

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

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

Subdivisión de Programas
Científico-Técnicos Transversales,
Fortalecimiento y Excelencia
Agencia Estatal de Investigación

Unidad de Proyectos
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Fundación Española para
la Ciencia y la Tecnología



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+D+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

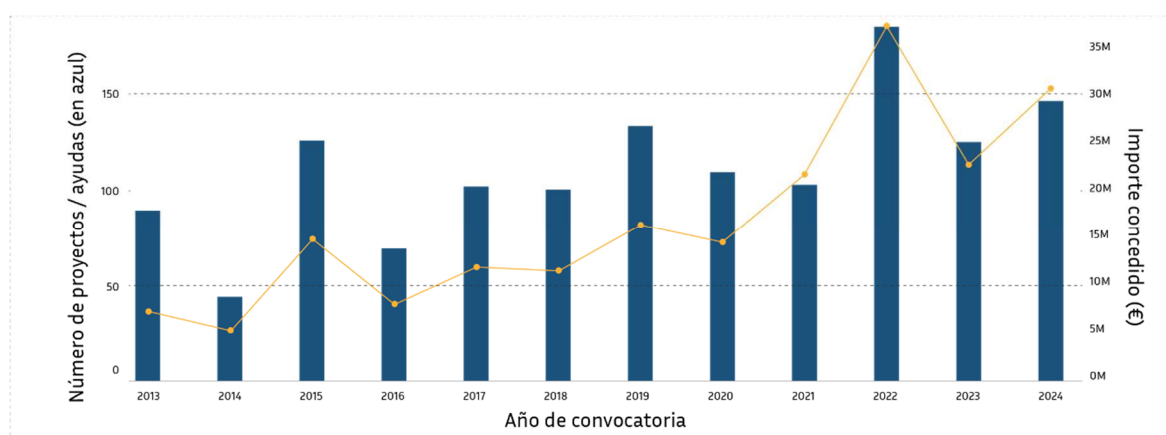
RESUMEN EJECUTIVO

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.

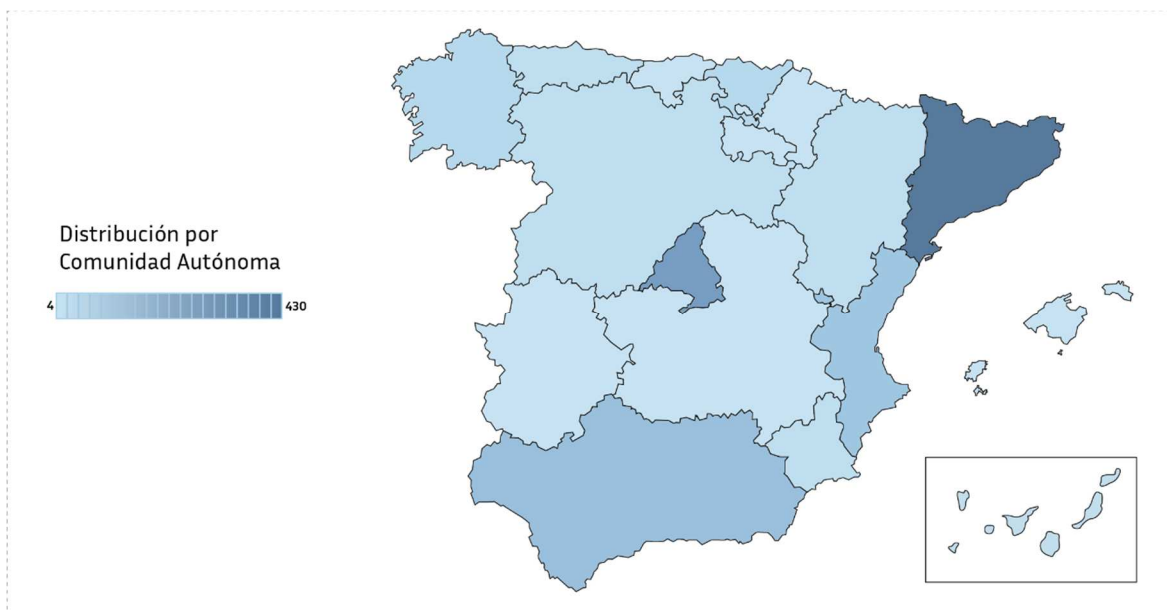
Los datos presentados en este resumen ejecutivo abarcan el periodo 2014-2024 (ambos incluidos). Sin embargo, debido a la provisionalidad de algunos datos relativos a los proyectos financiados, el presente informe no incluye en su detalle la anualidad de 2024.

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



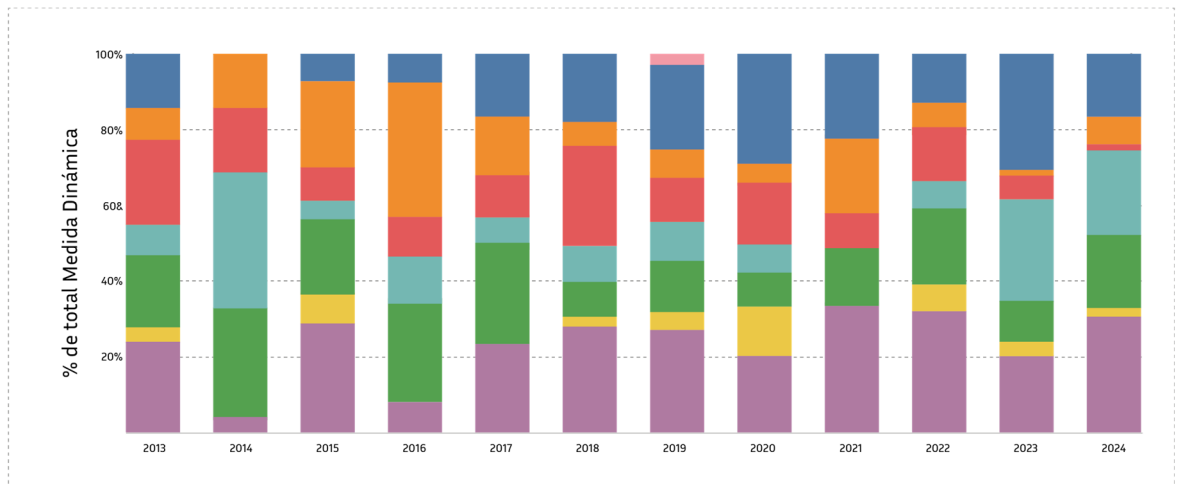
Las entidades receptoras de estas ayudas de la AEI están ubicadas fundamentalmente en Cataluña (430 ayudas), Madrid (275) Andalucía (149) y Comunidad Valenciana (119). Estas 4 comunidades autónomas acumulan el 70% del total de ayudas concedidas durante el período analizado.

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.

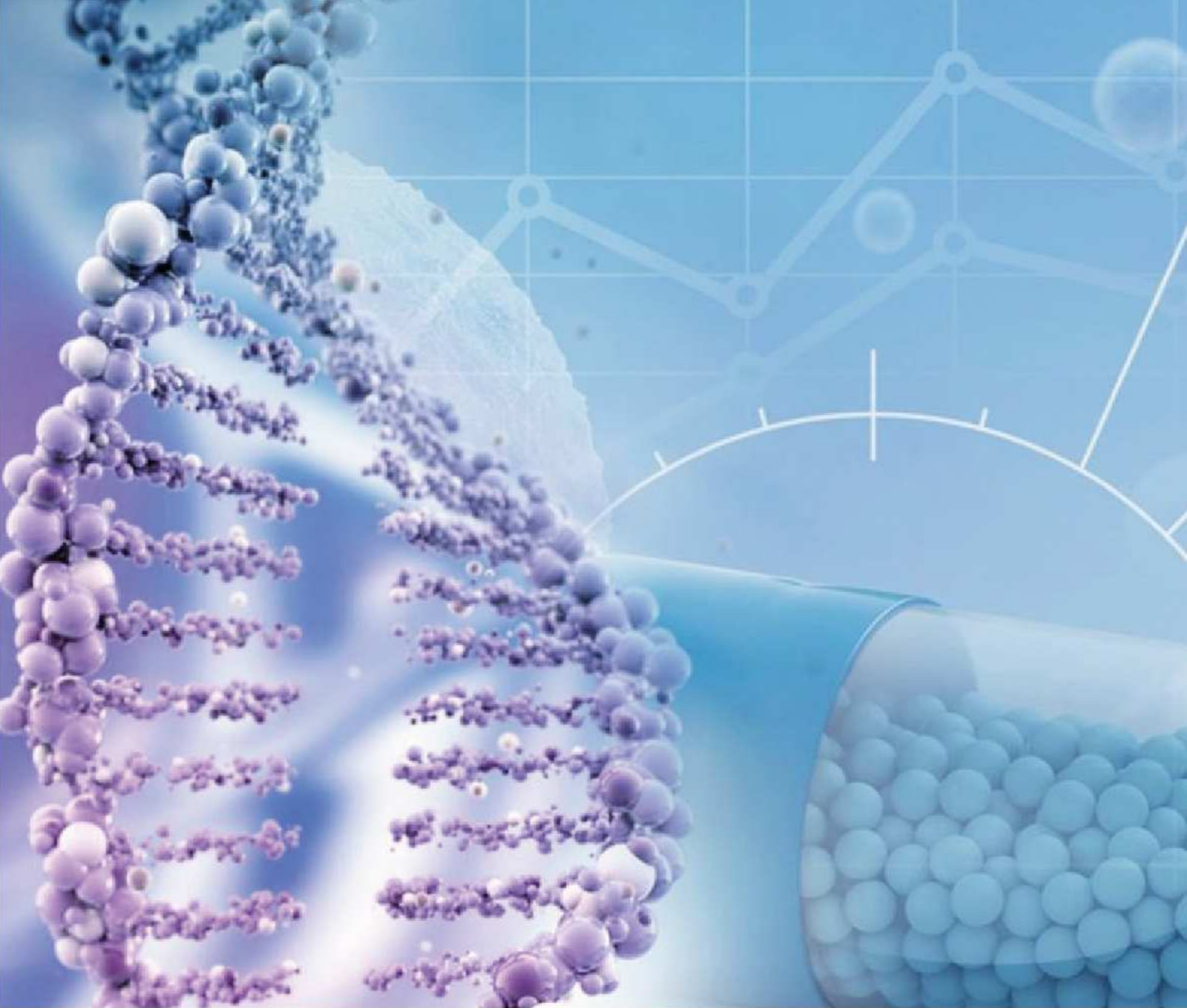
En lo referente a las instituciones españolas que participan en las convocatorias PCI, lideran el ranking las universidades públicas (Universidad de Barcelona, Universidad Politécnica de Madrid, Universidad Complutense de Madrid entre otras), el CSIC y el Centro Nacional de Supercomputación de Barcelona.

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

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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 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

6	EMBED. 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
7	microSCHIZ. Microglial activation in Complement C4-stratified schizophrenic patients and in a mouse model of C4 overexpression	Francia, Alemania, Suiza, Letonia
8	MiGBAN. Microbiome Gut-Brain interaction in Anorexia Nervosa	Alemania, Austria, Francia, Países Bajos
9	nEUrotalk. Disruption of the spatio-temporal dialogue between migrating cortical neurons as underlying factor in Autism Spectrum Disorder	España, Bélgica, Francia, Alemania
10	OPCphrenia. Oligodendrocyte precursor cell dysfunction linked to schizophrenia: from mechanisms towards new therapeutic strategies	Francia, Países Bajos, Canadá
11	Psi-Alc. Preclinical Phase II Testing of Psilocybin in Alcohol Addiction and Epigenetic and Neuroimaging Studies on the Mode of Action	Alemania, Italia, Francia, Suiza
12	PSYBIAS. A novel paradigm for effective and safer treatment of schizophrenia: biased (ant)agonists with a characterized polypharmacological profile	España, Alemania, Canadá
13	TAO2PATHY. Targeting TAO2 and its downstream pathway as critical effectors of Autism spectrum disorders in 16p11.2 microdeletion patients	Alemania, Bélgica, Canadá
14	UNMET. 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 (Cnnap2, FMR1, Agtbp1) 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. IDDs 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 IDDs 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 IDD 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 worldwide. 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 € (Fundacion 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
1	ANCE4STROKE. Autologous neurovascular cell ecosystems (ANCE) to repair ischemic stroke in mice, primates and humans.	Suiza, Francia, España
2	BiotaBB. Modulation of brain barrier function by microbiota-derived factors in cerebral ischemia	Alemania, Turquía, Suiza
3	CH-Stroke. Clonal Haematopoiesis in Ischemic Stroke	Alemania, Israel, Polonia, Francia
4	COHDICH. COnsequences of Haemostatic Defects after IntraCerebral Haemorrhage	Francia, Alemania, Taiwan
5	CRESCENDO. CiRculating mEdiators of Stroke reCurrENce and aetiOlogies	Alemania, España, Suiza
6	DeCoDis. Deciphering Cellular and Acellular Barrier Dysfunction in Cerebrovascular Diseases	Alemania, Suiza, Francia
7	IMatrix. Theragnostic targeting of extracellular matrix metalloproteinases and blood brain barrier disruption in subacute ischemic stroke	España, Alemania, Francia, Hungría
8	MatriSVDs. Multidimensional interrogation of microvascular matrisome abnormalities in cerebral small vessel diseases	Francia, Alemania, Suiza
9	MECACCM. Preclinical study targeting mechanosensitive calcium channels for Cerebral Cavernous Malformations therapy and early diagnosis.	Francia, Bélgica, Alemania, Italia, Eslovaquia
10	MeniSPYs. The meninges as a new player in post-stroke recovery	Francia, Alemania, Hungría
11	MICROBLEEDs. MICROglia as modulators of brain BLEEDs	Alemania, Canadá, Israel, Italia
12	STROKE-POCK. 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
13	TACKLE-CSVD. Targeting Autophagic networks and the lysosome in Cerebral Small Vessel Disease	Alemania, España, Israel
14	VasOx. 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 membrane 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 lags 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	LONGLIVES: 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 movilizano 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 Siintifica 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	Acrónimo 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 LPS loads, 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 (BMWFW), 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 €

ENDOBSITY. 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 agedependent – 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 Nutrimune

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 (NUTRIMUNE)”. 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 (NUTRIMUNE)”
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	SulTAN. 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	Acrónimo 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 divers 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 Biotecnology
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 (MineEZ/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

ATMA4FS.		
23	Agricultural Trade and Market Access for Food Security: Micro- and Macro-level Insights for Africa	Bélgica, Alemania, Ghana, Países Bajos, Senegal, Sudáfrica
Ento-Economy.		
24	Enhancing food and nutrition security through promotion of edible insects value chain in Eastern Africa	Bélgica, Alemania, Kenia, Uganda
NUTRIFOODS.		
25	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.		
26	A Social-Ecological System Approach towards a Sustainable Intensification of Agricultural Production in Sub-Saharan Africa	Burkina Faso, Francia, Alemania, Ghana
MycoSafe-South.		
27	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-sectoral 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	Acronimo 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 (FiMoE); 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	Acronimo 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	FIRENWOOD. 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

BESTBROOD.		
5	Identification of broodstock performance indicators and markers to boost the aquaculture of emerging fish species	Noruega, España, Italia
BIOSHELL.		
6	Recycling crustaceans shell wastes for developing biodegradable wastewater cleaning composites	Rumanía, Portugal, Noruega
BIOZOOSTAIN.		
7	Sustainable utilization of zooplankton as by-products	Islandia, Dinamarca, Italia, España
BlueCC.		
8	Commercial exploitation of marine collagen and chitin from marine sources	Bélgica, Italia, Alemania
CASEAWA.		
9	Advanced materials using biogenic calcium carbonate from seashell wastes	Italia, Alemania, España
DIGIRAS.		
10	Optimizing land-based fish production in next generation digital recirculating	Noruega, Alemania, Finlandia, Portugal, Alemania
ImprovAFish.		
11	Improving aquaculture sustainability by modulating the feedmicrobiome-host axis in fish	Dinamarca, Suecia, Noruega, Irlanda
InEVal.		
12	Increasing Echinoderm Value Chains	Irlanda, Noruega, Alemania, Italia
MARIKAT.		
13	New catalytic enzymes and enzymatic processes from the marine microbiome for refining marine seaweed biomass	Dinamarca, Suecia, Grecia, Islas Feroe
MedSpon.		
14	Characterization of new antibiotic principles against WHO priority pathogens of sustainable produced marine sponges for nutraceutical applications	Grecia, Alemania, Italia
MINERVA.		
15	Marine Innovation using Novel Enzymes for waste Reduction and Valorisation of Algal biomass	Irlanda, Suecia, Islandia
PLASTISEA.		
16	Novel enhanced bioplastics from sustainable processing of seaweed	Noruega, Suecia, Dinamarca, España
RASbiome.		
17	Microbial management in RAS for sustainable aquaculture production	Dinamarca, Bélgica, Noruega
SIDESTREAM.		
18	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
SNAP.		
19	Seaweeds for Novel Applications and Products	Noruega, Suecia, Estonia, Alemania, Italia
SuReMetS.		
20	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; Universita' 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 PrP^{Sc}, the causative agent of TSE, in the brain. PrP^{Sc} represents pathogenic conformers of PrP^C, 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
4	Cover Power. Smart Glass Coatings for Innovative BiPV Solutions	Austria, Suiza
ENMESH.		
5	ENabling Micro-ConcEntrator PhotovoltaicS with Novel Interconnection MethOds	España , Reino Unido, Suiza
6	Erigeneia. Enabling rising penetration and added value of photovoltaic generation by implementation of advanced storage systems	Chipre, Austria, Reino Unido, Turquía
7	HEAVENLY High-efficiency PERT and IBC cell development focussing on paste and CVD optimization for longterm stability	Reino Unido, Alemania
8	Hyconsys. Hydrogen control in solar thermal parabolic trough heat transfer fluid systems	Alemania, España
9	MASTERPV. Innovative manufacturing solutions for cost-efficient semitransparent BiPV	España , Alemania
10	NELL. Novel encapsulant for long lifetime high voltage PID-resistant PV modules	España, Alemania
11	NEXT-FOIL. 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 Efficient 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 fuer 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®XLP grades, 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 Ithalat Ihracat Anonim Sirketi (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 Investigacion Energetica 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

PROYECTO01 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 carbonatación 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 monitorización 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, Rumanía
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, Rumanía

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, Francia, Reino Unido, Portugal, Suecia, Bélgica, Finlandia, Turquía
22 Energy System Modelling for Transition to a net-Zero 2050 for EU via REPowerEU	
MORE	Suecia, Dinamarca, Italia, Noruega
23 Next Generation Marine Materials for Resilient Offshore Renewable Energy Devices	
NewHeatIntegrated	Alemania, República Checa, Finlandia
24 Highly flexible and modular PCM based thermal energy storage system for efficient heating applications in the built environment	
NextGen	Suecia, Dinamarca, Alemania
25 Demonstrating the NextGeneration of Direct Drive Generators for Wind Energy	
NORD STORM	Alemania, Países Bajos Noruega
26 Novel paths towards next generation heterojunction solar cell and module	
Oxy-Kraft RB	Finlandia, España, Suecia, Estados Unidos
27 Oxy-Kraft recovery boiler - Towards novel integrated green energy parks	
ProSeCO	Alemania, Austria, Portugal
28 Probabilistic Sector coupling Optimizer	
PVT4EU	Suecia, Portugal, Dinamarca
29 Photovoltaic Thermal for Europe	
QuantumIRES	Alemania, España, Suiza, Rumania
30 Increasing Control and Efficiency In Regional Energy Systems Using Quantum Sensors And Machine Learning	
RamonCO	Noruega, Estados Unidos, Países Bajos, Alemania, Rumanía, Reino Unido
31 Risk-based framework for assessing CO2 storage monitoring	
REFORM	España, Finlandia, Turquía
32 Power Generation from Perovskite Architectural Elements	
RESILIENT	Alemania, Francia, Finlandia, Italia, Suecia
33 Resilient Energy System Infrastructure Layouts for Industry, E-Fuels and Network Transitions	
SEASNAKE+	Suecia, España, Italia, Francia, Irlanda
34 Industrial upscale of surface protection system & fibre optic-based condition monitoring for the SEASNAKE MVC (Medium Voltage Cables)	
SENSATION	Noruega, Francia, Alemania, Países Bajos
35 Sorbent Assisted Carbon Capture Tailored for Low CO2 Concentrations from Air and Low Industrial CO2 Emissions	
SMART-LEM	Rumanía, España, Portugal, Austria, Irlanda
36 A Business Model-Oriented Platform with Applications for Developing Local Electricity Markets and Accelerating Clean Energy Transition	
SMARTMOORING	Suecia, España, Francia
37 Smart mooring for safe and efficient ocean energy production	
SPOT-IT	Italia, España, Finlandia Dinamarca
38 Stable printed perovskite/organic tandem solar cells and modules for indoor & IoT	

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 Energía 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	MULTIGINATION 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

CONVOCATORIA NACIONAL PCI 2023

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 Rem0te SensIng and furTHer scenaRi0S 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

BiodivScen - Promoting and implementing joint programming at the international level to reinforce research on the development of scenarios of biodiversity and ecosystem services	240
BIODIVCLIM - European Joint Programme for the Integration of Radiation Protection Research	247
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	253
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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
1	ACCES. De-icing of Arctic Coasts: Critical or new opportunities for marine biodiversity and Ecosystem Services?	Noruega, Canadá, Dinamarca, Polonia, Estados Unidos
2	AlienScenarios. Developing and applying scenarios of biological invasions for the 21st century	Austria, Canadá, Alemania, España, Francia
3	ARCTIC-BIODIVER. Scenarios of freshwater biodiversity and ecosystem services in a changing Arctic	Suecia, Canadá, Dinamarca, Noruega, Estados Unidos
4	BIOESSHEALTH. Scenarios for biodiversity and ecosystem services acknowledging health	Suecia, Austria, Alemania, Finlandia, Noruega
5	BONDS. Balancing biODiversity conservatiON with Development in Amazon wetlandS	Francia, Brasil, Alemania, Noruega, Reino Unido, Estados Unidos
6	ENVISION. An inclusive approach to assessing integrative scenarios and visions for protected area management	Suecia, Alemania, España, Países Bajos, Estados Unidos
7	FARMS 4 Biodiversity. Farmer-led Agroecological Research in Malawi using Scenarios for Biodiversity	Estados Unidos, Canadá, Alemania, Noruega
8	FATE. 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
9	FutureWeb. Climate and land use change threat to the vertebrate European food web structure and functioning	Francia, Suiza, Alemania, Finlandia, Italia, Países Bajos, Estados Unidos
10	InvasiBES. Understanding and managing the Impacts of INVASive alien species on Biodiversity and Ecosystem Services	España, Suiza, Alemania, Francia, Estados Unidos
11	Land2Sea. 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
12	LimnoScenES. 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 SECBIVIT. Scenarios for providing multiple ecosystem services and biodiversity in viticultural landscapes

SECBIVIT 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. SECIVIT 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. SECIVIT 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	Acrónimo y título del proyecto	Países participantes
1	ACORN. Identifying seed sources for highly adaptable oak forests in a changing climate.	Austria , Suiza, Alemania, Grecia, Turkia
2	ASICS. 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
3	BaltVib. Pathogenic Vibrio bacteria in the current and future Baltic Sea waters: mitigating the problem.	Alemania , Estonia, Dinamarca, Finlandia, Lituania, Polonia, Suecia
4	BIOFAIR. BIOdiversity of soils and FARMing Innovations for improved Resilience in European wheat agrosystems.	Bélgica , Suiza, Alemania, España, Francia
5	CLAMBIO. Assessing the effects of past and future climate change on Amazonian biodiversity.	Finlandia , Brazil, Alemania, Reino Unido
6	EASMO. EAStern Tropical Pacific reef fish on the MOve: biodiversity reorganisation and societal consequences.	Alemania , Australia, Colombia, Costa Rica, Noruega, Portugal, Suecia, Reino Unido, US
7	EPICC. 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
8	FeedBaCks. Feedbacks between Biodiversity and Climate.	Suiza , República Checa, Alemania, Francia, Suecia
9	FUNPOTENTIAL. Potential of functional diversity for increasing the disturbance resiliency of forests and forest-based socio-ecological systems.	Finlandia , Alemania, Francia
10	FutureArcticLives. Future Arctic livelihoods and biodiversity in a changing climate.	Dinamarca , Noruega, Suecia
11	GenClim. 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 mejorar 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 fare.

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 Ciencia 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-IRNASA 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 SCRREEN, 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,

