of innovative solutions.

IP	Università di Firenze, UNIFI, Italia
Socios	Italia, Alemania, Argelia, Croacia, Líbano, Túnez, España, Turquía
Concedido ES	115.000 €
Presupuesto total	1.240.190 €

PROYECTO 22 Nano4Fresh. Nanomaterials for an environmentally friendly and sustainable handling of perishable products

Nano4fresh aims to extend the shelf-life of perishable products, reducing post-harvest chemical treatments, food losses and wastes.

This will be achieved by developing nanomaterials (carbons, zeolites, MOFs and PCPs) with innovative and versatile characteristics, in terms of adsorption, catalytic photoactivity and antibacterial/fungi performances, to surpass the current state-of-the-art approaches for prevention of the ripening processes of food products.

In practical terms, novel filters and photoreactors will be developed and optimised for the storage (atmosphere control) during the ripening process. This approach comprises the ethylene removal, both during long storage, transportation and at the retail stores, leading to eradicate the use of chemicals as a post-harvest strategy to prevent the ripening process. The developed technology will be tested, and the performances validated in a laboratory-controlled and real-life

environment to supply fruit quality parameters (colour, compactness, sugar content, enzymatic activity) in the presence and absence of developed devices.

IP	Universidade de Lisboa, Portugal
Socios	Portugal, España, Italia, Marruecos
Concedido ES	145.000 €
Presupuesto total	666.332 €

PROYECTO 24 RESIDUE. Risk reduction of chemical residues in soils and crops – impact due to wastewater used for irrigation

The main goal of the project is to improve the safety of agricultural products grown in countries, which are obliged to use waste materials for irrigation and fertilization in agriculture. The concept of the project is to develop a technology with significantly reduced risks of transfer of organic contaminants into the agricultural products. The new technology will be based on i) the improvement of soil functions to enhance in situ the removal and detoxification of introduced organic pollutants, (ii) new production procedures for safe soil amendments and iii) a clear discrimination of non-bioavailable organic pollutants introduced into soil that do not constitute a risk for agriculture.

IP	Fraunhofer Gesellschaft, Alemania
Socios	Israel, España, Alemania, Italia
Concedido ES	145.000 €
Presupuesto total	1.111.488 €

PROYECTO 27 StopMedWaste. Innovative Sustainable technologies to extend the shelf-life of Perishable MEDiterranean fresh fruit, vegetables and aromatic plants and to reduce WASTE

The overall objective of StopMedWaste is to preserve perishable Mediterranean fresh fruit, vegetables and aromatic plants through innovative strategies that are safe for consumers, to reduce waste of agricultural products, and at the same time to minimise or reduce the application of synthetic pesticides. Project StopMedWaste aims to extend the shelf-life of this produce by applying physical means (gaseous ozone, ozonated water, electrolysed water), natural compounds (chitosan, essential oils, antifungal edible coatings [AECs]) and biocontrol agents.

IP	Università Politecnica delle Marche, Italia
Socios	Italia, Chipre, Túnez, Turquía, España
Concedido ES	140.000 €
Presupuesto total	1.009.017 €

PROYECTO 29 VALUEFARM. Valorization of Mediterranean small-scale FARMS by cropping wild UnExploited species

To propagate and cultivate selected WEPs species, to describe and evaluate agronomic performance of WEPs, to evaluate the potential of cultivating WEPs in degraded soils and assess

their soil improvement properties, to diversify existing farming systems, to evaluate innovative approaches, to analyze chemical composition, nutritional value and bioactive compounds content of WEPs, to increase knowledge and public awareness on the nutritional value and the bioactive compounds content of WEPs, to create physical labs and to implement living lab platforms for technological transfer in each zone of the project.

IP	Università Politecnica delle Marche, Italia
Socios	Italia, Chipre, Túnez, Turquía, España
Concedido ES	145.000 €
Presupuesto total	1.242.435 €

PROYECTO 30 WILDFOOD. Eating the wild: improving the value chain of Mediterranean Wild Food Products (WFP)

To propagate and cultivate selected WEPs species, to describe and evaluate agronomic performance of WEPs, to evaluate the potential of cultivating WEPs in degraded soils and assess their soil improvement properties, to diversify existing farming systems, to evaluate innovative approaches, to analyze chemical composition, nutritional value and bioactive compounds content of WEPs, to increase knowledge and public awareness on the nutritional value and the bioactive compounds content of WEPs, to create physical labs and to implement living lab platforms for technological transfer in each zone of the project.

IP	Centre de Ciència i Tecnologia Forestal de Catalunya, España
Socios	España, Italia, Portugal, Túnez, Argelia, Eslovenia
Concedido ES	190.000 €
Presupuesto total	814.220 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2020

Países participantes	Argelia, Croacia, Chipre, Egipto, Francia, Alemania, Grecia, Israel, Italia, Jordania, Líbano, Luxemburgo, Malta, Marruecos, Portugal, Eslovenia, España, Túnez, Turquía
	Section 1 Agro- food Value Chain (proyectos 1,2,3,4) Farming Systems 1 (proyectos 5,6,7) Farming Systems 2 (proyectos 8,9) Nexus (proyectos 10,11) Water Management (proyectos 12,13,14,15) Section 2 Multi-Topic (proyectos 16 al 46)

Presupuesto total	64.200.000 €
Presupuesto ES	198.100 €
Proyectos aprobados	46
Proyectos con financiación AEI	1 (1 coordinado)

No.	Acrónimo y título del proyecto	Países participantes
1	FLAT BREAD MINE. Flat Bread of Mediterranean area; INnovation and Emerging process and technology	Francia, Croacia, Egipto, España, Grecia, Italia, Jordania, Líbano, Malta, Portugal
2	FunTomP. Functionalized Tomato Products	Turquía, Croacia, España, Grecia, Italia, Líbano, Portugal, Túnez
3	LOCALNUTLEG. Developing of innovative plant-based added-value food products through the promotion of LOCAL Mediterranean NUT and LEGume crops	España, Alemania, Francia, Israel, Italia, Marruecos, Portugal, Turquía
4	MEDWHEALTH. Development of new wheat-derived foods of the Mediterranean diet with improved nutritional and health value	Italia, Argelia Líbano, Marruecos, Túnez, Turquía
5	MEDIBEES. Monitoring the Mediterranean Honey Bee subspecies and their resilience to climate change for the improvement of sustainable agro-ecosystems	España, Argelia, Italia, Jordania, Líbano, Malta, Portugal, Turquía
6	SCALA-MEDI. Improving sustainability and quality of Sheep and Chicken productions by leveraging the Adaptation potential of Local breeds in the MEDiterranean area.	Italia, Argelia, Francia, Marruecos, Túnez.
7	SURFOLY. SUStainable Ruminants Feed with OLive pomace and polYphenols enriched charred olive stone	Italia, Líbano, Marruecos
8	NEWFEED. Turn food industry by-products into secondary feedstuffs via circular-economy schemes	España, Egipto, Grecia, Turquía
9	SUSTAvianFEED. Alternative animal feeds in Mediterranean poultry breeds to obtain sustainable products	España, Italia, Túnez, Turquía
10	LENSES. Learning and action alliancEs for NexuS EnvironmentS	Italia, España, Grecia, Israel, Jordania, Turquía
11	NEXUS-NESS. NEXUS Nature Ecosystem Society Solution: Fair and Sustainable Resource Allocation Demonstrator of the Multiple WEFE Nexus	Italia, Alemania, Chipre, Egipto, España, Francia, Túnez

Economic, Social and Environmental Benefits for Mediterranean Regions

12	AQUAOUNT. Adapting to Climate change by QUAntifying optimal Allocation of resOURces and socio-ecoNomic inTerlinkages	Italia, España, Grecia, Jordania, Líbano, Túnez
13	MAGO. Mediterranean Agroecosystems for Sustainability and Resilience under Climate Change	España, Francia, Grecia, Líbano, Túnez
14	TALANOA-WATER. Talanoa Water Dialogue for Transformational Adaptation to Water Scarcity Under Climate Change	España, Egipto, Francia, Italia, Líbano, Túnez
15	TRUST. Management of industrial Treated wastewater ReUse as mitigation measures to water Scarcity in climaTe change context in two Mediterranean regions	Italia, España, Francia, Argelia, Túnez, Turquía
16	4BIOLIVE. Production of Biostimulants, Biofertilizers, Biopolymers and Bioenergy from OLIVE-oil chain residues and by-products	Italia, Argelia, España, Túnez
17	AGRICOMPET. Governing the agri-food supply chain: how to improve smallholders competitiveness	España, Francia, Grecia, Italia, Turquía
18	BIOPESTICIDES. Development of Bio-Pesticides and Herbicides for a sustainable agriculture	Alemania, Argelia, Grecia, Túnez, Turquía.
19	CHANGE-UP. Innovative agroecological APPRoaches to achieving resilience to climate CHANGE in Mediterranean countries	Italia, Argelia, Túnez, Marruecos, Francia
20	DATI. Digital agriculture technologies for irrigation efficiency	Italia, Francia, España, Marruecos, Portugal
21	DROMADED. Capitalization of Mediterranean maize germplasm for improving stress tolerance	España, Argelia, Alemania, Francia, Italia, Marruecos, Portugal, Túnez, Turquía
22	ECHINO-SAFE-MED. New sustainable tools and innovative actions to control cystic ECHINOcoccosis in sheep farms in the MEDiterranean area: improvement of diagnosis and SAFETy in response to climatic changes	Italia, Argelia, Australia, Francia, Grecia, Suiza, Túnez
23	GourMED. Governance of food supply chain to equilibrate price and profits of high quality and safe Mediterranean foods	Grecia, Argelia, Alemania, Túnez, Italia
24	HANDYWATER. Practical tools for sustainable irrigation management in Mediterranean crops	España, Alemania, Egipto, Italia, Marruecos
25	INTEL-IRRIS. Low-Cost Intelligent Irrigation System for Autonomous Water Control in Smallholder Farms	Francia, Argelia, Alemania, Grecia, Marruecos
26	IRRIWELL.	España, Alemania, Francia, Marruecos, Túnez

A New Approach to Estimating Orchard Irrigation Water Requirements for Optimal Water Management		
	ISFERALDA.	
27	Improving Soil FERTility in Arid and semi-arid regions using Local DAta palm residues	Francia, Argelia, Grecia, Túnez
	ImpUISe.	
28	Innovation in the By-ProdUct Supply chain of citrus in Mediterranean area	Alemania, Argelia, Egipto, Francia, Túnez, Turquía
	LAB4SUPPLY.	
29	Multi-agent Agri-food living labs for new supply chain Mediterranean systems; towards more sustainable and competitive farming addressing consumers' preferences and market changes.	España, Argelia, Egipto, Francia, Grecia, Italia, Marruecos
	MA4SURE.	
30	Mediterranean Agroecosystems for Sustainability and Resilience under Climate Change	España, Egipto, Francia, Italia, Eslovenia
	MED-LINKS.	
31	Data-Enabled Business Models and Market Linkages Enhancing Value Creation and Distribution in Mediterranean Fruit and Vegetable Supply Chains	Italia, Egipto, Francia, Grecia, Marruecos
	MED-WET.	
32	Improving MEDiterranean irrigation and Water supply for smallholder farmers by providing Efficient, low-cost and nature-based Technologies and practices	Alemania, Egipto, Grecia, Malta, Marruecos, Portugal
	MiDiVine.	
33	Innovative approaches promoting functional microbial diversity for sustainable vine health and productivity in viticultural systems in Mediterranean regions	Italia, Chipre, España, Marruecos, Portugal, Túnez
	OIL4MED.	
34	Implementation of an Open Platform and establishment of an olive oil supply chain dedicated to small Mediterranean olive growers	España, Francia, Portugal, Túnez
	OPTIMUS PRIME.	
35	Optimal use of natural products and biological initiators to improve the resilience of agrosystems to climate change	España, Chipre, Grecia, Italia, Marruecos, Turquía
	ORABBIT.	
36	Omega RABbit: a food for health	Italia, Egipto, Francia, Túnez
	PROSIT.	
37	Plant microbiomes in sustainable viticulture	Italia, Argelia, Alemania, Francia
	ProSmallAgriMed.	
38	Promoting soil fertility, yield and income in smallholder agriculture of semiarid and arid Mediterranean regions by management of beneficial soil microbiota, conservation agriculture and intercropping.	Italia, Argelia, Francia, Marruecos, Túnez
	RESCHEDULE.	
39	Towards cropping systems resilient to extreme climate change in the Mediterranean: harnessing the power of soil health and associated microbiota	Grecia, Alemania, Italia, Portugal, Túnez

40	REVINE. Regenerative agricultural approaches to improve ecosystem services in Mediterranean vineyards	Italia, Chipre, Egipto, Francia, Grecia, Portugal, Túnez
41	ReCROP. Bioinocula and agrosystems: integrated biotechnological approach to improve crop yields and the resilience of Mediterranean agrosystems	Portugal, Egipto, España, Francia, Italia, Marruecos, Túnez
42	SUSFORAGE. Sown forage mixtures for sustainable agroecosystems in the Mediterranean area	España, Alemania, Francia, Líbano, Eslovenia
43	SafeAgroBee. Preserving the resilience of agroecosystems in the face of climate change through effective pollination and sustainable beekeeping	Grecia, Argelia, Chipre, Croacia, Francia, Italia, Líbano, Eslovenia
44	TRANSITION. Innovative resilient farming systems in Mediterranean environments	España, Argelia, Egipto, Francia, Grecia, Italia
45	UToPIQ. Use of Tomato lines tolerant to Proximity shade to Increase yield and Quality in intercropping agrosystems	España, Francia, Italia, Marruecos
46	ValICET. Valorise foods and Improve Competitiveness through Emerging Technologies applied to food by-products within the circular economy framework	España, Francia, Italia, Portugal, Túnez

CONVOCATORIA NACIONAL PCI 2021

PROYECTO 26 IRRIWELL. A New Approach to Estimating Orchard Irrigation Water Requirements for Optimal Water Management (IRRIWELL)

Fruit orchards are sensitive crop systems threatened by future scenarios. In the Mediterranean region increase in water scarcity induced by climate is seen as a major threat for many crop productions. As perennials, fruit trees are particularly concerned by this risk since they can be damaged by drought with long term consequences on fruit production. Therefore farmers need rational strategies to improve the water use efficiency of their orchards. Although a lot of progress has been made in irrigation methods and scheduling, the reality shows that such progress was rarely adopted by farmers. The main goal of IRRIWELL is to test the implementation of a novel approach to estimate water requirements of fruit trees based on stomatal conductance with the aid of plant sensors and mechanistic physiological models, and facilitate the implementation of a decision support system by small farmers. IRRIWELL offers an innovative solution based on the monitoring of physiological processes and their representation in mechanistic models. It is thus possible to understand key processes behind the observed response of plants to water stress. The approach is then generic facilitating its transfer to different species and cultivar and offer the possibility to address trade-off implications by deficit irrigation thanks to the method's ability to evaluate the consequences on the production of a reduction in irrigation. The approach proposed is based on the combination of plant sensors, remote sensing observation and mechanistic models. In this approach, the target is the use of stomatal conductance as the best indicator of water status and stress level in the plant. Stomatal conductance is a key physiological parameter to assess water consumption but also a unique way to bridge the carbon and water cycles and thus link water consumption to production. Stomatal conductance will be estimated automatically

from plant sensors in the field, and then the carbon uptake will be calculated by a biochemical model of photosynthesis. The method is in an advanced stage of maturity, although it has been tested and validated only in olive orchards. IRRIWELL will provide a unique opportunity to test its performance in several fruit tree species and under various pedoclimatic conditions. The method represents an innovative solution for the use of plant sensors to schedule irrigation and open also the possibility to researchers working on agriculture to understand the behaviour and mechanisms of woody crop species and their response to environmental factors. The method will take profit of the Sentinel-2 capabilities to characterize orchard heterogeneity and estimate the evolution of plant leaf area which is useful to upscale plant information delivered by plant sensors and determine their installation. All this information will be integrated into a web platform already designed and commercially available at the international level for this purpose by a company, who is a partner of the project, but that will be improved with the algorithms based on mechanistic models obtained in IRRIWELL. The underlying IoT (Internet of Things) technologies make the integration of numerous user as well as the development of tailored services easy. A demonstration experiment of the whole services will be implemented in farms located in the different countries covered by the consortium to demonstrate the benefit, improve the services thanks to user feedback and elaborate a business model. This demonstration will be the cornerstone for the dissemination of IRRIWELL solutions.

IP	Agencia Estatal Consejo Superior de Investigaciones Científicas-CSIC. España
Socios	Alemania, Francia, Marruecos, Túnez
Concedido ES	198.100 €
Presupuesto total	1.038.229 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2021

Países participantes	España, Italia, Marruecos, Grecia, Francia, Túnez, Egipto, Líbano, Alemania, Turquía, Portugal, Argelia, Croacia, Israel, Jordania, Chipre, Eslovenia, Malta, Luxemburgo
	Section 1 Agro-food Value-Chain (proyectos 1,2,3) Farming Systems (proyectos 4,5,6) Management of water (proyectos 9,10,11) Nexus (proyectos 7,8) Section 2 Multi topic (proyectos del 12 al 40)
Presupuesto total	61.200.000 €
Presupuesto ES	3.394.589,14 €
Proyectos aprobados	39
Proyectos con financiación AEI	17 (3 coordinados)

No.	Acrónimo y título del proyecto	Países participantes

1	DELICIOUS. UnDERstanding consumer food choices & promotion of healthy and sustainable Mediterraneans diet and Lifestyles in Children through behavIOUral changes actions	España , Egipto, Portugal, Italia, Líbano
2	PROMEDLIFE. PROMotion of MEDiterranean LIFEstyle and healthy diet	Italia , Túnez, Eslovenia, Marruecos, Grecia
3	SWITCHtoHEALTHY. Switching Mediterranean consumers to Mediterranean sustainable healthy dietary paterns	Italia , España, Turquía, Marruecos, Grecia, Líbano, Egipto, Túnez
4	FARMS4CLIMATE. Smart governance and operational models for agroecological carbon farming	España , Italia, Líbano, Túnez, Egipto, Grecia
5	MountainHER. Empowering women asociations and drivers for agro-ecological transformation to generate in come for Mountanin farming communities	Marruecos , Líbano, Italia, Croacia, Túnez, Argelia, España
6	PASTINNOVA21. Innovative models for sustainable future of Mediterranean pastoral systems	Grecia , España, Italia, Francia, Croacia, Argelia, Líbano, Marruecos, Túnez, Turquía, Chipre, Eslovenia
7	BONEX. Boosting Nexus Framework Implementation in the Mediterranean	España , Líbano, Portugal, Jordania, Italia, Marruecos, Túnez, Alemania, Portugal
8	SURE_NEXUS. Ensure fair Nexus transition for climate change adaptation and sustainable development.	España , Marruecos, Grecia, Italia, Israel, Egipto, Túnez, Francia
9	Mara-Mediterra. Safewarding the livelihood of rural communities and the environment in the Mediterranean throught Nature-based solutions.	Grecia , Malta, Italia, Egipto, Turquía, Líbano, Francia, Argelia
10	REACT4MED. Inclusive outscaling of Agro-ecosystem Restoration ACTions for the MEDiterranean	Grecia , Italia, Alemania, Chipre, Israel, Marruecos, España, Egipto, Turquía
11	SALAM-MED. Sustainable Approaches to LAnd and water Management in MEditerranean Drylands	Italia , España, Egipto, Francia, Túnez, Grecia, Marruecos, Palestina
12	AGREEMAR. Adaptive agreements on benefits sharing for managed aquifer recharge in the mediterranean region	Alemania , España, Chipre, Portugal, Túnez
13	AGREEMed. Innovative Aquifers Governance for Resilient Water Management and Sustainable Ecosystems in Stressed Mediterranean Agricultural Areas	Marruecos , Alemania, Francia, Túnez, Jordania, Italia, España
14	Ag-wamed. Advancing non conventional water management for innovative climate-resilient water governance in the mediterranean area	Italia , Egipto, Argelia, Grecia, Túnez, España

15	ADVAGROMED. Advanced agroecological approaches based on the integration of insect farming with local field practices in mediterranean countries	Italia, Alemania, España, Grecia, Marruecos, Portugal
16	AgrEcomed. New agroecological approach for soil fertility and biodiversity restoration to improve economic and social resilience of mediterranean farming systems	Italia, España, Marruecos, Túnez
17	Agri-fiSh2021. Circular economy application: from the field to the net. sustainable and innovative feeds from agricultural wastes for a resilient and high-quality aquaculture	Italia, España, Argelia
18	ASTER. Agroecology-inspired strategies and tools to enhance resilience and ecosystem services in tomato crop	Italia, Grecia, Marruecos, España, Turquía, Argelia, Portugal, Túnez
19	BENEFIT-Med. Boosting technologies of orphan legumes towards resilient farming systems in the Greater Mediterranean Región: from bench to open field	Italia, Francia, Marruecos, Argelia, Túnez, Alemania, Grecia, Portugal
20	BIOMEnext. Modelling integrated biodiversity-based next generation mediterranean farming systems	Italia, España, Marruecos, Túnez, Francia, Líbano
21	CICLICA. Smart agriculture optimization to climate change adaptation	España, Alemania, Egipto, Turquía, Marruecos, Argelia
22	DREAM21. Diversified orchards for resilient and sustainable mediterranean farming systems	Italia, Grecia, Francia, Marruecos, España,
23	ECOBOOST. Boosting functional biodiversity to maximize ecosystem services for Mediterranean crop production	Italia, Grecia, Alemania, Marruecos, Turquía, Argelia, Túnez
24	HaloSheep. Agroecological sheep/goat production system based on the valorisation of halophytes of saline area in the mediterranean basin	Túnez, España, Francia, Italia, Turquía, Grecia
25	MED4PEST. Novel Ecologically-Based Rodent management Development in Mediterranean countries	Turquía, Grecia, Marruecos, Jordania, Chipre
26	MEDPOME-STONE. Valorizing some pome and stone fruit germplasm variability to ensure resilience to climate change in the mediterranean area	Turquía, España, Italia, Marruecos
27	Quinoa4MED. Quinoa as a climate-smart crop diversification option for higher income generation from marginal lands in the mediterranean	Alemania, España, Francia, Marruecos, Argelia, Túnez
28	ReMe-diation. Resilient Mediterranean with a holistic approach to sustainable agriculture: Addressing challenges of water, soil, energy and biodiversity	Alemania, Turquía, Grecia, Portugal
29	Safe2021. Sustainable water reuse practices improving safety in agriculture, food and environment	Italia, Francia, Grecia, España, Argelia, Túnez, Marruecos, Líbano

30	SEA FENNEL4MED. Innovative sustainable organic sea fennel (<i>Crithmum maritimum</i> L) based cropping systems to boost agrobiodiversity, profitability, circularity, and resilience to climate changes in Mediterranean small farms	Italia , Croacia, Francia, Turquía, Túnez, Grecia
31	SIRAM. Sustainable innovations for regenerative agriculture in the mediterranean area	Italia , Francia, Marruecos, Grecia, España, Egipto, Portugal, Túnez, Italia
32	SUSTEMICROP. Development of eco-sustainable systemic technologies and strategies in key mediterranean crops systems, contributing the small farming socio-economic resilience	España , Francia, Marruecos, Italia, Túnez, Eslovenia, Líbano, Portugal,
33	VALMEDALM. VALorization of MEDiterranean ALMond orchards through the use of intercropping integrates strategies	Portugal , Israel, Marruecos, Egipto, Italia, Croacia, Grecia
34	VINEPROTEC. Ecological survey for biological management and protection Mediterranean vineryards facing climate change	Portugal , Italia, Turquía, Marruecos
35	GreenDriedFruits2021. Application of extreme temperatures in dried fig, dates and currants desinfestation: sustainability in practice	Italia , Grecia, Alemania, Turquía, Israel
36	InovFarmer.MED. Improving Mediterranean supply chain through innovative agro-food bussines to strengthen small-scale farmers competitiveness, using prickly pear and fig as case study	Portugal , Egipto, Francia, Marruecos, Argelia
37	RESILINK. Increasing Resilience of Smallholders with Multi-Platforms Liinking Localized Resource Sharing	Francia , Marruecos, Egipto, Argelia, Alemania
38	SMALLDERS. Smart models for agrifood local value chain based on digital technologies for enabling covid-19 resilience and sustainability	Italia , Francia, España, Túnez
39	TECHONEY2021. Development of a blockchain based ecosystem that allows an improved positioning of small producers of honey on local and international markets	España , Francia, Luxemburgo, Marruecos, Italia, Turquía, Túnez, Argelia

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PROYECTO 12 AGREEMAR. Adaptive agreements on benefits sharing for managed aquifer recharge in the mediterranean region

AGREEMAR “Adaptive agreements on benefits sharing for managed aquifer recharge in the Mediterranean region” is a project funded under the PRIMA 2021 program for a period of three years (June 2022 – May 2025) with partners from Germany, Spain, Portugal, Cyprus and Tunisia. AGREEMAR intends to develop an adaptive governance framework integrated with a set of management tools that will assist water policy makers and water managers to reach Sustainable Integrated Water Resources Management. The countries in the Mediterranean basin have many

features in common, including an arid and semi- arid climate, economic activities focusing on agriculture and tourism, and a strong economic and social value of water. Water resources availability is often characterized by uneven spatio-temporal distribution heavily affected by agricultural intensification, necessity to sustain the rapid population growth, and extensive and seasonal tourism in coastal areas. Aquifers play an important role in the provision of several services to human activities, including storage and production of clean water (for drinking water supply, irrigation, etc.), flood mitigation, saltwater intrusion control and support to aquatic ecosystems. In many places (especially in northern Mediterranean countries), aquifers are being over-exploited, i.e., the annual abstraction rate exceeds the recharge rate, in which case utilisation rate falls below the sustainability threshold. In coastal areas, this leads to seawater intrusion. As a consequence, coastal communities increasingly suffer from insufficient supply of drinking water and a decreasing quality of agricultural lands due to progressive salinization of soils, a trend which is expected to worsen due to climate change impacts. AGREEMAR's mission is to contribute to water scarcity alleviation in the Mediterranean basin by increasing the water availability at a national/regional/basin level. This will be achieved by an improved and integrated management of the water cycle, including water reuse, centred on optimizing the water storage in aquifers. The long-term aim of AGREEMAR is to optimize the hydrological balance in Mediterranean countries by developing governance models, management strategies, costs-benefits analyses, technical specifications and simulation tools to optimize the water storage in aquifers, enabling increased resilience to climate change. The research approach includes: 1) development and demonstration of a combined mapping methodology that integrates the demand for aquifer-dependent services, a realistic hydrological assessment of conventional and non-conventional water sources for MAR, and a GIS-based multi-criteria decision analysis for the selection of sites suitable for MAR application; 2) development of a general participatory governance framework at regional level based on the results from the feasibility mapping and national policy analysis; 3) validation of the feasibility maps through numerical models at watershed and local scale to assess the improvements in reliability, vulnerability and resilience provided by the inclusion of MAR schemes in water management schemes; 4) implementation of co-created location-specific agreements for MAR benefits sharing, supported by scientific evidence (feasibility maps and modelling) and endorsed by cross-sectoral stakeholder groups; 5) a participative multi-actor approach for fostering the engagement of stakeholders from different societal sectors and actor groups in all stages of project development. The project will demonstrate its applicability at four regional sites from Tunisia, Cyprus, Portugal and Spain by fostering the integration of water supply sources and multi-sectoral water needs for the development of participative adaptation strategies tailored to the local context. AGREEMAR will ensure strong stakeholders' involvement across multiple sectors for co-designing, co-working and validating of sustainable water management solutions with wider societal acceptance.

IP	Technische Universität Dresden. Alemania
Socios	España, Chipre, Portugal, Túnez
Concedido ES	174.800 €
Presupuesto total	1.000.915 €

PROYECTO 14 Ag-wamed. Advancing non conventional water management for innovative climate-resilient water governance in the mediterranean area

The project “Advancing non conventional water management for innovative climate-resilient water governance in the Mediterranean Area” (AG-WaMED) aims at providing innovative, evidence-based participatory management solutions to water scarcity governance that can be scaled at the Mediterranean level. In particular, the project will tackle the problem of water scarcity by including Non Conventional Waters (NCW) (wastewater, runoff water harvesting, desalination) among the available resources to be included in water governance policies. The project will reach its envisioned objectives through a transdisciplinary approach, integrating the state of the art of land, water and agronomic modelling to support evidence-based water management in four Living Labs (LLs) located in Mediterranean watersheds (including a transboundary case). A participatory modelling suite will allow the co-definition and co-evaluation of different water allocation scenarios for improving water governance in each LL, taking into account the decisive impact of NCW use to ensure climate-resilient strategies under a climate change vision. A flexible yet comprehensive socio-economic approach procedure will enable the evaluation of such scenarios and will trigger a feedback mechanism to generate an adaptive learning environment in the AG-WaMED LLs. The full process will inform new water allocation models and will produce an innovative framework for improving water governance and for reducing conflicts in water-stressed contexts of the Mediterranean. AG-WaMED project aims to promote participatory, innovative and climate-resilient governance of the water resource. To achieve this objective, a multidisciplinary methodology will be implemented, including the hydrological modeling of critical areas in the Mediterranean basin and the simulation of the use of non-conventional water management technologies. The results of the latter will be elaborated and discussed in Living Labs, territorial laboratories for comparison with the main stakeholders, to make the proposed solutions truly implementable in the local selected realities. In the framework of the project, and also among the Living Labs stakeholders, the estimation of monetary values for benefits expected to accrue from the use of NCW which are not valued in markets (non-use values) to inform the socio-economic analysis is envisioned as well.

IP	Università degli Studi di Firenze. Italia
Socios	Egipto, Grecia, Túnez, España, Argelia, Países Bajos
Concedido ES	60.000 €
Presupuesto total	1.049.850 €

PROYECTO 15 ADVAGROMED. Advanced agroecological approaches based on the integration of insect farming with local field practices in mediterranean countries

The intensification of current agricultural production systems is one of the primary drivers of biodiversity loss. Currently, biodiversity loss is accelerating globally with agriculture and animal production being one of the major causal agents. The main components of agricultural intensification that have been identified to negatively affect biodiversity are the loss of natural habitats by conversion to agricultural land, the large field and farm size, as well as the extensive inputs of chemical fertilizers and pesticides. The increasing demand for agricultural land over the past 50 years to cover the nutrient needs of a continuously growing population has led to considerable natural habitats destruction with direct negative impacts to biodiversity. The large size of agricultural farms is also related to decreased habitat heterogeneity at the farm level. Finally, the extensive use of plant protection products and the widespread contamination of ecosystems with pesticides and synthetic fertilizers is also a factor responsible for the biodiversity deterioration in agricultural farming systems. Therefore, urgent systemic changes in the current

agricultural practices are needed to address this issue. Integrating agroecological practices with current agricultural farming systems could offer a sustainable means to conserve and enhance the endangered farming biodiversity and increase ecosystems services. In this context, the aim of ADVAGROMED is to develop a “new”, innovative, holistic agricultural production system based on agro-ecological principles and circular economy practices. ADVAGROMED introduces sustainable farming practice to increase the resilience of the agro livelihood systems. Using a multi-actor approach ADVAGROMED applies the Circular Economy / zero waste principle developing a sustainable and innovative farming system in the Mediterranean Area. ADVAGROMED uses by-products of local agricultural productions for rearing insects (*Hermetia illucens* (HI) and *Tenebrio molitor* (TM)) which deliver different products: 1) insect frass to be used as fertilizer to improve farm soil quality, to enhance plant health and soil microbial biodiversity, and deliver an antimicrobial effect (decreasing the use of inorganic fertilizers and pesticides), and 2) live larvae to feed local poultry breeds ensuring good animal performances, health and product quality (decreasing the use of imported feeds). In this way, biodiversity is promoted at various levels, i.e. at farm level where the genetic variability of local crops and varieties/animal breeds is exploited, but also at a regional level by minimizing the negative impact of synthetic pesticides on the microfauna through the exploitation of insect frass as biopesticide and plant immune modulator. This innovative farming system aims to be adopted by small farms, generating additional income for farmers in the Mediterranean countries. The project is divided into 6 Work Packages (WPs) where agricultural by-products generated in the partners countries are identified, chemically characterized and bioconverted using TM and HI (WP2). The products of this process are used to feed local poultry breed (live larvae; WP3) and to fertilize local crops and varieties (insect frass + poultry manure; WP4) in Italy, Greece, Spain and Morocco. WP5 is devoted to economic, environmental, social assessments and consumer study aspects. In addition to knowledge transfer and dissemination activities (WP6), a tight connection with local farmers and stakeholders is performed. Indeed, to demonstrate the socio-economic benefits for the farmers, 4 demonstration sites are developed in Italy, Greece, Spain and Morocco. These actions, together with the organization of Living Labs, widely promote the adoption of this innovative farming system by local farmers. Particular attention is paid to youth engagement and women empowerment to develop sustainable business models for socioeconomic growth.

IP	University of Turin. Italia
Socios	Alemania, España, Grecia, Marruecos, Portugal
Concedido ES	185.150 €
Presupuesto total	1.066.343 €

PROYECTO 16 AgrEcoMed. New agroecological approach for soil fertility and biodiversity restoration to improve economic and social resilience of mediterranean farming systems

Activation of Green ROofs Synergies as a tool for civic participation & environmental consciousness – AGROS is an Erasmus+ K2 project that runs from November 2020 to October 2022. The AGROS project addresses the demanding needs in terms of environment protection that Europe is confronted with in recent decades. It offers targeted actions and adaptation strategies to specific circumstances in different regions and cities of Europe, coming as a training solution with a purely practical dimension. More specifically, AGROS aims to support individuals in acquiring and developing basic skills and key competences towards the design, implementation, use and

sustainable management of green roofs for climate protection and environmental action, enhancing in this way individuals' civic response to major problems and solutions. Additionally, AGROS supports the awareness-raising concerning environmental challenges and effective responses, as participants-trainees will be given the chance to develop specific know-how in the relevant context, opting for a sustainable way of life.

IP	University of Basilicata. Italia
Socios	Túnez, Marruecos, España
Concedido ES	200.864,96 € (Universidad Politécnica de Valencia 95.864,98 €), (Universidad de Córdoba 104.999,98 €)
Presupuesto total	920.165 €

PROYECTO 17 Agri-fiSh2021. Circular economy application: from the field to the net. sustainable and innovative feeds from agricultural wastes for a resilient and high-quality aquaculture

Agri-Fish is a project coordinated by the University of Camerino and carried out in collaboration with the University of Tiaret (Algeria), the University of Valencia and CNR IRBIM in Ancona. The project will develop innovative feeds for use in aquaculture using waste products mainly from organic farming. The products used will be high quality wastes that can give rise to a high value-added feed rich in active antioxidant compounds, a feature that will improve the health of the fish. Agri-Fish will create an innovative agri-business system capable of linking, in a circular economy perspective, agriculture and aquaculture through the sustainable utilization of agricultural waste, contributing to cooperation, knowledge sharing and enhanced capacity building among different supply chains.

IP	University of Camerino. Italia
Socios	España, Argelia
Concedido ES	149.500 €
Presupuesto total	577.800 €

PROYECTO 18 ASTER. Agroecology-inspired strategies and tools to enhance resilience and ecosystem services in tomato crop

In a world as complex as the contemporary one, inter- and transdisciplinary research, based on the synergy Art-Science-Technology-Society (better known today with the terms SciArt and STEAM), makes more and more sense, since the creation of bridges of knowledge between different fields of study is proving to be a sure formula towards innovation and the advancement of society. On the one hand, science and technology could be considered as a source of inspiration and a medium for certain artists who, with their creations, bring closer and facilitate the understanding and reflection of the underlying scientific-technical and humanistic-artistic culture. On the other hand, art and design can act as catalysts for the creative approaches of scientists and technologists to discover new knowledge, invent innovative solutions and communicate their findings to society. From the ASTER project we propose methodologies, offer creative resources and promote activities aimed at facilitating possible symbiosis between Art-Science-Technology-Society.

IP	Consiglio Nazionale delle Ricerche. Italia

Socios	Marruecos, Grecia, España, Turquía, Portugal, Túnez, Argelia
Concedido ES	199.999,98 €
Presupuesto total	1.582.900 €

PROYECTO20 BIOMEnext. Modelling integrated biodiversity-based next generation mediterranean farming systems

Resource reduction, extreme climatic events and loss of biodiversity in cultivated fields, are having a strong impact on farmers' incomes, subjecting farms to the risk of shutdown and fields abandonment. BIOMEnext proposal aims to optimize, with a multi-actor approach, all resources available along the entire supply chain, in terms of plant genetic potential, effective microbial consortia for plant growth and health, new agro-systems based on the use of controlled grassing and cover cropping. Among the various Mediterranean cultivation systems, tree fruit growing has undergone the greatest technological transformation towards a deep intensification, complete mechanization and a genetic revolution, allowing, on one hand, an increase in production and cost reduction but, on the other one, leading to a very strong increase in resource demand, soil consumption and air-water-soil pollution. A threatening diversity loss of varieties and organisms composing the agro-ecosystems and causing irreversible loss of soil, reduction of organic matter and unacceptable levels of pollution of the air and surrounding environment. As a consequence of these changes, it has become mandatory to re-design the production models, using or enhancing low resource-demanding cultivars and developing new cultivation systems ready to reduce energy and water inputs, favoring cenoses able to increase adaptation, resilience and ability to exploit the environmental resources, including microbiomes, cover crops, agro-pastoral systems, neglected and underutilized species to produce food, to preserve soil fertility, to protect the agro-environment and to enable sustainable and resilient agro-systems to produce under a circular bioeconomy perspective. Olive, the most typical fruit crop of the Mediterranean basin, should represent the model system for studying new cultivation strategies and testing their environmental and economical sustainability to protect against climate constraints and recover from excessive pollution, resource consumption and genetic erosion. The model built within the project, could then be adapted and extended to many other fruit crop species (grape, almond, citrus, etc.). BIOMEnext will put in place the following actions:

- Harnessing traditional varieties, wild olives and new bred genotypes to redesign environmentally friendly groves;
- Developing new bacterial consortia and mycorrhizal inoculants to promote climate resilient and stress-tolerant plants; •Building new composite eco-friendly crop systems;
- Assessing the environmental and socio-economic impact of the proposed innovations and newly developed crop systems;
- Involving different stakeholders of the supply chain in order to share the problems to be faced and the technologies to be applied, with an integrated participatory approach. The expected outputs include:
- Selection of traditional and newly bred plant genotypes adapted to extreme conditions, stress tolerant and low-resource demanding, with high agronomical value in terms of productivity and product quality;

- Development of microbial consortia and biostimulants to assist plant trees to grow under severe environmental conditions, to valorize low-fertile soils and the environmental constraints;
- Recovery of traditional farming systems able to reduce resource inputs and endorse the natural resources;
- Application of new farming technologies, including remote sensing technologies to reduce water, fertilizers and pesticides; •Increasing crop yield under different soil and climate stress conditions;
- Integrating different value chain components into new farming systems;
- Application of inclusive approaches and to increase the public acceptance of the new technologies.

IP	University of Perugia-Department of Agricultural, Food and Environmental Sciences (UNIPG). Italia
Socios	Marruecos, Túnez, Líbano, Francia, España
Concedido ES	287.750 € (Agencia estatal Consejo Superior de Investigaciones Científicas-CSIC 129.375 €), (Universidad de Salamanca 129.375 €)
Presupuesto total	1.085.571 €

PROYETO 21 CICLICA. Smart agriculture optimization to climate change adaptation

The Mediterranean is among the most sensitive areas on the planet and constitutes one of the most exposed to the risk of drought. Climate change, together with the disproportionate exploitation of natural resources, will cause an even stronger decrease in the availability of water, energy, and food, as well as an imbalance of the ecosystem, thus affecting to a greater extent the resilience of food systems and therefore in life quality of the population. CICLICA is a Research and Innovation project which is focused on two tracks. First, the combination advanced water saving technologies that have already been validated in laboratories to provide a smart system for water management solution. A second track where the implementation of different biotechnology and agro solution for irrigation modeling, improve agronomic management and genetic adapting of alternative crops. Increasing crop tolerance to climate change and reducing water resources and high temperatures will present the challenge of the CICLICA project. These objectives will be achieved through the mobilization of all the actors concerned (decision-makers, farmers, NGO, technology partners and researchers) to successfully change agricultural practices towards the use of modernizing means of cultivation (humidity sensors), saving water for irrigation and improve soil quality via the development of novel eco-friendly superabsorbent polymers (SAPs) and reuse of non-conventional water resources. The project will focus in developing and investigating integrated on-farm practices to face two types of abiotic stresses, water, and salinity stresses, within applying those practices under two business models of farming systems; (i) the common farming system, producing traditional Mediterranean crops such as olive, citrus, tomatoes, (ii) alternative crops farming systems, include the introduction of new crops to improve the capacity of the farming system to face abiotic stresses. The goal of the project is to promote

the farming systems in the Mediterranean region based on agrological principles, to face the growing pressures from natural resources degradation and climate change, through (1) introduce integrated on-farm practices aiming to mitigate the impacts of abiotic stresses overcrop health and productivity, (2) boost the sustainable balance between agricultural productivity and ecosystem services, considering the application of low-quality water for irrigation, managing water quantity and quality during irrigation using superabsorbent polymer, crop- water productivity, soil health, and environmental foot print.

IP	Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC). España
Socios	Egipto, Turquía, Alemania, Marruecos, Argelia
Concedido ES	231.725 €
Presupuesto total	1.016.687 €

PROYECTO 22 Dream. Diversified orchards for resilient and sustainable mediterranean farming systems

The aim of DREAM is to significantly improve the performance of laser Powder Bed Fusion of titanium, aluminium and steel components in terms of speed, costs, material use and reliability, also using a Life Cycle approach, whilst producing work pieces with controlled and significantly increased fatigue life, as well with higher strength-to-weight ratios. The motivation for the project is to go far beyond the state of the art in laser-based Powder Bed Fusion, by mastering of all stages of the process chain; among the numerous industrial applications, the project is focused on components for prosthetic, automotive and moulding applications to optimize the procedure respectively for titanium, aluminium and steel. DREAM targets the development of a competitive supply chain to increase the productivity of laser-based Additive Manufacturing and to bring it a significant step further towards larger scale industrial use.

IP	Alma mater Studiorum-University of Bologna. Italia
Socios	Grecia, Francia, Marruecos, España
Concedido ES	201.250 €
Presupuesto total	1.332.707 €

PROYECTO 24 HaloSheep. Agroecological sheep/goat production system based on the valorisation of halophytes of saline area in the mediterranean basin

The project aims to develop an agroecological sheep/goat farming system (HaloSheep) based on the valorization of spontaneous halophytes of saline area of the coastal Mediterranean regions, threatened by climate change (CL), salinization of water and soil, anthropogenic pressures, biological invasions, and extinction of native species. This project is based on a multidisciplinary approach considering soil-plant-atmosphere continuum, plant-animal-human food chain, and socio-environmental constraints. The challenge is to maintain a balance between productivity, household food security, and environmental preservation in systems developed in high salinity and in a context of CL. The consortium is multidisciplinary with complementary skills to carry out systemic approaches and model the functioning of the ecosystem and provide tangible solutions improving the sustainability of the ecosystem and its resilience to CL. The work will be carried out

in collaboration with development organizations, associations, and breeders. Six Mediterranean countries (Tunisia, Greece, Turkey, Italy, France, Spain) are implicated and three of them (Tunisia, Greece and Turkey) are concerned by the prototype study, on the field. In each country, one or two locations are considered (Kerkennah archipelago for Tunisia, Creta and Aegean Islands for Greece and lake of Burdur and Yarışlı for Turkey). The approach is to characterize first the existing agrosystem and then to propose innovative practices, based on agroecological concepts (HaloSheep agroecosystem) to improve the technical, economic, social and environmental sustainability. The typology of sheep/goat production system will be done to evaluate the importance of this activity in the target areas. The spatio-temporal flora diversity will be analysed to identify the most valuable pasture resources and model some species dynamic in a context of CL. Sustainable feeding systems based on halophytes and maximal incorporation of local resources will be developed. Genetic diversity of local breeds will be explored to identify high impact candidate alleles that may contribute to adaptation to harsh conditions and CL. In pilot farms, risks factors for animal health and welfare will be identified and assessed to develop and promote best practices for livestock health and welfare. Health benefits (antibacterial and antiparasitic effects) of halophytes extracts will be also evaluated. Sensorial and nutritional milk and meat qualities produced according to innovative feeding practices will be appreciated, to assess labelling possibilities, considering ecological, agronomical, socio-economic and regulatory data. The novel products can be highly valued in a context of promotion of agroecological and sustainable agriculture. Finally, economic, social, and environmental sustainability of the HaloSheep agroecosystem will be studied to highlight the potential increase of income for sheep and goat farms. HaloSheep project will impacts at the short and long terms, it will increase knowledge concerning the genetic diversity of local breeds, their adaptation capacity to salinity, thermic stress and their phenotypic traits that provide a longer-term impact as a basis for the sustainable development of small ruminant system. It will improve knowledge about extremophile flora, represented by halophytes and their possible adaptation with CL. The project is expected to help local communities to develop farms based on local breeds in order not only to increase production by terms of yields but also by terms of better-quality products and better biodiversity and environment management. The sustainability and viability of the farms could be achieved, with parallel amelioration of farmers income.

IP	Institut Supérieur Agromomique de Chott Mariem. Túnez
Socios	Grecia, Francia, Italia, Turquía, España
Concedido ES	199.525 €
Presupuesto total	644.135 €

PROYECTO 26 MEDPOME-STONE. Valorizing some pome and stone fruit germplasm variability to ensure resilience to climate change in the mediterranean area

Global warming is seriously challenging the agricultural sector making the correct and efficient use of natural resources a fundamental aspect to take into account to mitigate the economic loss linked to such climatic changes. It is extremely important to develop new strategies against global climate change, started to affect the Mediterranean region negatively. The overarching goal of MEDPOME-STONE is to explore some pome and stone fruits biodiversity and to select genotypes with enhanced resilience to climate change to promote long-term breeding and more sustainable production in new biodiversity-based crop systems. The project proposes to obtain the most

detailed characterization of some wild pear and almond genetic diversity in the Mediterranean area, identifying variants associated with desired rootstocks traits to climate change resilience. By involving local farmers and stakeholders through a multi-actor approach, MEDPOME-STONE will valorize local knowledge and maximize the socioeconomic impact of its outcomes. The MEDPOME-STONE workflow is organized into 6 research work packages (WPs; WP1-WP6), in addition to those dedicated to the project Coordination and Management (WP0; M1-M36). (i) Desk analysis and living lab (Turkey, Italy, Spain and WP1; M1-M32. Data collection (official statistics, grey literature) to get an up-to-date overview of the characteristics of the markets of the related species. Living labs involving local farmers and stakeholders organized *once a year in Italy, Spain, and Turkey will aid the choice of genotypes* and traits based on knowledge about local cultivars provided by growers. (ii) Wild Pear (Turkey), Almond (Italy) and Almond (Spain) germplasm collections from three Mediterranean countries will be studied (WP2; M1-M3). Each germplasm collection will be analyzed in smart-pots. A number of genotypes will be chosen from the collections and also collected from nature especially in arid areas. Erciyes University: Wild pear: 100 genotypes from collections and nature. Catania University: Almond: About 130 local varieties, semi-wild and national and international varieties. Agrifood Research and Technology Centre of Aragón: Almond: 186 accessions: 94 from Spain and 92 from other countries and 15 wild-relative species. (iii) Assessment of genetic variability by genotyping-by-sequencing (GBS) (Italy, Spain, Turkey; WP3; M4-M24). GBS will be carried out following a modification of the double-digest RAD sequencing (ddRAD) procedure (Italy, Spain, Turkey). (iv) Phenotyping analysis of species in control/stress condition (Italy, Spain, Turkey; WP5; M4-M3). At the start of the project, plant material should be propagated to be ready for phenotyping by the summer of 2023. Plant treatments (drought) will be performed at the end of the spring season of 2023 on 10 plants for three experimental theses (control, drought stress; 5 biological replicates each). Physiological responses of treated and control plants will be estimated weekly by monitoring several physiological parameters. At the end of phenotyping analyses, the accessions showing favorable traits will be selected and made available to stakeholders for field trials. (v) Genome-wide association studies (Turkey, Italy Spain; WP6; M32-M36). Phenotypic and genotypic data from accessions from each partner will be integrated on a GWAS approach to detect molecular markers in strong linkage with candidate genes associated with phenotypes of interest. (vi) Dissemination, Exploitation Communication and Outreach (DECO) strategy (Italy, Spain, Turkey; WP7-; M1-M36). WP6 will be devoted to maximizing the impact of MEDPOME-STONE outputs throughout a plethora of DECO activities (as public presentations, press releases, project website and social media). Genotypes showing best adaptation to drought conditions will be shared with stakeholders and local farmers by project partners to have them tested under field conditions.

IP	Erciyes University. Turquía
Socios	España, Marruecos, Italia
Concedido ES	201.250 €
Presupuesto total	620.150 €

PROYECTO 27 Quinoa4MED. Quinoa as a climate-smart crop diversification option for higher income generation from marginal lands in the mediterranean

Quinoa (*Chenopodium quinoa*, Willd.), a pseudo-cereal originally cultivated in the Andean region, has gained attention throughout the Mediterranean because it yields well even on marginal soils

and is tolerant to drought, soil salinity and other abiotic stresses. Moreover, it is considered among the 20 world's healthiest foods, as its grains contain a balanced composition of minerals, vitamins, dietary fiber, fats, and high-quality, gluten-free proteins with a balanced amino acid profile. The Q4M project for the first time brings together scientific partners and societal stakeholders from four Mediterranean countries to promote quinoa cultivation and valorization in an integrated and systemic approach. Noteworthy, the introduction of novel quinoa breeding lines will be a diversification of current cropping systems aiming at stabilizing overall harvests, recovering and/or enriching soils and in general, improve year-round crop production for food and income security of smallholders.

IP	University of Hohenheim. Alemania
Socios	España, Túnez, Marruecos, Francia, Argelia
Concedido ES	201.013,10 €
Presupuesto total	1.747.173 €

PROYECTO 29 Safe2021. Sustainable water reuse practices improving safety in agriculture, food and environment

The SAFE Project is one of the largest ecological experiments in the world. We are studying how biodiversity and ecosystem function change as forests are modified by human activities. As well as studying the change, we also explore whether preserving sections of forest within modified landscapes and around waterways can protect biodiversity and ecosystem function, and how much protection is needed to be effective. SAFE is one of three large-scale field experiments managed by the South East Asia Rainforest Research Partnership (SEARRP), and represents a close collaboration with Imperial College London and local partners. Our scientific research encompasses expertise from many institutions, each running interlinked projects to better understand the ecology of changing landscapes.

IP	Universita degli Studi della Basilicata. Italia
Socios	Túnez, Grecia, Marruecos, Líbano, España, Francia, Argelia
Concedido ES	184.000 €
Presupuesto total	1.340.320 €

PROYECTO 31 Siram. Sustainable innovations for regenerative agriculture in the mediterranean area

SIRAM will provide a comprehensive integration and implementation of sustainable solutions for regenerative agriculture across different Mediterranean areas, addressing at the same time issues of low incomes at smallholder farm level. A multidisciplinary team involving agronomists, microbiologists, soil scientists, plant pathologists, nematologists, agricultural chemists, economists and experts in dissemination will tackle from different perspectives issues related to soil degradation, over-use of chemical inputs, climate change, desertification, environmental risks and low incomes at smallholder farms level. SIRAM will help to cope with the main challenges that the agricultural sector is facing in the 21st century: i) securing viable food production in the face of escalating food demands (expected to double by 2050); ii) ensuring sustainable management of natural resources and climate action to avoid the progressive deterioration of soil and water resources and the loss of biodiversity; iii) decreasing residue concentrations in vegetables and iv) contributing to a balanced territorial development of the EU's rural areas and

their communities. These issues will be tackled by a multidisciplinary approach based on four main pillars: (i) beneficial microorganisms for plant growth and pest control; (ii) crop varieties with resistance towards abiotic and biotic stresses; (iii) agronomical practices to safeguard soil quality and fertility; and (iv) bioeconomy approaches to recycle and valorize waste biomasses that restore soil organic matter and have biostimulant properties.

IP	Univesita Cattolica del Sacro Cuore. Italia
Socios	Marruecos, Egipto, Grecia, España, Túnez, Portugal, Francia
Concedido ES	164.310,48 €
Presupuesto total	1.566.292 €

PROYECTO 32 SUSTEMICROP. Development of eco-sustainable systemic technologies and strategies in key mediterranean crops systems, contributing the small farming socio-economic resilience

SUSTEMICROP is a Research and Innovation project that aims to increase the resilience of Mediterranean cropping systems and the competitiveness of small farmers in a climate change-affected environment, through the development of innovative, affordable, and systemic solutions with positive economic, environmental, and societal impacts. SUSTEMICROP will deliver a package of sustainable strategies, products, and tools that, when applied individually or adopted as a whole under integrated management, will allow small farmers to increase their competitiveness, adopt innovations and achieve overall sustainability. The project Consortium is composed of 11 Partners from 8 different countries, covering a range of complementary competences and skills. They all have specialised profiles and possess in-depth knowledge of the role that natural capital plays in developing crop strategies oriented towards sustainability, impact assessment, digital management tools, and an extensive capacity for the development of solutions adapted to small-scale farming for the project target crops (hop, grapevine (both vine and table grapes) and date palm), with high replicability and transferability potential into other crops and Mediterranean regions. Partners will execute SUSTEMICROP over 36 months with a total budget of € 2.248.894,80 requesting a public contribution of € 1.464.049,00. The project will generate broad scientific-technological knowledge (TRL 4) and develop applicable solutions (TRL 7), under an overall approach structured in 4 technological areas: 1) the selection of new Biological Control Agents (BCAs) and the use of compostable plant residues to generate BCA-amended compost to control soil-borne fungal pathogens; 2) the use of biopesticides based on natural resources for controlling key plant fungal diseases; 3) the use of fungal disease resistant crop varieties (genotypes) better adapted to adverse effects due to climate change and 4) sustainability assessment of agroecological innovations and related digital solutions support tools. In addition, the project foresees activities to approach the farmer (and other relevant stakeholders) to evaluate the agroecological innovations acceptance, allowing to connect the results generated with the reality of the primary sector. Overall, SUSTEMICROP will generate a significant and quantifiable impact, in the short term (2024) and medium term (2030), aligned with PRIMA SRIA and the 2030 SUSTAINABLE DEVELOPMENT GOALS, that will contribute to achieve the European GREENDEAL, the FARM-TO-FORK and the EU BIODIVERSITY STRATEGY in the agri-food chain.

IP	Universidad de León. España

Socios	Italia, Francia, Líbano, Túnez, Eslovenia, Marruecos
Concedido ES	285.699,98 €
Presupuesto total	1.374.049 €

PROYECTO 38 SMALLDERS. Smart models for agrifood local value chain based on digital technologies for enabling covid-19 resilience and sustainability.

The overall objective of the project is to carry out research and development activities with the aim of identifying innovative strategies and business models to increase the resilience of small-scale farms in the Mediterranean area, to adequately face disruptive events. The five specific objectives (SOs) of the proposal are explained below: SO-1 – Increasing saleability and perceived value of smallholder products, to be resilient and address any supply chain disruption in the event of a crisis. The project partners aim to achieve this goal through the design, development and implementation of a multi-sided platform, called SMALLDERS, capable of simultaneously hosting multiple types of actors: smallholder, citizen, critical stakeholder (i.e., large -scale retail trade operator, large-scale food producer), freight transport company, policymaker. This objective is relevant for the topic of the call because the platform enables an e-commerce channel that allows smallholders to sell directly to citizens and critical stakeholders, thus effectively coping with any unexpected closure of traditional distribution channels. Additionally, the implementation of an ad hoc Artificial Intelligence based Knowledge Navigator improves the shopping experiences done by citizens accessing the SMALLDERS platform. SO-2 - Increasing smallholder products traceability, quality, safety and perceived value. The implementation of an ad hoc blockchain as part of the SMALLDERS platform improves the traceability, quality and safety of products, therefore also the price that buyers are willing to pay (perceived value). An ad-hoc blockchain will trace for example the origin of the ingredients/raw materials used to produce a certain food product in order to validate its overall composition, or it could be used for monitoring the water consumption during the agricultural product cultivation. These aspects are crucial, especially during a pandemic period. SO-3 - Helping smallholders to cope with the shortage of workforce due to the COVID-like crisis. The third specific objective is to help smallholders to cope with the shortage of workforce, due to the COVID-like crisis and to increase the farm production efficiency. The goal of better managing the workforce is realistic as it is based on the use of the SMALLDERS multi-sided platform. Every smallholder can share job offers and/or requests with other smallholders or citizens, who are looking for job opportunities. SO-4 - Helping smallholders to increase the farm production efficiency. The fourth specific objective is the increase of the farm production efficiency. The SMALLDERS platform will cope the correct planning of the farm activities in order to make the smallholders aware of the production status in order to point out any inefficiency or delay in agriculture production. The platform will manage in particular the water usage during the agricultural phases, in order to create a time series of the water consumption and show, during some agricultural phases, possible deviation from the average consumption. SO-5 - Increasing the Multi-Capital Sustainability of Smallholders processes. The last specific objective focuses on the increase of the Smallholders sustainability by adopting a multi-capital approach. Multi-capital sustainability indicators will be defined and evaluated under multiple scenarios through the use of simulation models, in order to ensure the measurability of this objective under different what-if scenarios. Considering the importance of the environment (natural capital) for the agri-food sector, seven environmental indicators will be also reported in order to understand the improvement achieved by the SMALLDERS platform use.

IP	University of Calabria (Modeling&Simulation Center-Laboratory of Enterprise Solutions). Italia
Socios	Francia, Túnez, España
Concedido ES	201.250 €
Presupuesto total	1.061.328 €

PROYECTO 39 TECHONEY2021. Development of a blockchain based ecosystem that allows an improved positioning of small producers of honey on local and international markets

TECHONEY's main objective is to identify strategies and establish lines of resilience to the new challenges determined by the COVID-19 pandemic for beekeepers in the Mediterranean agricultural systems through the implementation, definition, enhancement and transfer of competitive, profitable, efficient and trustful honey supply-chain alternatives that address beekeepers capacities and attractiveness to fulfil consumer needs on unexpected food market changes. TECHONEY proposes the creation of a traceability system to guarantee the quality and safety of honey within the supply chain for more effective communication to consumers. This approach will be unfolded by the joint creation of two levels of interaction: a physical one through the characterization of honey, and a "laboratory" one through the creation of a Honey living lab (HILE) that will be the arena to collect information from beekeepers, stakeholders, and consumers to transfer and apply the new optimized models. The specific objectives (SO) are the followings: SO1: Map the current added-value chains and complexity level for honey products in six case studies SO2 Increase the competitiveness and power of the beekeeping supply chain by understanding consumers' and retailers' opinions and acceptance through hypothetical and no-hypothetical methods. SO3: To promote the traceability to differentiate local honey and guarantee food safety of honey produced in the Med. area by characterising it in a reliable, certifiable and documentable manner. SO4: Development of a new "Multichannel distribution" e-commerce platform implementing new business model as well as integrating and scaling up the outcomes from WPs 1, 2, 3. Explore the feasibility of a new traceability ecosystems and effective business models across different stakeholders. SO5: Maximize the exploitation and transference of the findings through the creation of a website ITC Tool. SO6: Maximize outreach and beneficial influence of the project results and reach the target users (beekeepers, small-scale food manufacturers and local distributors, canteens and retailers, authorities) through an effectively established communication and dissemination plan, including innovative training capsules

TECHONEY is structured in 4 main technological pillars: 1) creation of a consortium IoT blockchain platform that involves various actors in the honey supply chain to ensure transparency and traceability, in addition to reducing costs and ensure the traceability in the honey supply chain; 2) creation of a transformative learning community to ensure a smart-short-resilient shared supply chain; 3) characterization of the quality of honey to guarantee its traceability within the blockchain directly by consumers; 4) develop ICT tools for honey supply chain participants and consumers.

IP	Centro de Investigación y Tecnología Agroalimentaria de Aragón. España
Socios	Túnez, Francia, Luxemburgo, Argelia, Marruecos, Turquía, Italia
Concedido ES	295.500,54 € (Centro de Investigación y Tecnología Agroalimentaria de Aragón - CITA 180.000,30 €), (Fundación Centre de Recerca i Economia Desenvolupament Agroalimentari UPC-IRTA 115.500,24 €)
Presupuesto total	1.248.531 €

CONVOCATORIA CONJUNTA INTERNACIONAL 2022

Países participantes	Argelia, Croacia, Chipre, Egipto, Francia, Alemania, Grecia, Israel, Italia, Jordania, Líbano, Luxemburgo, Malta, Marruecos, Portugal, Eslovenia, España, Túnez, Turquía
Temáticas	• Agro Food • Farming • Nexus • Water
Presupuesto total	60.144.457 €
Presupuesto ES	3.600.234 €
Proyectos aprobados	34
Proyectos con financiación AEI	15 (3 coordinados)

No.	Acrónimo y título del proyecto	Países participantes
1	NATMed2022 Nature-based Solutions on existing infrastructures for resilient Water Management in the Mediterranean	España, Turquía, Grecia, Argelia, Italia
2	OurMED Sustainable water storage and distribution in the Mediterranean	Alemania, Italia, Francia, España, Jordania, Grecia, Marruecos, Portugal, Túnez, Turquía
3	SHARInG-MeD Soil Health and Agriculture Resilience through an Integrated Geographical information systems of Mediterranean Drylands	Italia, Francia, Argelia, Croacia, Grecia, Marruecos, España, Túnez, Turquía
4	SOILS4MED SOIL health monitoring and information systems FOR sustainable soil management in the MEDiterranean region	Italia, Líbano, Egipto, Francia, Jordania, Grecia, España, Túnez, Turquía
5	CIPROMED Circular and Inclusive utilisation of alternative PROteins in the MEDiterranean value chains	Grecia, Alemania, Italia, Israel, Chipre, Malta, Marruecos, Portugal, España, Túnez
6	ProxiMed Exploration and Implementation of Products with Alternative Proteins in the Mediterranean Region	Alemania, Turquía, España, Túnez, Egipto, Grecia, Italia, Líbano, Malta, Portugal
7	EcoFuture A socio-ecological approach to combat desertification for a sustainable future	Grecia, Israel, Jordania
8	FrontAgNexus Impact of Climate- Smart & Water-Saving Frontier Agriculture on WEFE Nexus in Arid Mediterranean Regions	Alemania, Marruecos, Turquía, Grecia, Italia Jordania, Israel, Túnez

9	WEFE4MED Title Towards a Mediterranean WEFE Nexus Community of Practice	Chipre, Egipto, Líbano, Grecia, Malta, Eslovenia, España, Túnez,
10	FUNZYbio Fungal and enzymatic degradation of antibiotics: safe reuse of livestock residues for agriculture	Francia, Marruecos, Italia, España, Túnez
11	MAEWA Mitigation of Agricultural effects in Mediterranean soils and wetlands: bioremediation technologies, environmental and economic benefits	Francia, Marruecos, Túnez, Argelia, Croacia, Egipto, Portugal, España
12	MedInCircle Future-proofing the Mediterranean agri-food chain through integrated and circular management of contaminant-safe water, nutrients and bioresources	Italia, Francia, Turquía, Egipto
13	NPP-SOL Modelling and technological tools to prevent surface and ground-water bodies from agricultural non-point source pollution under mediterranean conditions	Italia, Marruecos, Israel, Francia, España
14	PROMEDRICE Effective farming practices to protect water resources in Mediterranean rice-based agroecosystems	España, Marruecos, Egipto, Italia, Portugal, Turquía
15	PureCircles Maximising resource use efficiency within the energy, water and nutrient nexus for sustainable agriculture in Mediterranean marginal environments	Alemania, Francia, Italia, Marruecos, Túnez, Egipto, Portugal, España
16	Safe-H2O-Farm Innovative farm strategies that integrate sustainable N fertilization, water management and pest control to reduce water and soil pollution and salinization in the Mediterranean	Italia, Chipre, Croacia, Alemania, Israel, España, Turquía
17	SAFWA Alternative biopesticides for safe integrated pest and water management around mediterranean	Túnez, España, Francia, Alemania, Italia, Líbano, Turquía
18	SWRIPS Sustainable Wastewater Re-use with Innovative Purification and Sensing system for the agrifood supply chain	Italia, Túnez, Argelia, Francia, Egipto, España
19	TeleNitro New low cost strategies of crop based on biodiversity and remote sensing to reduce the application of nitrogen fertilizers in the Mediterranean area	España, Italia, Túnez, Marruecos
20	MEDGOAT Goat farming systems characterization and novel strategies to sustain production in the changing climate scenario in the Mediterranean regions	Francia, Túnez, Marruecos, Italia, Portugal, España
21	PAS-AGRO-PAS The Making of Fragile Agro ecosystems Productive, Adaptive and Sustainable: Multifunctional Agro pastoralism	Portugal, Francia, Marruecos, España, Chipre, Egipto, Italia, Túnez
22	SUREPASTOR	Italia, Marruecos, Egipto, Túnez, España

Management Strategies to Enable Sustainable RESilient
AgroPASTORalism

23	B4HT Box for Health by Tradition & Innovation: promoting sustainable mediterranean diet by Healthy Foods	Italia , Líbano, Portugal, Túnez
24	FEED From edible sprouts to healthy food	Italia , Croacia, España, Alemania, Israel, Turquía
25	Im-Pack Technological and economic potential of the active packaging obtained by supercritical techniques for the preservation of Mediterranean fresh food	España , Francia, Argelia, Italia, Marruecos, Portugal, Túnez
26	InnoSol4Med Innovative sustainable solutions for ready-to-eat traditional Mediterranean products and nonconventional healthy foods	Croacia , Italia, Marruecos, España, Turquía
27	MEDACORNET Rescuing acorns as a Mediterranean traditional superfood	Portugal , Argelia, Croacia, Italia, Marruecos, España, Túnez, Turquía
28	MEDIET4ALL A Transnational movement to support the sustainable transition towards a healthy and Eco-friendly Agri-Food System through the promotion of MEDIET and its lifestyle in modern society	Alemania , Francia, Marruecos, Argelia, Luxemburgo, Italia, España, Túnez
29	MedDietMenus4Campus Promoting stakeholder adherence to Mediterranean Diet on Campus through menu interventions and social marketing strategies	Portugal , Croacia, Turquía
30	MoreMedDiet More on the adoption of a healthy Mediterranean diet	España , Francia, Italia, Egipto, Portugal, Túnez, Turquía
31	Mush-Med Transition to Healthy Mediterranean Functional Food via Integrating Mushroom Beta-glucans and Proteins: Promoting Body Homeostasis After Stress-Related Health Problems	Egipto , Italia, Turquía, Portugal
32	Oli4food Microbial resources for a sustainable olive oil system and a healthier Mediterranean food: from by-products to functional food	Turquía , Italia, Egipto, Alemania, Marruecos, España
33	Tool4MEDLife From Tradition to Innovation: New Foods and Educational Toolkits for a Healthy and Sustainable Mediterranean Lifestyle	Italia , Turquía, Croacia, Portugal, España
34	VALOstones Valorization of olive stone by-product as a green source of innovative and healthy valueadded products in the context of the circular bioeconomy and sustainability	Túnez , Francia, Italia, Malta, Marruecos, Turquía, España

CONVOCATORIA NACIONAL PCI 2023

PROYECTO 10 FUNZYBIO. Fungal and enzymatic degradation of antibiotics: safe reuse of livestock residues for agriculture

The main goal of the FUNZYbio project is to provide the proof-of-concept for novel biotechnologies for the treatment of livestock residues: manure and anaerobic digestates of livestock slurries, for (i) allowing safe reuse of water and organic matter for agriculture, (ii) exploiting this potential for soil health and durability and (iii) limiting their adverse environmental effect as potential sources of salinization and pollution, such as from antibiotics (ABs). Addressing these three issues at the same time, the FUNZYbio consortium has the potential of proposing technical solutions of extremely high impact towards both Operational Objectives of Topic 2.1.1: “land and water sustainability” and “smart and sustainable farming”. Because AB pollution determines the rising of AB resistant bacteria and AB resistance genes, the outcomes of FUNZYbio also significantly contribute to prevent and limit one of the major threats to human and animal health worldwide: the rise of AB resistance. The technological solutions developed in FUNZYbio will rely on the discovery of fungal and enzymatic biocatalysts that can degrade ABs. These solutions will integrate existing value chains for the valorization of manure and anaerobic digestates, improving existing processes for the obtention of safe organic fertilizers. To achieve this goal, the scientific and technical objectives of FUNZYbio can be aligned along two main axes: - Nature-inspired AB-degrading bioreactors: i) the discovery of biocatalysts: AB-degrading fungi and enzymes (WP2); ii) the characterization of biocatalysts, and biocatalysis reactions and products (WP3); iii) biocatalyst immobilization and production scale-up (WP4); iv) the design of fungal and enzymatic bioreactors (WP4). - Improved pilot treatments of livestock residues: v) AB degradation of anaerobic digestates (WP4, 5 and 6); vi) AB degradation in manure compost (WP7); vii) analysis of different fractions, from sources (manure, anaerobic digestates) to products (water, fertilizers) (WP5 to 7); viii) environmental and cost-benefit analysis (LCA, TEA) of established biocatalysts, bioreactors and processes, for future integration of real value chains (WP8). Overall, FUNZYbio will provide the proof-of-concept for obtaining safe (AB-free) water, liquid or solid fertilizers, and compost for safe use in the agri-food sector.

IP	Institut National de Recherche pour L'Agriculture, L'Alimentation et L'Environnement. Francia
Socios	Túnez, España, Italia, Marruecos
Concedido ES	163.350 €
Presupuesto total	1.113.823 €

PROYECTO 13 NPP-SOL Modelling and technological tools to prevent surface and ground-water bodies from agricultural non-point source pollution under mediterranean conditions.

The general objective of NPP-SOL is to prevent diffuse pollution of water resources due to NPS agricultural pollutants under the Mediterranean soil and environmental conditions, according to the objectives of the new Green Deal and Farm-to-Fork strategies. NPP-SOL will integrate site-specific best management practices for improving soil, water, fertilizers and crop management with site-tailored and affordable-costs technologies for preventing natural bodies pollution. Common to all the adopted methodologies-technologies will be their sustainability and economic efficiency, and their adherence to circular economy approaches. mCIHEAM Montpellier

participates in this project as a partner and is the leader and the co-leader for different work packages (WP) within the project.

IP	University of Basilicata. Italia
Socios	Israel, Marruecos, Francia
Concedido ES	206.910 €
Presupuesto total	1.324.078 €

PROYECTO 14 PROMEDRICE. Effective farming practices to protect water resources in Mediterranean rice-based agroecosystems

Rice is the staple food for more than half of the world's population. It is the crop to which the largest volume of water is allocated worldwide, accounting for 24 to 30% of the total freshwater withdrawals.

IP	Universidad de Girona. España
Socios	Turquía, Egipto, Marruecos, Portugal, Italia
Concedido ES	378.730 € (Universitat de Girona 254.100 €) y (Agencia Estatal Consejo Superior de Investigaciones Científicas-CSIC 124.630 €)
Presupuesto total	1.685.185 €

PROYECTO 16 Safe-H2O-Farma. Innovative farm strategies that integrate sustainable fertilization, water management and pest control to reduce water and soil pollution and salinizaation in the Mediterranean

The objective is to evaluate innovative agricultural management strategies capable of reducing environmental contamination by nitrates and pesticides and the salinization of waters and soils. Currently, agricultural production uses large quantities of products that are applied to the crop to ensure high performance. Inappropriate management of them poses high risks of water and soil contamination in Mediterranean countries, where agri-food activities represent one of the most important economic sectors. The project focuses on two of the most widespread crops in Mediterranean countries, such as the tomato, within horticultural crops, grown both in open fields and in greenhouses, and the olive tree, within fruit tree crops. Various field trials and experiments in pots and greenhouses have been planned in the different participating countries.

IP	University of Perugia. Italia
Socios	Israel, Turquía, Croacia, Alemania, Chipre, España
Concedido ES	205.700 €
Presupuesto total	1.400.950 €

PROYECTO 17 SAFWA. Alternative biopesticides for safe integrated pest and water management around Mediterranean

In all modern agricultural crops, the improvement of vegetable production of economic interest is based mainly on the control of pests and vectors of diseases. Pesticides application involves the use of chemicals with insecticidal, fungicidal, bactericidal properties. However, the expansion of their field application has created serious problems impacting human health and animals. In addition, excessive use of pesticides can leach into soils and water leading to land as well as groundwater pollution and wider biodiversity losses. Some of these products currently used to control pests are extremely toxic in inducing serious human diseases, such as cancer and immune and nervous system disorders. Current use of plant protection products in conventional and/or organic farming systems should be reconsidered taking in account their side effect on environment, non-target organisms, animal and human health. Such potential risk can be reduced through development, testing and demonstrating of approaches based on products safe for environment and life. This project aims to release to the market an innovative solution combining a new competitive biopesticide to cultural trainings aiming to reduce land and water pollution through new agricultural practices. SAFWA specific challenges are to meet the requirement of the EU regulation regarding the registration of safe biopesticides and to provide an environment in which agriculture production contributes to reduce the pollution of the water and the land. The main goal of SAFWA is to market a new alternative intended to minimize the risk associated with the use of pesticides. SAFWA will build on the ongoing European project IPM-4-Citrus achievements both at technological and market assessment levels to drive new cultural practices to farmers in 3 experimental farms around the Mediterranean.

IP	Centre de Biotechnologie de Sfax. Túnez
Socios	España, Turquía, Líbano, Alemania, Francia, Italia
Concedido ES	272.855 € (Institut De Recerca I Tecnologia Agroalimentaries -IRTA 123.420 €) y (Universidad de Valencia 149.435 €)
Presupuesto total	1.358.109 €

PROYECTO 8 SWRIPS. Sustainable wastewater re-use with innovate purification and sensing system for the agrifood supply chain.

The overall objective of SWRIPS project is to increase the efficiency, sustainability and competitiveness of the water usage in the agri-food supply chain (SC) in the EU-Med area under a circular economy approach aimed to saving water and minimize the external use of resources, avoiding further contamination of land and water. SWRIPS addresses the thematic “Water Management - Prevent and reduce land and water salinization and pollution due to agri-food activities”. It aims to recover the wastewater produced in the agri-food processing and to reuse the purified water for fertigation purpose while at the same time recovering the substances produced in the process as a matrix for fertilizer, thus putting in place a virtuous cycle that reduces the overall consumption of freshwater, guarantees water availability to farmers, reduce soil drying out and the overall amount of additional fertilizers, is cost effective both for agri-food industries and farmers and, finally, is environmental and human-health friendly. SWRIPS will achieve it by implementing a circular economy and management system based on a Life Cycle Assessment: the environmental impact would be considered along the entire production chain, from the cultivation to the food processing and end-of-life water cycle. SWRIPS aims to demonstrate the possibility to

-reduce the problem of scarcity of freshwater and of excessive salinization of the soil and contamination of aquifers, particularly critical in the Mediterranean areas, through the recovery of agri-food industry wastewater for fertigation; -reduce the need of external fertilizers and therefore the presence of nitrates, phosphates, sulphates etc. through the re-use of water and excess sludge produced in the purification process; - provide, thanks to an innovative integrated monitoring system, a continuous control of the quality of purified water, also guaranteeing the possibility of early warning in case of excessive pollutant levels (organic components, pesticides, metals) in any of the purification phases - control, through microbiology and chemical-physical analyses, all the relevant water, soil and crop parameters involved in the process to define fertiliser application better tailored to crop needs, soil conditions, and the agroecosystem's nitrogen cycle. - develop a flexible and cost-effective system that allows an optimized use based on crop seasonality and characteristics of the water to be treated, typical of the agri-food industry under study. SWRIPS identifies 3 fundamental innovative technical elements: -an innovative multi-stage purification system based on aerobic granular biomass and nanocomposite and photocatalyst based filters to remove pollutants; -an integrated test system for continuous monitoring of the physical and microbio-chemical parameters of the purified water, consisting of a compact solid-state UV spectroscopy apparatus and visible sensing system for early warning; -the usage of innovative deep-learning algorithms to optimize the whole water/crop cycle and reduce water footprint and environmental impact on water basins, soil and crop itself. SWRIPS will test the system in three sites and different agri-food SCs: citrus in Sicily, tomato canning in Tunisia and oil industry in Algeria. SWRIPS foresees a very strong consortium combining expertise in the development and set-up of innovative wastewater treatment and sensors with those of control software development and advanced optimization algorithms. SWRIPS partners have documented experience in quality water and fertilization crop control. These experiences are complemented by the technical-engineering ones on water distribution. An added value for SWRIPS is the presence of the end-users of the process: agricultural consortia and agri-food industries. This will allow not only to test the system in the laboratory and through software models but also to test its functionality in the field, in different operating and environmental conditions.

IP	Centro Siciliano di Física Nucleare e di Struttura de la Materia. Italia
Socios	Túnez, Egipto, Argelia, Francia, España
Concedido ES	119.790 €
Presupuesto total	1.138.230€

PROYECTO 19 TELENITRO. New low-Cost strategies of crop based on biodiversity and remote sensing to reduce the application of nitrogen fertilizers in the Mediterranean area

Fertilization is an essential practice to obtain the maximum production and quality of the crop harvest. However, the excessive use of nitrogenous fertilizers produces environmental problems related to the accumulation of nitrates in the soil and in the environment, mainly in lagoons, seas, oceans, etc., which trigger a series of problems that affect different society sectors. Mediterranean basin countries such as Spain, Italy, Morocco, and Tunisia have vulnerable areas in terms of the accumulation of nitrates in the environment, so there is a need to develop cultivation strategies that minimize the damage of nitrates in the environment by reducing the amount of nitrogen fertilizers applied on farms. Therefore, the objective of this project “TeleNitro” is to reduce nitrogen fertilizer in the crops by the design of a new cultivation strategy to reduce the contribution

of nitrogenous fertilizers through the use of plants and/or botanical extracts with the capacity to slow down the transformation of ammonium into nitrate. Plants absorb and assimilate ammonium more effectively than nitrate, and in the environment ammonium pollutes less than nitrate. To achieve this objective, the following specific objectives are proposed: i) Knowing the spatial and temporal distribution of nitrate in agricultural systems (soil, plant, drainage solution), and the nutritional requirements of crops and their varieties; Calibrate and validate nitrate monitoring technology in agricultural systems; Selection of natural inhibitors of nitrification: plants and botanical extracts; Introduction and validation of the use of NI in the agronomic strategies of crops; Creation of a decision support system (DSS) that helps farmers to manage the fertilization of their crop plots in the most sustainable way possible; iv) Conduct a life cycle study (LCA) and an economic study; vii) Dissemination. For this Project, a consortium has been formed made up of research centers from the countries mentioned above. These centers are CEBAS-CSIC (Spain), Miguel Hernandez University (Spain), National Research Council of Italy (Italy), Mohamed V University (Morocco) and Higher institute of the Science and Techniques of Water of Gabes (Tunisia). The researchers and their centers have all the knowledge and infrastructure necessary to carry out research tasks in the areas of knowledge required by the project: botany (biodiversity is applied when selecting NBI plants), chemistry (science sciences are introduced state-of-the-art omic analysis to characterize exudates and botanical extracts), plant physiology (the mechanisms by which NBI plants exude compounds with NI character are studied), microbiology (assays with microorganisms are used to test the inhibitory capacity of nitrification of NI compounds), remote sensing (satellite images are used to monitor the water and nutritional status of the crop), and all this in the agricultural environment to solve a serious environmental problem such as the accumulation of nitrates in soils and water sources , and, its effects on eutrophication. This project is presented in the topic Thematic Area 1-Water management: Topic 2.1.1-2022 (RIA) Prevent and reduce land and water salinization and pollution due to agri-food activities, since this project aims to reduce the amount of nitrogenous fertilizers that are applied to agriculture, thus avoiding the contamination by nitrates of soils and lakes, seas, oceans, etc. in countries that have vulnerable areas of accumulation by nitrates. The methodology and technology used in this project will include biodiversity such as will be used plants and exudates with NI activity, and TIC to monitor the nitrate in plants, soil, and water.

IP	Consejo Superior de Investigaciones Científicas, CSIC. España
Socios	Túnez, Marruecos, Italia
Concedido ES	343.640 € (Agencia Estatal Consejo Superior de Investigaciones Científicas-CSIC229.900 €) y (Universidad Miguel Hernández de Elche 113.740 €)
Presupuesto total	875.000 €

PROYECTO 20 MEDGOAT. Goat farming systems characterization and novel stragies to sustain production in the changing climate scenario in the Mediterranean region

The main objective of the MEDGOAT project is to provide pastoral and agropastoral communities in the Mediterranean region with instruments to cope with climate change and increase ecosystem resilience by improving the sustainability of agriculture and the associated value chain of species that are more adapted to the agropastoral system and climate change: the goat. MEDGOAT will provide agropastoral communities and policy makers with the knowledge to refocus on local breed goats as livestock, preserving and rehabilitating pastoral ecosystem and landscape management

and improving rural livelihoods Mediterranean. MEDGOAT will address the lack of information on local goat breeds and resilience to climate change, the nutritional value of alternative food resources, and their potential effects on ruminal function. Demonstration and dissemination activities in Tunisia and Morocco will be organized to increase awareness and provide technical support for their awareness and provide technical support to support the adoption, for example, of information on limits inclusion and feeding practices for new nutritional sources, as well as guidelines for managing new foods.

IP	Institut de l'élevage. Francia
Socios	Marruecos, Túnez, España, Italia, Portugal
Concedido ES	211.750 €
Presupuesto total	1.289.883 €

PROYECTO 21 PAS-AGRO-PAS. The making of fragile agro-ecosystems productive, adaptive and sustainable: multifunctional agro-pastoralism

The objective of the PAS-AGRO-PAS project is to increase productivity, adaptiveness, sustainability and profitability of Mediterranean agro-pastoral production systems, by exploiting every dimension of their multifunctionality through a novel systemic approach that will identify stressors currently impacting on agro-pastoral systems' viability, with views to implementing tailored strategies that redirect agro-pastoralism from subsistence-oriented fragile production systems towards commercially-oriented resilient systems. To achieve this objective, PAS-AGRO-PAS will explore a representation of 10 agro-pastoral production systems from Portugal, Spain, France, Italy, Cyprus, Morocco, Egypt and Tunisia, covering a wide range of environmental, agro-ecological, economic, socio-cultural and institutional traits and challenges; and will apply a systemic approach from farm to global scale, interlinking three systems: (i) "agro-ecosystem", with interventions on the productivity and diversification of crops, pasture and livestock resources (such as better utilisation of crop residues, new grazing surfaces, use of biodiverse pasture seeds, including forage legumes into rotations with crops, alley cropping with barley, drought-tolerant forage and crop varieties, effective treatment of manure, matching livestock production cycle to feed resources, multi-nutrient blocks to enhance digestibility, etc.) that will be implemented, in order to ensure low input, maintenance/increase of biodiversity, enhanced soil fertility and custody for local adapted breeds – in the short term, and the rehabilitation of rangelands and the reduction of vulnerabilities to climate change – in the long term; (ii) "socioeconomic system", with interventions towards the valorisation of agro-pastoral products (through assurance of quality, safety and typicity, and creation of notebooks of product standards for origin/quality certification), the leveraging of the marketable "healthy" trait of food produced with environmentally friendly systems, the efficient integration into markets, and the rising of the "commercialisation mentality" of agro-pastoralists, in order to ensure economic benefits and generational renewal; and (iii) "information system", whereby, within a multi-actor co-creation process, the agro-pastoralists' traditional knowledge will be sourced and steadily integrated with the outputs of this project, taking advantage of the networked and cooperative digitalisation of Agriculture 4.0, in order to efficiently manage information resources

and access to decision-making support e-tools. Furthermore, the successful implementation of PAS-AGRO-PAS with the expected impacts at the farm, at the regional and at the global scale will be sustained by two important pillars: (i) “capacity building activities” for agro-pastoralists on effective strategies, climate change mitigation and adaptation, quality of their products, pricing and economic profitability, commercialisation and entrepreneurship, inclusive development, with special focus on women, the youth and newcomers; and “divulgarion activities” with key stakeholders and policy-makers for providing policy guidelines for more enabling structural, economic and institutional settings; and (ii) the development of the PAS-AGRO-PAS Mediterranean e-platform, which through systematised data, reports, models and web applications for resource allocation, ration formulation and feed management, optimum slaughter weight prediction, and e-commerce, will better inform evidence-based decisions for both agro-pastoralists and policy-makers.

IP	Instituto Politécnico de Bragança. Portugal
Socios	Egipto, España, Chipre, Marruecos, Túnez, Francia, Italia
Concedido ES	279.510 € (Fundación Centro Tecnológico Da Carne 169.400 €) y (Instituto tecnológico Agrario De Castilla y León 110.110 €)
Presupuesto total	1.685.185 €

PROYECTO 24 FEDD. From edible sprouts to healthy food

Sprouts are defined by the EU regulation 208/2013 as “the products obtained from seed germination, harvested before the development of the first leaf and fully consumed including the seed”. These vegetable foods are rich in phytonutrients, such as polyphenols, glucosinolates, isoflavones, vitamins and minerals. Compared to seeds, sprouts represent a higher source of nutrients, since the germination process reactivates metabolism, resulting in the new synthesis of secondary metabolites with potential health benefits, and in the reduction of antinutrients compounds. Depending on plant species, sprouts synthesize bioactive compounds with specific biological activities (antioxidant, antidiabetic, hypocholesterolemic, anti-obesity and anticancer), crucial to cope with chronic diseases. In this context, the objective of FEED will be to improve the development of a new trend towards the consumption of “functional foods”, using fresh or dried sprouts of different botanical origins, with particular attention to traditional, local and wild edible species. Sprouts will be characterized for their bioactive compounds, antioxidant and anti-inflammatory activities. In addition, the study of microbiota changes, associated with diets enriched with specific sprouts, will establish a relationship between diet and the inflammatory status of the cells. Moreover, as fresh sprouts are very perishable and possess a short shelf-life, new bio-based and biodegradable active packaging will be developed by formulating antioxidants and antimicrobial sprout-derived compounds in bio-based and biodegradable edible coatings and active thermoplastic packaging, with the aim of extending the sprout shelf-life and safety. FEED will also propose the production of new functional foods using dried sprout powder through innovative and sustainable technologies: Microencapsulation and three-dimensional (3D) food printing. Microencapsulation will be realized to produce two different traditional Turkish foods: a drinkable yogurt “Ayran” and Turkish noodles “Erişte”. 3D food printing and non-thermal innovative pre-treatments (e.g., high-power ultrasound, pulsed electric fields) will be carried out to produce snacks, juices and low-sugar jellies that will meet individual customer requirements in terms of colour, shape, taste, texture and nutritional value. Aiming at developing new vegetable-based products active on chronic diseases (i.e., cardiovascular, inflammatory), the project will

thus contribute to reducing the pressure on the healthcare systems. In this context, FEED will be addressing the SDG 3, target 3.4: “By 2030 reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being”. Moreover, FEED will link to relevant EU policies and objectives in the context of the European Green Deal (Farm to fork strategy) in the action of reducing the use of pesticides, antimicrobials and excess fertilisation, since the sprout production does not involve intensive agriculture. FEED also takes into account the environmental sustainability for the packaging of the fresh sprouts through the preparation of biodegradable edible active packaging. The carbon footprint analyses of the developed products will aid to assess the environmental impacts of the products by estimating the GHGs emission for the entire life cycle of the products (from cultivation to packaging). This evaluation represents a winning marketing strategy for a consumer that is more and more aware of the environmental impacts of its purchases.

IP	National Research Council. Italia
Socios	Turquía, Israel, España, Croacia, Alemania
Concedido ES	258.819 € (Agencia Estatal Consejo Superior de Investigaciones Científicas-CSIC 149.919 €) y (Asociación Investigación Industria Juguete, Conexas y Afines 108.900 €)
Presupuesto total	1.399.495 €

PROYECTO 26 INNOSOL4MED. Innovate sustainable solutions for ready -to-eat traditional Mediterranean products and non- conventional healthy foods.

The Mediterranean diet is acceptable and easily adaptable in different cultures and promotes the health and well-being of individuals in all areas. To contribute to individual and overall public health, the InnoSol4Med project proposal is launched based on the concept that prevention of unhealthy lifestyle and dietary habits is more effective when healthy foods are formulated to fit modern lifestyles and are readily available and ready to eat. The strategic options for the development and commercialization of the new healthier foods are possible through the formulation of new concepts that include ingredient improvement (from nutritive to functional/nutraceutical) and technological solutions (from intense to mild). In this context, InnoSol4Med aims to introduce innovative matrices (essential oils, natural compounds and extracts) from sustainable sources (agricultural by-products) and autochthonous microbial strains as new functional ingredients and solutions to improve the quality, safety, nutritional value and functionality of traditional foods. Moreover, these concepts will be used in synergy with non-thermal innovative technological solutions (ozone, nanoemulsions) and fermentation by autochthonous Mediterranean starter cultures for the development of new ready-to-eat foods. Another objective is to conduct a cross-national survey on consumer attitudes and preferences for mild processed and healthy ready-to-eat foods and promote customised business models to support local producers, create new market opportunities, and improve consumer value perception through awareness campaigns that can support the adoption and use of the innovative food prototypes developed in the project. InnoSol4Med will use an interdisciplinary approach (from the perspective of food safety, technological properties, and nutritional value assessment) to investigate bioprotective protocols using ingredients from Mediterranean agriculture by-products and starter/bioprotective strains with environmentally friendly technologies (TRL5 for fresh and TRL6 for fermented foods). The project will raise public awareness of the health benefits of the Mediterranean diet and the benefits derived from the improved properties of the innovative solutions developed under the project, thus changing consumption habits towards a healthier and

more sustainable diet. The environmental impact of InnoSol4Med is related to the valorization of local agricultural by-products for the production of new high-value functional compounds and the promotion of their application in more cost-effective industrial processes as a contribution to waste reduction and sector sustainability.

IP	University of Split. Croacia
Socios	Marruecos, Turquía, España, Italia
Concedido ES	217.800 €
Presupuesto total	1.204.269 €

PROYECTO 28 MEDIET4ALL. Transnational movement to support the sustainable transition towards a healthy and eco-friendly y agri-food system through the promotion of mediet and its lifestyle in modern society.

Due to modern societal trends, adherence to MEDIET model is decreasing, while consumption of takeout and ultra-processed foods and drinks (UPFDs) is exponentially growing in all ages, with alarming levels in many EUR-MED regions (e.g., $\approx 61\%$ in Spain and 79% in Germany). To scrutinise the resulting harmful impact on both population and ecosystem, “MEDIET4ALL” aims to support the transition from UPFs culture to modern and sustainable MEDIET through the implementation of best practices and innovative solutions enhancing the convenience, modernity, competitiveness, and shelf life of MEDIET and the adherence to its lifestyle. Specifically, multicenter databases of MEDIET’s ingredients/food and their providers will be created to promote accessibility to MEDIET. Additionally, a variety of highly nutritional and antioxidant-rich “Quick & Easy” MED-recipes that respond to modern trends while following the accredited MED dietary patterns and considering sustainability aspects will be developed. To promote the availability of MEDIET, these modern recipes will be communicated to hotels, canteens, restaurants, and food production companies to provide on-site, takeout, delivered, packaged, and/or ready-to-eat MEDIET meals. To preserve the eco-friendly (e.g., reducing food waste) and food safety characteristics and extend the shelf life of the MEDIET products, active bio-packaging will also be designed. Interestingly, databases of MEDIET’s products (e.g., ingredients, food, modern recipes, and active/bio packaging) and their providers will be uploaded to a strategic “MEDIET4ALL” platform and m-app to support farm-to-fork strategy, help construct multicenter MEDIET supply chains, and obtain cheap ingredients, thereby improving the competitiveness and sustainability of MEDIET. The integrative “MEDIET4ALL” platform and m-apps (a smart MEDIET and lifestyle coach) will also include a variety of combined MED-lifestyle interventions tailored to each user profile. Traditional and technology-based awareness and motivational campaigns with extensive marketing and advertising actions to promote MEDIET4ALL movement are also programmed.

IP	Johannes Gutenberg-Universität Mainz. Alemania
Socios	Marruecos, Luxemburgo, Francia, Argelia, Italia, Túnez, España
Concedido ES	217.800 €
Presupuesto total	1.631.933 €

PROYECTO 30 MOREMEDDIET. More on the adoption of a healthy mediterranean diet

The health benefits of the Mediterranean diet (MD) and its protective effect against chronic diseases have been widely studied by the scientific community. Recent studies associate this dietary pattern with a lower incidence of cardiovascular disease, cancer and lower mortality and may even strengthen the immune system against COVID 19. In addition, the MD has a great potential to have a low environmental impact in terms of land use, energy needs, water consumption and greenhouse gas emissions. Despite these benefits, it is well-known that the dietary habits of MED populations have gradually moved away from the traditional MD model. Contemporary eating habits, coupled with a more sedentary lifestyle, have led to an increase in the prevalence of obesity among MD populations. Therefore, the main objective of this study is to improve the adoption of traditional MD food consumption in different population groups by designing nutritious, healthy and attractive low-processing recipes, taking into account consumers' opinions and ideas. For this, co-creation (CC) sessions will be organised with consumers of all ages (children/youth, adults and seniors) to create the healthiest and most attractive recipes based on the MD philosophy, and sensory testing with expert panels. In addition, to test and evaluate the real effect of the MedDiet recipes, monitoring will be carried out through in vivo and in vitro tests, together with a comprehensive assessment of the physical exercise, lifestyle and eating habits of the target population. To assess the authenticity, quality and safety of the designed recipes, a digital farm-to-fork traceability platform will be developed, based on data collection with rapid, mostly non-destructive tools. In addition, the system will be secured with blockchain systems. Business models will be developed to evaluate the socio-economic impact of the designed MD recipes. At the same time, their components and the actual effect on health will be evaluated, with the ultimate goal of activating mechanisms to engage the population and ensure recognition and adherence to MD. The success of the project lies largely in the number and continuity of the educational and experimental activities designed in the programme. Consistency and continuity throughout the programme will be achieved through timely and repeated contact with affiliated stakeholders and the community. A comprehensive training system will be developed from the early years under a Living Labs (LL) approach, teaching children/youth about the importance of eating a balanced and healthy diet and its positive effect on health. In addition, this education and training will be continued at all ages and advances in knowledge on MD in public nutrition, health policies, strategies and guidelines for consumers, industry and policy makers in collaboration with local and regional authorities will be introduced.

IP	Universidad de Extremadura. España
Socios	Turquía, Francia, Egipto, Italia, Portugal, Túnez
Concedido ES	385.990 € (Universidad de Extremadura 266.200 €) y (Centro de Investigaciones Científicas y Tecnológicas de Extremadura 119.790 €)
Presupuesto total	1.422.308 €

PROYECTO 32 OLI04FOOD. Microbial resources for a sustainable olive oil systems and healthier Mediterranean food: from by-products to functional food

The Mediterranean diet (MD) represents a set of skills, knowledge, practices, and traditions ranging from landscape to table, between crops, harvesting, fishing, food processing, and, in particular, food consumption. The MD is a nutritional model that has remained constant over time and space, consisting mainly of olive oil, cereals, fresh or dried fruit, and vegetables. Nowadays, the strong demand for adequate nutrition is accompanied by concern about environmental issues

and a considerable emphasis is paid on recovery and recycling of food by-products and wastes. The transition towards more sustainable food systems, as a new “Farm to Fork Strategy”, requires the involvement of all actors of the food systems with the final goal to provide healthy, adequate, safe, nutritious, and sustainable food to everyone, taking into account the three pillars of sustainability: environmental, economic and societal. The Oli4food proposal aims to increase the adherence to MD removing the main barriers to consumption of olive-based products by a consumer-centered-design strategy. In particular, the proposal intends to apply a biotechnological sustainable production system to valorise by-products of olive oil extraction to satisfy the demand of taste acceptability, cultural identity, and economic accessibility. Besides, formulation/reformulation of the olive oil- and olive-based products will be carried out in order to enhance the diversity of healthy olive based food products. Oli4food proposes to apply, at an industrial scale, a process based on an integrated multidisciplinary approach, using selected microbial pools for valorising olive-based products through a biological de-bittering process and addition of probiotic selected strains. In order to exploit resilient biodiversity, each partner in Mediterranean countries (Italy, Turkey, Spain, Germany, Egypt and Morocco) will focus on local olive cultivars and autochthonous selected microorganisms will be used to reduce the bitter taste of olive-based products. Safety traits, bioactive compounds availability, probiotic survival, and sensorial traits will be evaluated. Besides, new approaches such as an antifungal spray formulation by using olive oil by-products or non-thermal techniques including high hydrostatic pressure will be studied in order to overcome the microbial spoilage of table olive and olive based products during shelf-life. Furthermore, the health benefits of olive-based products will be proven through a cell culture study to analyze the ability of phenolic metabolites to modulate anti-inflammatory activities by evaluating macrophage cell line. Finally, to increase the adherence to the MD pattern, a communication strategy will be defined for raising awareness on healthy diet behavior, encouraging the audiences to contribute to collective sensing. Oli4food will foster a sense of co-responsibility, increase motivation and willingness, to adopt a sustainable lifestyle model, and to promote the new olive-based products in a -Mediterranean lifestyle concept. The market analysis, the exploitation plan, and the techno-economic feasibility at the consumer and industrial level will also be performed. In line with the Implementation of Research and Innovation in the Agro-food chain, promoting higher quality, sustainability, and competitiveness, with particular reference to smallholders, Oli4food will contribute to enrich the portfolio of products derived from olives, to promote and extend the adherence to the MD pattern, among consumers, demolishing the main barriers due to the high salt content (for table olives), and specifically among younger adults (who do not prefer the residual bitter taste of olives).

IP	Istanbul Technical University. Turquía
Socios	Egipto, España, Alemania, Italia, Marruecos
Concedido ES	162.140
Presupuesto total	1.159.587 €

PROYECTO 34 TOOL4MEDLIFE. From tradition to innovation: new foods and educational toolkits for a healthy and sustainable mediterranean lifestyle

The association between a Mediterranean diet pattern (DM) and health has been widely described. In recent years, a decrease in adherence to DM has been reported, since cultural and social changes have modified people's lifestyle towards a Western diet that leads to inadequate

intake of macro and micronutrients essential to achieve and maintain good nutritional status. In this context, it is important to investigate food consumption and implement corrective actions through the design and production of new specific foods and the development of specific educational strategies. The objectives of the project are to investigate MD adherence and dietary behaviors in local Mediterranean communities and implement corrective actions by designing new, healthy foods based on Mediterranean tradition, including some foods enriched with functional molecules, and developing Inclusive strategies to help the population change towards healthy Mediterranean dietary behaviors. Tool4medlife will be organized into five work packages (WP): WP1 and WP5 include project management, tracking, and communication, respectively. wp2) carry out specific nutritional and social surveys on the eating habits of Mediterranean communities aimed at different groups taking into account age, socioeconomic status, gender, educational level, occupation, attitudes and beliefs. wp3) design and make new healthy foods to help people meet nutritional needs: fortified extra virgin olive oil, low-fat cheese and foods derived from milk enriched with bioactive molecules. Bioactive molecules will be extracted using green methodologies from organic plant waste according to the circular economy model. wp4) develop personalized and inclusive educational strategies to improve adherence to the DM, awareness of healthy dietary behaviors and sensitize people about the beneficial impact of a healthy diet. Specific toolkits will be designed considering non-formal and innovative education methods. The proposal addresses the specific challenge of the call since it aims to promote physical and mental human health, in line with the European green deal, the farm to fork strategy and with the objectives of horizon europe partnership for safe and sustainable food system, through the promotion of behaviors linked to the Mediterranean lifestyle, including characteristic dietary patterns, regular physical activity and adequate rest, coexistence, traditional culinary activities and biodiversity, seasonality, the choice of local and organic food products. An existing network of key actors (including local farmers, smallholder farmers, kindergartens, primary and secondary schools, universities, non-profit organizations and retirement homes) will participate through a co-creation approach. This is an interdisciplinary project that involves food technologists and biochemists with experience in the study of new sustainable and healthy foods and nutritionists, sociologists and computer scientists who are experts in the development of personalized food educational strategies.

IP	Università degli Studi di Camerino. Italia
Socios	Turquía, Portugal, Croacia, España
Concedido ES	175.450 €
Presupuesto total	679.981 €

CRCNS - Collaborative Research in Computational Neuroscience (CRCNS) Innovative Approaches to Science and Engineering Research on Brain Function

La neurociencia computacional proporciona una base teórica y un rico conjunto de enfoques técnicos para comprender sistemas neurobiológicos complejos, basándose en la teoría, los métodos y los hallazgos de la informática, la neurociencia y muchas otras disciplinas. Participantes: U.S. National Science Foundation (NSF), National Institutes of Health (NIH), and Department of Energy (DOE); the German Federal Ministry of Education and Research (Bundesministerium für Bildung und Forschung, BMBF); the French National Research Agency (Agence Nationale de la Recherche, ANR); the United States-Israel Binational Science Foundation (BSF); Japan's National Institute of Information and Communications Technology (NICT); and **Spain's State Research Agency (Agencia Estatal de Investigación, AEI)** and National Institute of Health Carlos III (Instituto de Salud Carlos III, ISCIII).

Se considerarán dos clases de propuestas en respuesta a esta solicitud:

- Propuestas de investigación que describen proyectos de investigación colaborativa, y
- Propuestas de intercambio de datos para permitir el intercambio de datos y otros recursos.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales: 5 (2019, 2020, 2021, 2022, 2023)

Participación de AEI en convocatorias conjuntas: 5 (2019, 2020, 2021, 2022, 2023)

CONVOCATORIA CONJUNTA 2019

Países participantes	España, Estados Unidos
Temáticas	Neurociencia computacional
Concedido ES	400.000 €
Proyectos aprobados	2
Proyectos con financiación AEI	2

No.	Acrónimo y título del proyecto	Países participantes
1	AGEDYN. Age-related changes to cortical dynamics underlying working memory	España
2	NULL. Circuit-level mechanisms of adaptive decision-making	España

CONVOCATORIA NACIONAL APCIN 2020

PROYECTO 1 AGEDYN. Age-related changes to cortical dynamics underlying working memory

Normal aging in primates often leads to impaired cognitive function, particularly in working memory, which begins to decline in middle-age. Cognitive impairment correlates with structural and functional changes observed with aging in neurons and white matter pathways in the prefrontal cortex (PFC), a brain area that is a key player in working memory. However, we currently lack a mechanistic understanding of how the changes at the single-cell and pathway level impact network function and thus working memory performance. Moreover, the prefrontal cortex is only one node in a distributed network of brain regions that contributes to working memory (Christophel et al. 2017; Leavitt et al. 2017) and aging not only leads to local changes in PFC but also alters other – particularly fronto-parietal and visual – brain areas and long-range inter-areal connections (Luebke et al. 2010; Liu et al. 2017; Xie et al. 2016). The central goal of the proposed project is to advance our understanding of the computational and neural mechanisms underlying working memory as well as the age-related changes to this executive function in the rhesus monkey model of normal aging. Specifically, we will test the hypothesis that working memory arises through coordinated interaction of visual and fronto-parietal brain regions, and that aging-related decline in working memory results from changes to both local circuit dynamics and inter-area communication. The proposed work employs a highly interdisciplinary approach that combines psychophysical, anatomical, and electrophysiological experiments with theory and computational modeling, taking advantage of the complementary expertise of the Pis and their laboratories.

The proposed research has the following specific aims:

- Aim 1: Identify aging effects on individual neurons, white matter pathways and resting state fMRI activity in fronto-parietal and visual cortices.
- Aim 2: Develop a multi-area computational neural network model in which working memory function emerges from interacting distributed circuits.
- Aim 3: Model-based interpretation and experimental validation of the neuronal mechanisms underlying age-related working memory decline.

Socios	Estados Unidos y España
Concedido ES	204.000 €

PROYECTO 2 A NULL. Circuit-level mechanisms of adaptive decision-making

Mammals continuously adapt the process of action selection in noisy and volatile environments so as to maximize the success of future decisions. This flexible decision-making is mediated by corticobasal-ganglia- thalamic (CBGT) circuits that both control action selection and use feedback signals to modify the approach to future decisions (i.e., undergo reinforcement learning; RL).

Problem. Despite the fact that decision-making and RL originate from a common neural substrate, they are generally studied as independent processes. Understanding the unified nature of action selection and learning requires a careful re-evaluation of how cognitive algorithms emerge from the circuit-level dynamics of CBGT networks.

Approach. We propose a series of empirical and theoretical investigations that bridge across levels of analysis to unify algorithmic models of learning and decision-making by characterizing how they emerge from the circuit-level interactions within CBGT networks. We will achieve this aim by first developing a computational ‘upwards mapping’ framework that links accumulator-RL hybrid models with biologically realistic spiking models of CBGT networks under constraints imposed by behavioral observations from a set of adaptive decision-making experiments (Objective 1). This approach will allow us to characterize precisely how different neurophysiological properties (e.g., plasticity linked to phasic dopamine in cortico-striatal pathways) contribute to distinct cognitive processes (e.g., drift rate) during the acquisition of flexible behavioral repertoires. Using this paradigm, we will characterize how plasticity mechanisms can push networks into distinct states that manage the speed-accuracy trade-off in contextually appropriate ways (Objective 2) and build testable predictions about the neural mechanisms shaping action selection across network states, validated against a novel, large-scale neuroimaging data set of dozens of hours of human behavior in a dynamic decision-making task (Objective 3).

Socios	Estados Unidos y España
Concedido ES	130.450 €

CONVOCATORIA INTERNACIONAL CONJUNTA 2020

Países participantes	Estados Unidos, España
Temáticas	Collaborative Research in Computational Neuroscience (CRCNS) Innovative Approaches to Science and Engineering Research on Brain Function
Concedido ES	248.300 €
Proyectos aprobados	1
Proyectos con financiación AEI	1

No.	Acrónimo y título del proyecto	Países participantes
1	AD-HNN. Interpreting meg biomarkers of alzheimer s progression with human neocortical neurosolver	Estados Unidos, España

CONVOCATORIA NACIONAL PCI 2021

PROYECTO 1 AD-HNN. Interpreting meg biomarkers of alzheimer s progression with human neocortical neurosolver

Overview: Over the last decade, there has been a growing interest in understanding the brain mechanisms underlying the loss of the brain homeostasis in the continuum of Alzheimer's Disease (AD). Animal models suggest that the substrate for this phenomenon is the loss of the excitatory/inhibitory (E/I) balance due to the toxic effects of amyloid oligomers and plaques on inhibitory terminals. This hyperexcitability is presumed to underlie the observed increases in power

and interarea synchronization of alpha/beta frequency oscillations measured in humans with electro- and magneto-encephalography (M/EEG). Co-PI Maestu and colleagues have shown that amnesic mild cognitively impaired (aMCI) patients present increased resting-state MEG power in (7-14Hz) alpha and (15-29Hz) beta bands in brain regions with higher amyloid deposition. Additionally, aMCI patients who later converted to AD (CONV), compared to non-converters (NOCONV), showed increased synchrony between anterior and posterior brain regions. While animal and human studies are highly synergistic, it is unknown if the hyperexcitability found in animal models is the origin of the hypersynchronization found in human neurophysiology. Co-PI Jones and colleagues have recently developed a computational neural modeling framework uniquely designed to link human macroscale M/EEG signals to the underlying cellular and circuit level dynamics that can be interrogated with invasive animal recordings or other imaging modalities (e.g., MR spectroscopy, tractography), namely Human Neocortical Neurosolver . The current proposal will integrate previously collected longitudinal MEG, tractography, volumetry, and MR GABA spectroscopy data in CONV- and NOCONV- aMCI patients and controls with the HNN framework, to establish new early diagnostic AD biomarkers and to interpret the detailed neural mechanisms underlying these biomarkers.

IP	Brown University. Estados Unidos
Presupuesto total	868.903 €
Socios	Estados Unidos y España
Concedido ES	248.300 €

CONVOCATORIA INTERNACIONAL CONJUNTA 2022

Países participantes	Estados Unidos, España
Temáticas	Collaborative Research in Computational Neuroscience (CRCNS) Innovative Approaches to Science and Engineering Research on Brain Function
Concedido ES	3.077.389 €
Proyectos aprobados	3
Proyectos con financiación AEI	3

No	Acrónimo y título del proyecto	Países participantes
1	NEUROSPEECH. Tracking and modeling the neurobiology of multilingual speech recognition	Estados Unidos, España
2	DIFFUSIONBRAIN. The diffusional complexity of the brain's extracellular space	Estados Unidos, España
3	METALEARNING. Circuit mechanisms of priors and learning during decision making	Estados Unidos, España

CONVOCATORIA NACIONAL PCI 2022

PROYECTO 1 NEUROSPEECH. Tracking and modeling the neurobiology of multilingual speech recognition

Whereas digital platforms are tools, 'platformisation' describes processes.

IP	University of Connecticut. Estados Unidos
Presupuesto total	942.690 €
Socios	Estados Unidos y España
Concedido ES	263.220 €

PROYECTO 2 DIFFUSIONBRAIN. The diffusional complexity of the brain's extracellular space

When thinking about brain structure, most neuroscientists envision the shapes of neurons and glia. However, increasing evidence shows that the structure of the Extracellular Space (ECS) can affect brain function. The ECS contains the interstitial fluid (ISF) and the extracellular matrix. Changes in ECS structure can affect the diffusion of neurotransmitters; thus, potentially affecting the excitability of neurons and networks. This proposal brings together two laboratories with complementary experimental and computational expertise to determine the complexity of the ECS at nanoscopic resolution in live tissue and its effects on neuronal function. The Spanish laboratory has spearheaded the development of super-resolution shadow imaging (SUSHI), based on stimulated emission depletion (STED) microscopy. SUSHI can produce images at a resolution of 50x50x200 nm over areas of 100x100 µm. The US team will use computer models to study the consequences of using competing hypotheses of how the ECS complexity affects the diffusion of neurotransmitters, which they will test experimentally.

IP	University of Texas at San Antonio. Estados Unidos
Presupuesto total	860.146,59 €
Socios	Estados Unidos y España
Concedido ES	267.279 €

PROYECTO 3 METALEARNING. Circuit mechanisms of priors and learning during decision making

"The use of perceptual decision making tasks in animals has propelled our understanding of the neural basis of elemental cognition. However, we still lack a fundamental understanding of the mechanisms at play during task learning. Animal training remains a venturesome enterprise commonly resulting in suboptimal behaviors plagued with superstitious ticks and idiosyncratic biases. One prominent example of such suboptimality are sequential effects: animals tend to bias their choices based on previous decisions and outcomes, hindering performance in common laboratory tasks using independent trials. Training recurrent neural networks (RNN) on decision making tasks has become a common approach to study potential neural mechanisms of cognition. Yet, RNNs typically behave much closer to optimality in laboratory tasks than real subjects. We suggest this behavioral difference is rooted in the fundamental discrepancy between how animals and current RNNs learn: unlike animals before learning, RNNs before training are tabula rasa and their connectivity is adjusted exclusively to the local contingencies of the task. We hypothesize that animals' learning of simple laboratory tasks builds mostly on pre-existing programs, namely

structural prior, that have been shaped through evolution for the species' fitness in a given ecological niche. Sequential effects are a manifestation of such pre-wired strategies, which may ultimately support learning, by the rapid formation of new associations between past events and future rewards. To test this, we will characterize sequential effects during learning of a set of perceptual tasks and identify their underlying neural circuitry. In close interaction, we will compare animals' behavior with RNNs which, after being equipped with structural priors, can then mimic the animal's ability to learn new tasks."

IP	Carnegie Mellon University. Estados Unidos
Presupuesto total	1.274.553 €
Socios	Estados Unidos y España
Concedido ES	253.995 €

CONVOCATORIA CONJUNTA 2023

Países participantes	España, Estados Unidos
Temáticas	• Biosciencias and technologies • Biomedicine
Concedido ES	441.650 €
Proyectos aprobados	2
Proyectos con financiación AEI	2

No.	Acrónimo y título del proyecto	Países participantes
1	ACHMEN The Role of Muscarinic Acetylcholine Receptors On Ca1 Pyramidal Neurons In Shaping Memory Formation And Stability	Estados Unidos, España
2	DDCBGT Decision Dynamics in Cortico-Basal Ganglia-Thalamic Networks	Estados Unidos, España

CONVOCATORIA NACIONAL PCI 2023

PROYECTO 1 ACHMEN. The Role Of Muscarinic Acetylcholine Receptors On Ca1 Pyramidal Neurons In Shaping Memory Formation And Stability

A century of clinical and experimental work has shown that the hippocampus is crucial for being able to orient ourselves in an environment (spatial memory) and remember events that occur in our lives (episodic memory). However, the neural mechanisms underlying the formation and retention of these memories remain largely unknown. The hippocampus receives various neuromodulatory inputs. Among them, cholinergic contributions are essential to form new memories and regulate the stability of memory. The cholinergic innervation of the hippocampus progressively degenerates in patients with Alzheimer's and the neuronal response to acetylcholine

weakens with aging. Therefore, addressing how cholinergic activity mediates changes at the cellular, circuit, and behavioral levels as memory forms and stabilizes is key to understanding mnemonic processing in health and disease. Extensive in vitro evidence suggests that muscarinic acetylcholine receptors (machr), modulate synaptic plasticity, the molecular correlate of learning and memory. However, in vivo evidence for the role of machr in shaping neuronal dynamics during learning remains scarce. In the ca1 region of the hippocampus, machr are expressed in multiple cell types and cellular compartments, making it difficult to decipher the contribution of individual elements to the overall network effects of acetylcholine. In ca1 pyramidal neurons, machr are densely clustered in proximal dendrites, co-localized with ca315 inputs that convey information about stored memory. These receptors are ideally situated to modulate the response of pyramidal neurons to Ca3 inputs and shape neuronal dynamics through synaptic plasticity. In this project, we hypothesize that machr located in ca1 pyramidal neurons mediate both the formation and stability of memory-related dynamic activity patterns generated by these neurons. To test this hypothesis, we combined theoretical models with in vivo experiments that take advantage of recently developed neuropharmacological tools to target muscarinic acetylcholine receptors with cell type specificity. Our objective is to elucidate the cholinergic control of plasticity in two different stages of the memory process (memory formation and stability) at multiple levels, from acetylcholine receptors specific to each cell type to the development of neuronal dynamics related to memory and, finally, refinement of behavior.

IP	Max Planck Florida Corporation. Estado Unidos.
Presupuesto total	1.010.563 €
Socios	Estados Unidos y España
Concedido ES	228.690 €

PROYECTO 2 DDBC GT. Decision Dynamics in Cortico-Basal Ganglia-Thalamic Networks

Drawing on our CRCNS-funded "bottom-up mapping" framework, which links models of cognitive processes to excitable and biologically realistic networks, we propose a series of empirical and theoretical investigations that cross different levels of analysis to understand the flow of information through of cbgt circuits during the decision-making process. From a theoretical point of view, we will use our models to understand the low-dimensional space that represents cbgt circuits throughout the decision-making process, using "energy landscape" models along with dimensionality reduction. Empirically, our collaborators in the USA will test the predictions emerging from our network model and provide new observations to support the refinement of the model using experiments in rodents (optogenetics, electrophysiology) while performing both tasks with dynamic reward contingencies that present discrete choices or continuous motor control. Importantly, our theoretical and empirical work will evolve in a cycle of mutual development, in which theoretical experiments will be used to derive new behavioral and neural predictions and empirical experimental results will be used to review and update the properties of the generative model they drive. to later predictions.

IP	Carnegie Mellon University. Estados Unidos
Presupuesto total	16.314.089 €
Socios	Estados Unidos y España
Concedido ES	212.960 €

EU-LAC Interest Group Platform Contributing to the dissemination of the bi-regional research and innovation cooperation activities.

El Grupo de Interés UE-LAC organiza actividades conjuntas invitando a todas las agencias de financiación de ambas regiones que deseen colaborar en ciencia, tecnología e innovación. El Grupo de Interés se basa en la larga experiencia de colaboración y la confianza mutua establecida en proyectos anteriores financiados con fondos europeos, como ERANet-LAC o ALCUENET. Esta colaboración ha permitido la financiación de proyectos birregionales de investigación e innovación a través de convocatorias conjuntas organizadas por ERANet-LAC.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales: 1 (2023)

Participación de AEI en convocatorias conjuntas: 1 (2023)

CONVOCATORIA INTERNACIONAL CONJUNTA 2023

Países participantes	Austria, Bolivia, Brasil, República Dominicana, Alemania, Italia, Panamá, Perú, Polonia, Portugal, España, Turquía, Uruguay
Temáticas	• Global Challenges • Health • Biodiversity • Energy
Concedido ES	1.109.570 €
Proyectos aprobados	9
Proyectos con financiación AEI	7

No.	Acrónimo y título del proyecto	Países participantes
1	ABSARBO Aptamer-based strategies to create novel biotechnological tools against Arboviruses	Uruguay, México Austria, España, Alemania, Perú
2	BESTROPS Biodiversity and ecosystem services variability across the El Niño gradient in the Peruvian and Brazilian forests	España, Brasil, Perú, Alemania
3	CLIMSOCTRYPBOL Insight on climate and social participatory research for integral management of vector-borne zoonosis caused by Trypanosoma cruzi and Leishmania spp. in the Bolivian Gran Chaco	España, Turquía, Bolivia, Uruguay
4	ENCON Environmental Consciousness: A Behavioral Rebound Effect	España, República Dominicana, Uruguay, Polonia
5	ELAPSE-ND European-Latin American and Caribbean collaborative project on personalised medicine for neurological disorder	Brasil, Alemania, Panamá, España

6	IRI4SGC Interoperable Research Infrastructure for Managing Sustainable Grid Cells	Alemania, Austria, Bolivia, Panamá, Brasil
7	MICRORESI Deciphering microbiomes from extreme environments for the improvement of crop resilience to climate change, food security and safety.	Perú, España, Turquía, Bolivia, Italia
8	MYOREHAB Monitoring and Delivering Personalised Hand Neurorehabilitation through Virtual Activities Controlled by the Neural Drive.	España, Brasil, Alemania, Panamá
9	RI_HUBS Amplifying RI impact with a global perspective: a Regional Hubs model	España, Brasil, Italia, Finlandia, Uruguay, Portugal, Reino Unido, Perú

CONVOCATORIA NACIONAL PCI 2023

PROYECTO 1 ABSARBO. Aptamer-based strategies to create novel biotechnological tools against Arboviruses

Infections by Arthropod-borne virus (arbovirus) represent nowadays a significant global health problem. In recent years, the world has experienced several epidemics produced by arboviruses. Some of these viruses, such as Dengue, were already known for a long time while others have recently emerged to become a huge health threat like Chikungunya, Zika or Mayaro viruses. In fact, over 100 viruses cause infections and lead to what is globally termed as Arboviral diseases in humans, which annually produce more than 1 million deaths worldwide. Being spread from humans to arthropods, including mosquitos, ticks and flies, these viruses could be potentially transmitted from several vectors to humans triggering the next hemisphere-wide epidemic. Furthermore, the geographical spread and abundance of transmitting vectors, influenced by the consequent climate changes, are a of great concern to public health organizations in EU-LAC. All scenarios point to the need of creating new strategies to anticipate the occurrence of a possible new pandemic. Among those, two are of greater importance to enhance our preparedness: i) easy and rapid to deploy Arbovirus detection assays; and, ii) therapeutic/pharmacological candidate at advanced pre-clinical stages. In this context, ABSarbo is focused on the implementation of preventive strategies to rapidly address these emerging diseases by applying state-of-the-art and multidisciplinary aptamer-centered techniques in order to anticipate and minimize arboviruses' impact worldwide, and to develop diagnostic methods able to differentially recognize the most dangerous and abundant arboviruses found in our regions, as well as new treatment opportunities.

IP	Universidad de la República de Uruguay. Uruguay
Presupuesto total	356.630 €
Socios	México, Austria, España, Alemania, Perú
Concedido ES	124.630 €

PROYECTO 2 BESTROPS. Biodiversity and ecosystem services variability across the El Niño gradient in the Peruvian and Brazilian forests

Tropical South American forests are among the most biodiverse ecosystems in the world and provide multiple ecosystem services (provision, regulating, and cultural). Tropical areas are also highly vulnerable to climate change and extreme climate events such as El Niño –Southern Oscillation (ENSO), a phenomenon with global effects in precipitation regimens and temperature patterns. However, despite the critical importance of tropical ecosystems for the sustainability of the planet, multidimensional studies investigating the changes in above and belowground biodiversity and ecosystem function to changes in climatic variability are largely lacking, hampering our capacity to protect biodiversity and local indigenous communities in tropical South American forests. The main goal of this project is to investigate the changes in biodiversity and ecosystem services, promote a fair distribution of resources, and preserve the Natural Capital in rural communities of tropical forests. Combining experimental and modelling approaches, we will study plant and soil biodiversity and ecosystem services across an elevation and climate gradient in the main area of largest impact of ENSO (Dryland coast, the Andes mountains, and the Amazonian rainforest). Our project incorporates a social perspective by working side-by-side with decision makers, local stakeholders, and rural and indigenous communities, taking in consideration the changes in ecosystem services supply and demand. The main outcome of BESTROPS is to provide new open knowledge on the cultural and social dimension of tropical ecosystems, and insight in policy making without risking the natural capital under the forecasted climate change scenarios.

IP	Universidad de Córdoba. España
Presupuesto total	435.564 €
Socios	Brasil, Alemania, Perú
Concedido ES	196.020 €. (Universidad de Córdoba 121.000€), (Agencia Estatal Consejo de Investigaciones Científicas -CSIC 75.020€)

PROYECTO 3 CLIMSOCTRYPBOL. Insight on climate and social participatory research for integral management of vector-borne zoonosis caused by Trypanosoma cruzi and Leishmania spp. in the Bolivian Gran Chaco

Transmission risk of Zoonotic American Tripanosomiasis (Chagas disease) and Leishmaniasis in the Gran Chaco of Bolivia is linked to climate change, and also to the behaviour and social nature of their human hosts, domestic reservoirs and vector populations. Both Chagas disease and leishmaniasis are considered to be in an emergency and/or re-emergence situation in various parts of the world. In the Bolivian Chaco region, Chagas disease is highly endemic while leishmaniasis outbreaks have been very recently described, including visceral leishmaniasis cases. In close coordination with social actors, local authorities and research centres, the project will deploy the team experience in community engagement and co-creation in order to design, implement and evaluate a strategy to meet community needs related with prevention, diagnosis, treatment and follow-up of leishmaniasis and Chagas disease. Their climatic drivers of transmission in the area will be investigated by a range of complimentary modelling techniques, considering vector ecology and human disease outcomes. For that, we will prospectively assess the presence of Chagas and leishmaniasis vectors in human dwellings and peridomestic

environments, and domestic reservoirs (dogs). Triatomine samples will be used for a detailed population genomic analysis in order to evaluate and identify management-units of *Triatoma infestans*, main vector of Chagas disease in Bolivia, and sand flies samples will be analysed for the first time to obtain data on their genetic population.

IP	Institute of Global Health of Barcelona. España
Presupuesto total	257.890 €
Socios	Turquía, Bolivia, Uruguay
Concedido ES	192.390 €. (Institute of Global Health of Barcelona 136.730€), (Universidad de Barcelona 55.660€)

PROYECTO 4 ENCON. Environmental consciousness: A Behavioral Rebound Effect

A common public policy recommendation for climate change mitigation is the implementation of energy efficiency measures. Popular thought is that these measures result in a proportional reduction of energy consumption. However, efficiency gains can lead to a less than proportional decrease in energy consumption, or even a net increase. This is what is known as the rebound effect. The aim of this study is to address the issue of the rebound effect on household energy uses when implementing energy efficiency measures. Previous studies have shown the rebound effect to be as large as 30% of potential energy savings in households, reducing considerably the environmental impact. Counteracting the rebound effect is of significant importance, but measures to reduce it in households are not well studied. In order to address the study goals, we will first measure the rebound effect in four different countries with a survey-experiment. This will allow the research team to see differences or similarities of this effect in different contexts. Furthermore, two public policies will be studied, anchoring heuristics and labeling. Laboratory experiments with repeated games and a survey experiment will be implemented. All in all, the outcomes of the our project will be (1) assessment of experimental methods that can be most effective in developing pro-ecological behaviors and awareness among energy users and (2) decision-making framework and guidelines for policy makers and involved stakeholders. The implementation of the project will lead to more sustainable energy use in the future and hopefully, the costs and energy consumption savings on a larger scale can be achieved and strengthen integration and collaboration between the European Union and Latin America and the Caribbean

IP	Universidad de Loyola Andalucía. España
Presupuesto total	342.610 €
Socios	República Dominicana, Uruguay, Polonia
Concedido ES	170.610 €

PROYECTO 7 MICRORESI. Deciphering microbiomes from extreme environments for the improvement of crop resilience to climate change, food security and safety

Climate change largely affects agroecosystems. Increases in temperatures, the occurrence of extreme weather events and changes in precipitation patterns compromise agricultural productivity and food quality. Such extreme events are expected to be more frequent in the future.

By metagenomics and metabolomics, the MiCroResi project aims at investigating the effects of extreme conditions such as salinity, aridity, heavy metals contamination and UV light on the microbial biodiversity in agricultural systems and in turn on crop yield. The main hypothesis is that the persistence of extreme conditions imposes a selection on the microbiota which could be exploited as a new source of plant-beneficial microbes. Since naturally adapted to extreme conditions, properly selected beneficial microbes will be further developed into new tools to be used in microbe-assisted cropping systems for the improvement of crop resilience to climate change. MiCroResi consortium is composed of five partners from Peru, Bolivia, Italy, Spain and Turkey, which are linked to four research infrastructures, i.e. MIRRI-IT, INDES-CES, IIFB-IIAREN and CEBAS. The infrastructures will be fundamental for the achievement of the project goals. MIRRI and IIFB-IIAREN will be both the source and sink of microbial biodiversity and INDES-CES will help with the generation and holding of genomic data which MiCroResi will work with. CEBAS will provide analyses of soil properties and crop/fruit quality (metabolomics). The multidisciplinary of MiCroResi is ensured by the expertise of the project consortium, which includes microbiology, phytopathology, plant physiology, next-generation sequencing technologies, metabolomics and bioinformatics. All the project partners will work together for common objectives and their complementary expertise is the basis for an intense interaction. Special regard will be paid to the communication and dissemination of MiCroResi results to the scientific community and the society at large.

IP	Universidad Nacional Toribio Rodríguez de Mendoza. Perú
Presupuesto total	439.829 €
Socios	España, Turquía, Bolivia, Italia
Concedido ES	125.840 €

PROYECTO 8 MYOREHAB. Monitoring and Delivering Personalised Hand Neurorehabilitation through Virtual Activities Controlled by the Neural Drive

Rehabilitation treatments for neuromuscular disorders are variable across clinical centers and national healthcare systems and are largely dependent on the clinical experience of the practitioners. One of the main difficulties of the treatment is to monitor the progress of rehabilitation before signs of motor improvements. Misinformation may frustrate the patient and the practitioner and limit the recovery. MYOREHAB aims to provide an artificial intelligent system that can monitor and deliver a personalised closed-loop neurorehabilitation intervention of the hand based on the amount of electrical activity generated by the muscles. The project will be divided into three phases. In the validation phase, the rehabilitation technology and protocols will be implemented and tested in healthy individuals. In the clinical assessment phase, the technology will be used to extract clinical metrics useful to readapt physical therapies more efficiently and effectively. In the clinical intervention phase, conventional physical therapy will be complemented with our novel technology to enhance recovery by providing patients with more engaging and effective rehabilitation activities. This project will approach different motor conditions (stroke and spinal cord injury) across institutions in four countries (Spain, Germany, Brazil and Panama) to develop a strong long-term research network between European and Latin American researchers and to provide a transnational framework for standardised motor rehabilitation.

IP	Universidad de Alicante. España
Presupuesto total	463.875 €
Socios	Brasil, Alemania, Panama
Concedido ES	170.610 €

PROYECTO 9 RI_HUBS. Amplifying RI impact with a global perspective: a Regional Hubs model

Research Infrastructures, capacity building, Health, Infectious diseases, cryo Electron Microscopy, Super Resolution Microscopy, Integrative Regional Hubs Cooperation among Bioimaging & Structural Biology Research Infrastructures (RIs) from Latin America and Europe has steadily increased recently, e.g. via the EU-LAC ResInfra project. However, to have true impact on Health and long-lasting cooperation, even stronger and more tangible actions must be strategically planned. We now propose a bi-regional effort for capacity building, through staff hiring and exchange, focused on the creation/consolidation of Integrative Regional Hubs. Such Hubs are conceived as entry-to-mid-level RIs, well connected to high-end installations, with clear open facility access procedures and committed to open science. Regional Hubs shall accelerate the: (1) uptake of technology, (2) training of experts, (3) adoption of common RI best practices, (4) connection with local industry partners, and (5) efficient access to high-end RIs. The occurrence of global pandemics like Covid19 underscores the urgent need for globally concerted actions, combining biomedical expertise with state-of-the-art RIs, ensuring fast and effective responses. Key methodological aspects of this proposal include (i) the selection of Regional Hub sites, according to excellent science, engagement in biomedical research and long-standing record of open access to RIs. Eight RI partners in six LAC and EU countries, will contribute with their experience, also including two pan-European RI Consortia, maximising feasibility; and, (ii) a strong plan for training experts in advanced bioimaging technologies, following a well-designed network of interactions, staff exchange, visits and workshops. These exchanges will allow best practices and FAIR data management protocols to be shared, setting common standards. This model of Integrative Regional Hubs shall contribute to a global perspective in RI management.

IP	Agencia Estatal Consejo Superior de Investigaciones Científicas. CSIC. España
Presupuesto total	554.344 €
Socios	Brasil, Italia, Finlandia, Uruguay, Reino Unido, Perú, Portugal
Concedido ES	129.470 €

Proyectos en colaboración internacional
financiados a través de la convocatoria de
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