

DOCUMENTO DE TRABAJO
AEI-FECYT
SEPTIEMBRE 2021

Proyectos en colaboración internacional financiados a través de la
convocatoria de

Proyectos de Colaboración Internacional

–PCI–
(2014-2020)

Subdivisión de Programas Científico-Técnicos
Transversales, Fortalecimiento y Excelencia

Agencia Estatal de Investigación

Unidad de Proyectos Internacionales

Fundación Española para la Ciencia y la Tecnología



MINISTERIO
DE CIENCIA
E INNOVACIÓN



ÍNDICE

INTRODUCCIÓN	4
RESUMEN EJECUTIVO	5
RETO 1: SALUD, CAMBIO DEMOGRÁFICO Y BIENESTAR	7
NEURON.....	8
EURONANOMED III	18
The Joint Programming Initiative (JPI) “More Years, Better Lives – The Potential and Challenges of Demographic Change”	27
JPI AMR.....	32
JPI HDHL	38
ERA-NET COFUND ERA-HDHL	41
JPI HDHL-INTIMIC COFUND	48
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)	53
FACCE SURPLUS.....	54
SUSCROP.....	57
SusAn	67
ERA CoBioTech	71
LEAP-AGRI	79
SUSFOOD2 Cofund	84
CORE Organic Cofund	90
ForestValue.....	93
BLUEBIO ERANET Cofund	98
ERANet ICRAD	105
RETO 3: ENERGÍA, SEGURIDAD Y MODELOS ENERGÉTICOS SEGUROS, SOSTENIBLES Y EFICIENTES	112
SOLAR-ERA.NET Cofund.....	113
CSP ERA.NET.....	124
NEWA- New European Wind Atlas ERA-NET PLUS	128
ERA-NET COFUND BESTF3	130
DemoWind 2	132
ERA-NET COFUND ACT	134

GEOTHERMICA ERA-NET Co-fund Action	138
RETO 5: ACCIÓN SOBRE EL CLIMA, EFICIENCIA RECURSOS Y MATERIAS PRIMAS	141
BiodivScen.....	142
BIODIVCLIM.....	148
ERA-MIN 2	153
JPI OCEANS	156
JPI WATER	162
WaterWorks	175
ERA4CS ERANET Cofund	181
AXIS	186
CONCERT-EJP	190
MOSAiC	193
RETO 6: CAMBIOS E INNOVACIONES SOCIALES.....	195
JPI Cultural Heritage	196
HERA-JRP-PS.....	205
GENDER NET Plus.....	209
NORFACE network	213
TECNOLOGÍAS FACILITADORAS ESENCIALES: MATERIALES, NANOTECNOLOGÍA, TICS.....	220
CHIST-ERA III	221
FLAG-ERA II ERA-NET COFUND.....	232
M-ERA.NET 2	245
ECSEL.....	261
QUANT-ERA.....	288
INICIATIVAS GEOGRÁFICAS.....	298
CYTED	299
Convocatoria de Proyectos conjuntos España - Japón	304
PRIMA	309
CRCNS	325

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 del primer ERA-NET en 2004, la posición española en el ranking europeo ha ido aumentando y actualmente, en H2020, España lidera los países de la UE28 en términos de participación en iniciativas entre agencias pública de financiación (datos de ERA-LEARN Country Report Spain Jul. 2018) participando en más de 60 convocatorias internacionales. De estas, España ha coordinado cinco (WaterWorks2014, MANUNET III, EuroNanoMed III, ERA PerMed y CSP ERANET).

Las agencias financiadoras del Ministerio de Ciencia e Innovación, AEI, CDTI y el ISCIII, y 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 programación conjunta** engloban, entre otros: Redes del Espacio Europeo de Investigación (ERA-NET COFUND), Iniciativas de Programación Conjunta (JPI), o los Programas Europeos Conjuntos Cofinanciados (European Joint Programme Cofund, EJP). 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 (y antes de su creación, por el MINECO), en el contexto de la programación conjunta internacional y las convocatorias nacionales a ésta asociada - Proyectos de Colaboración Internacional -PCI-, anteriormente APCIN, desde el inicio de Horizonte 2020 hasta la actualidad.

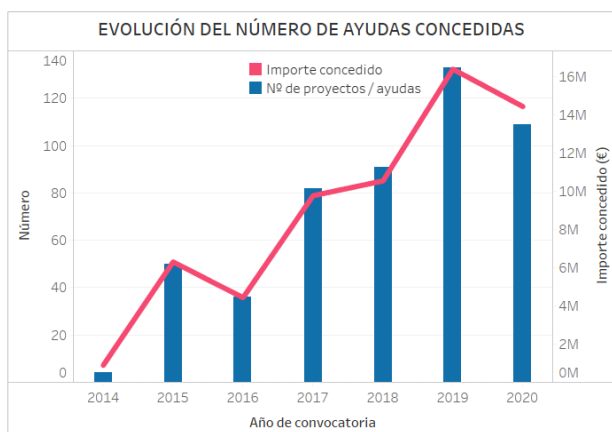
También se recogen aquellas iniciativas fruto de acuerdos de cooperación y colaboración en I+i de ámbito geográfico y que incluyen proyectos con Iberoamérica, Japón, EE.UU. e India, entre otros.

Este documento de trabajo ha sido realizado gracias al marco de colaboración establecido en el Convenio ente la Agencia Estatal de Investigación y la Fundación Española para la Ciencia y la Tecnología para la colaboración en el desarrollo de iniciativas internacionales, firmado en enero de 2020.

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

Gráfico 1. Evolución del número de ayudas concedidas, 2014 - 2020



La AEI ha financiado durante el periodo 2014-2020 un total de **505 ayudas** procedentes de 419 proyectos con un importe concedido de alrededor de **63 millones de euros** (124 mil euros de media por ayuda).

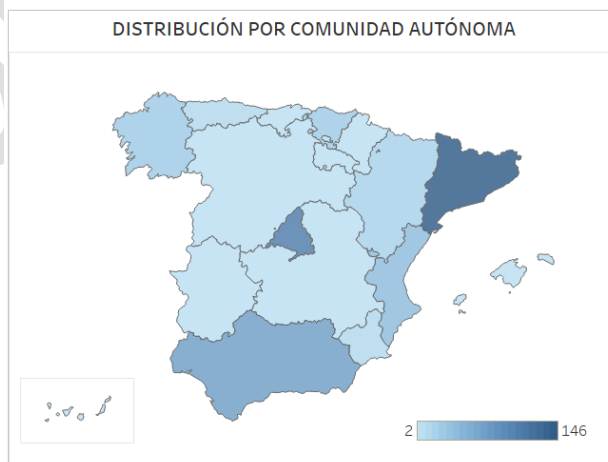
En cuanto al liderazgo de entidades españolas en los proyectos internacionales financiados, un 25% del total ha sido liderado por algún socio español, mostrando además una evolución positiva a través de los años.

de la AEI están ubicadas fundamentalmente en Cataluña (146 ayudas), Madrid (108), Andalucía (70), Valencia (39) y el País Vasco (24). Estas 5 comunidades autónomas representan tres cuartas partes del total de ayudas concedidas durante el período analizado.

Los países europeos con los que la colaboración ha sido más intensa han sido Alemania (con 191 proyectos), Francia (177), Italia (147) y Países Bajos (96). En cuanto a otras zonas no pertenecientes a la Unión Europea, el mayor número de colaboraciones se han llevado a cabo con México, Brasil, Chile y Perú.

Las entidades receptoras de estas ayudas

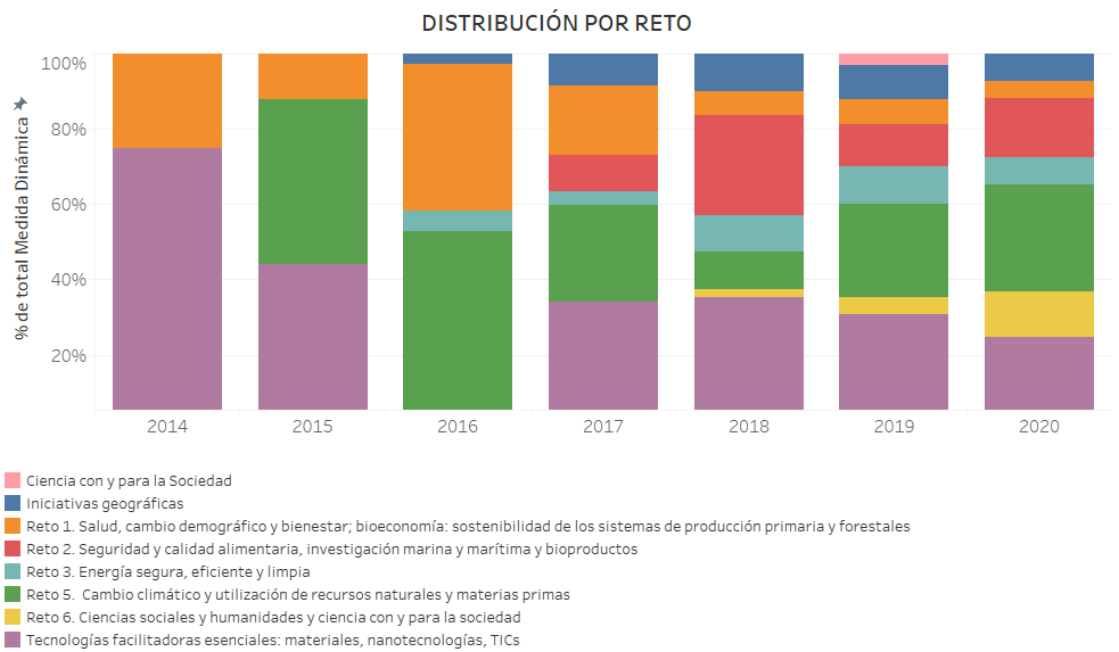
Gráfico 2. Distribución del número de ayudas concedidas por Comunidad Autónoma, 2014-2020

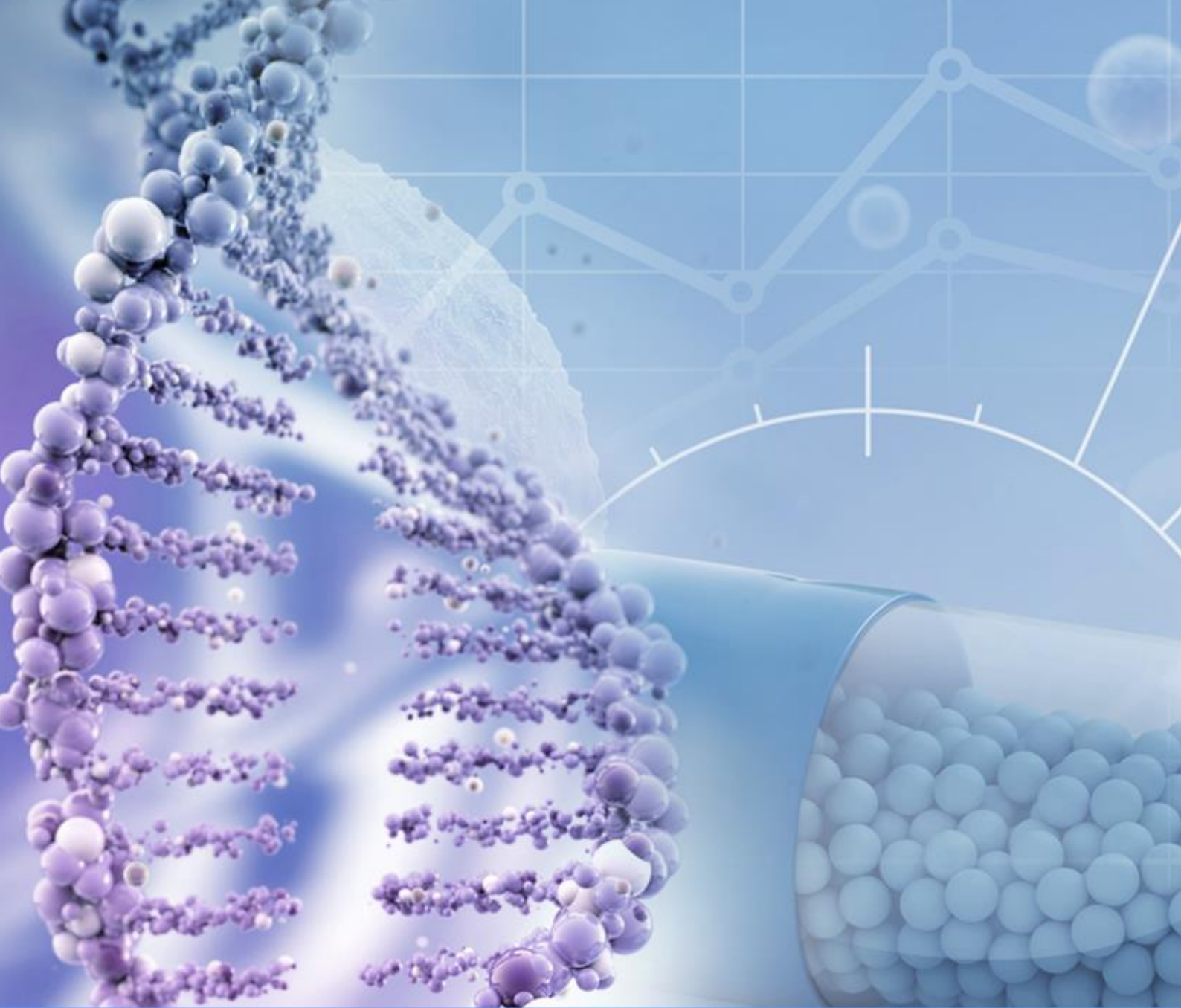


En lo referente a las instituciones españolas que participan en las convocatorias PCI, lideran el ranking las universidades públicas (Universidad Politécnica de Madrid, la Universidad de Barcelona o la Universidad Autónoma de Barcelona, entre otras) y el CSIC.

Finalmente, por retos, tal y como se muestra en el Gráfico 3 resaltan las áreas de Tecnologías Facilitadoras Esenciales, con 155 ayudas; el Reto 5, con 133 ayudas; el Reto 2, con 64 ayudas y el reto 1 con 56.

Gráfico 1. Distribución por RETO





Reto 1: Salud, cambio demográfico y bienestar



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: 8 (2016, 2017-1, 2017-2, 2018, 2019, 2020-1, 2020-2, 2021)

Participación de MINECO/AEI: 3 (2016, 2017, 2020-2)

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
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Temáticas	<p>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.</p> <p>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.</p>
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
8	KidBrainIT. 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
9	LEAP. New therapeutic strategies in the treatment of traumatic brain injury by targeting the LEctin Activation Pathway of complement (*)	Italia, España, Reino Unido, Alemania, Polonia
10	Micronet. Cortical microcircuitry after traumatic brain injury: molecules to networks	Bélgica, Alemania, Reino Unido, Alemania, Polonia
11	NEURONICHE. Spinal cord repair from endogenous stem cells in the spinal niche	Reino Unido, Francia, Alemania, Bélgica, Polonia
12	RATER SCI. Repurposing Acute Therapies for Enhanced Recovery after Spinal Cord Injury	Canadá, Suiza, Alemania, España
13	REACT NSCs. Induction of Reactive Neural Stem Cells by Traumatic Brain Injury in the Adult Hippocampus	España, Francia, Bélgica, Países Bajos
14	ReplImpact. Repetitive Subconcussive Head Impacts – Brain Alterations and Clinical Consequences	Alemania, Bélgica, Israel, Noruega, Eslovaquia, Países Bajos

15	SCI-NET. Identification of novel bioactive mediators of tissue scarring, inflammation and extracellular matrix remodeling after spinal cord injury	Reino Unido, Canadá, Alemania, Suiza
16	SILENCE. Spinal Cord Injury-induced Systemic Maladaptive Immune Response and Autoimmunity to Central Nervous System Antigens - European Network Approach	Alemania, Austria, Suiza, Italia
17	SiMPLYReha. Seeing-Moving-Playing: Early Rehabilitation utilizing visual and vestibular technology following traumatic brain injury	Canadá, Francia, Israel
18	TAI-MRI. A New Traumatic Axonal Injury Classification Scheme based on Clinical and Improved MR Imaging Biomarkers	Noruega, Bélgica, Países Bajos, Reino Unido
19	TRAINS. 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 Universitätsmedizin)

Presupuesto total: 642.000€

Concedido ES: 142.000€

Proyecto 11

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

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

IP: Mazahir Hasan, Achucarro Basque Center for Neuroscience Research Fundazioa, España

Socios: Italia (Fondazione Santa Lucia), **España (Universidad Pablo de Olavide)**, Alemania (Center for Stroke Research, BMBF), Noruega (Haukeland University Hospital-University of Bergen), Polonia (Collegium Medicum)

Presupuesto total: 1.261.782€

Concedido ES: 90.000€+134.000€=224.000€

Convocatoria conjunta internacional 2018

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

No.	Acrónimo y título del proyecto	Países participantes
1	ADNPinMED The pleiotropic effects of ADNP in Mental Disorders	Bélgica , Israel, Italia, Canadá
2	ADORe Targeting adolescent neurocognitive processes in depression to promote intervention response	Francia , Canadá, Francia, Italia, Rumanía
3	AutoScale Multiscale analysis of anti-NMDA receptor autoantibody in psychosis	Francia , Alemania, España, Canadá
4	DECODE! Decrypting Cadherin-13 function in cortico-cerebellar circuitry underlying neurodevelopmental disorders!	Países Bajos , Alemania, Canadá, Francia
5	DiSCoVeR The DiSCoVeR Project: Examining the synergistic effects of a cognitive control videogame and a home-based, self-administered non-invasive brain stimulation on alleviating depression	Israel , alemania, Suiza, Lituania
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 (Cntnap2, FMR1, Agtpbp1) 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
6	I, See. Improving intracortical visual prostheses using complex coding and spontaneous activation states	Alemania, Cánada, Suiza
7	PreTouch. Tactile sensory impairment of C, LTMR afferents in preterm children and interventional approaches	Noruega, Alemania, Francia y Hungría
8	ReDiMoAMD. Human organoid system based therapy discovery and development for age, related macular degeneration	Alemania, Cánada, Suiza, Francia
9	Rethealthsi. Gap junctions serve to distribute health, signals among neurons of the diseased retina	Hungría, Italia y Alemania
10	SensingASD. Targeting Sensory Dysfunctions in Autism Spectrum Disorders	Alemania, Suiza, Canadá, Letonia
11	TRANSMECH. The role of translational dysregulation in sensory neurons in mediating tactile hypersensitivity in neurodevelopmental disorders	Grecia, Canadá y Alemania
12	VELOSO. 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€

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

IP: Università degli Studi di Modena e Reggio Emilia, Italia

Socios: **España (LEiTAT, DropSens S.L.)**, Francia (Université de Strasbourg, ImmuPharma)

Presupuesto total: 917.340€

Concedido ES: 120.960€

Convocatoria conjunta internacional 2018

Países participantes	Bélgica, Canadá, Estonia, Francia, Alemania, Grecia, Italia, Letonia, Lituania, Polonia, Rumanía, Eslovaquia, España, Taiwán, Turquía
Temáticas	<ol style="list-style-type: none"> 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 cytoplasmic-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	TARBRAINFEK. 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 cytoplasmic-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

PANIPAC. 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. 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. TEMperature-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 Taiwan
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 Científicas (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: 3 (J-AGE I 2015, J AGE II 2016, J AGE III 2017)

Participación de MINECO-AEI en convocatorias conjuntas: 3 (2015, 2016 y 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, 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
1	AgeWellAccounts. Age-Specific Wellbeing- and Transfer Accounts: Evaluating Intergenerational Support	Austria, Francia, Italia
2	CIRCLE. Care and Income Redistributive Cycles in the Lives of Europeans	Italia, España, Bélgica
3	CREW. Care, retirement and wellbeing of older people across different welfare regimes	España, Países Bajos, Bélgica, Italia, Canadá
4	EMMY. European Welfare Models and Mental Wellbeing in Final Years of Life	Finlandia, Noruega, España, Italia

5	WELTRANISM. Demographic change and intra and intergenerational distribution: Modelling the impact of different welfare models	España, Austria, Finlandia
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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

WELTRANSIM. 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.	Acrónimo y título del proyecto	Países participantes
1	ACCESS: Supporting digital literacy and appropriation of ICT by older people	Austria, Finlandia, Alemania, Italia, Japón
2	COORDINATES: TeChnology tO suppORT DecisioN making about Ageing aT home	Canadá, Suecia, Países Bajos
3	ORIENT: Use of care robots in welfare services: New models for effective orientation	Finlandia, Alemania, Suecia
4	VoiceAdapt: Voice Adaptive Training for older adults with Aphasia	Austria, Canadá, Alemania
5	MCI@work: Dementia or mild cognitive impairment: @work in progress	Canadá, Finlandia, Suecia

6	HARVEST: eHealth and Ageing in Rural Areas: Transforming Everyday Life, Digital Competences, and Technology	Finlandia, Italia, Suecia
7	BCONNECT@HOME: Being Connected at Home – Making use of digital devices in later life	Canadá, España, Suecia, Países Bajos
8	PAAL: Privacy-Aware and Acceptable Lifelogging services for older and frail people	Canadá, Alemania, Italia, España , Suecia

Convocatoria nacional APCIN 2017

Proyecto 7

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

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

IP: Utrecht University, Países Bajos

Socios: Canadá (Trent University), **España (Universitat Oberta de Catalunya)**, Suecia (Royal Institute of Technology, KTH)

Presupuesto total: 571.032€

Concedido ES: 95.500€

Proyecto 8

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

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

IP: Universidad de Alicante, España

Socios: Canadá (University of Toronto), Alemania (RWTH Aachen University), Italia (Università Politecnica delle Marche), Suecia (Stockholm University)

Presupuesto total: 1.130.679€

Concedido ES: 126.000€

JPI AMR -Joint Programming Initiative on Antimicrobial Resistance

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

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

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

ERA-NET COFUND JPI-EC-AMR

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

Socios: Coordinador Suecia (Vetenskapsrådet Swedish Research Council (SRC), Bélgica (National Fund for Scientific Research (FNRS), Research Foundation Flanders (FWO), Dinamarca (Innovation Fund Denmark (Innofond), Francia (Agence Nationale de la Recherche (ANR), Rumanía (Autoritatea Nationala Pentru Cercetare 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
9	JumpAR. A multi-scale approach to understanding the mechanisms of mobile DNA driven antimicrobial resistance transmission.	Alemania, Suecia, Canadá
10	MACOTRA. Combating MRSA; increasing our understanding of transmission success will lead to better control of MRSA	Países Bajos, Francia, Reino Unido
11	PET-Risk. Risk of companion animal to human transmission of antimicrobial resistance during different types of animal infection	Portugal, Alemania, Canadá, Reino Unido, Suiza
12	PREPARE. Predicting the persistence of resistance across environments	Canadá, Portugal, Dinamarca
13	SpARK. Rates and routes of transmission of multidrug resistant Klebsiella clones and genes into the clinic from environmental sources.	Reino Unido, Italia, Francia, Noruega
14	ST131_ transmission. Escherichia coli ST131: a model for high-risk transmission dynamics of antimicrobial resistance	Canadá, Francia, España , Suiza, Reino Unido
15	STARCS. Selection and Transmission of Antimicrobial Resistance in Complex Systems	Países Bajos, Suecia, España , Francia, Reino Unido, Bélgica
16	TransComp-ESC-R. 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		
17	AWARE-WWTP. Antibiotic Resistance in Wastewater: Transmission Risks for Employees and Residents around Waste Water Treatment Plants	Países Bajos, Suecia, Alemania, Rumanía
18	DARWIN. Dynamics of Antimicrobial Resistance in the Urban Water Cycle in Europe	Dinamarca, Reino Unido, España, Israel

19	Gene-gas. Wastewater treatment plants as critical reservoirs for resistance genes	Suecia, Dinamarca, Noruega
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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 MINECO/AEI	con	3 (1 coordinado)
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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€

Borrador V5

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

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

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

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

CONVOCATORIAS CONJUNTAS DE PROYECTOS

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

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

Convocatoria conjunta internacional 2014

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

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

Convocatoria nacional APCIN 2014

Proyecto 2

FOODBALL. 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 intersection 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 pattern on intestinal permeability in the elderly	Italia, España , Reino Unido

Convocatoria nacional APCIN 2015

Proyecto 3

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

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

IP: Instituto de Productos Lácteos de Asturias-Agencia Estatal Consejo Superior de Investigaciones Científicas (IPLA-CSIC), España.

Socios: **España (Universidad Complutense de Madrid (UCM))**, Irlanda (University College Cork), Italia (Università degli Studi di Parma), Países Bajos (Wageningen University)

Presupuesto total: 1.368.273 €

Concedido ES: 108.000€+85.000€ =193.000€

Proyecto 6

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

The aim of the MaPLE project is to test the hypothesis that altering the diet of elderly subjects with established intestinal permeability (IP) by increasing consumption of polyphenols will cause

beneficial changes in their gut microbiota, IP reduction in and decreased translocation of inflammogenic bacterial factors into the blood, lowering systemic inflammation. Polyphenol-rich diet versus control diet will be assessed in a randomised, controlled cross-over design. Peripheral blood, urine, and faecal samples will be collected before and after each intervention period to evaluate blood bacterial and LPSloads, blood and faecal microbiota composition, short chain fatty acids and polyphenol-derived metabolites, urine metabolites, and markers of inflammation, oxidative stress and endothelial function.

IP: Università degli Studi di Milano, Italia

Socios: **España (Universidad de Barcelona)**, Reino Unido (Institute of Food Research-Norwich)

Presupuesto total: 598.188€

Concedido ES: 118.000€

Convocatoria conjunta internacional 2015

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

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

(*) Financiado en APCIN 2016

Convocatoria nacional APCIN 2015

Proyecto 2

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

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

IP: Central Institute of Mental Health, Alemania

Socios: Alemania (University of Bonn), **España (Universidad de Extremadura)**, Países Bajos (University of Leiden)

Presupuesto total: 957.076€

Concedido ES: 109.000€

Proyecto 3

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

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

IP: King's College London, Reino Unido

Socios: Reino Unido (King's College London), Austria (Paracelsus Medical University), Francia (Université de Bordeaux, INRA), Países Bajos (University of Amsterdam), **España (Universidad de Barcelona)**

Presupuesto total: 1.105.423€

Concedido ES: 122.000€

Convocatoria nacional APCIN 2016

Proyecto 4

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

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

IP: Natascia Ventura, Heinrich Heine University, Alemania

Socios: Alemania (IUF–Leibniz Research Institute for Environmental Medicine), Italia (University of Rome “Tor Vergata”), **España (Centro de Biología Molecular Severo Ochoa- Agencia Estatal Consejo Superior de Investigaciones Científicas (CBMSO-CSIC)**

Presupuesto: 818.600€

Concedido ES: 140.000€

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

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

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

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

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

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

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

Convocatoria conjunta internacional 2016

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

No.	Acrónimo 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	<p>Nutrition & the Epigenome:</p> <ol style="list-style-type: none"> 1. Establishing cause-and-effect relationships between diet, the epigenome and metabolic health 2. Identifying risk factors and early stage epigenetic change 3. Epigenetic effects across the lifespan and inter (and potentially trans) generational epigenetic effects 4. Investigation of modifiable factors that could be involved in epigenetic regulation 5. 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 glycaemic 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.

DIFAMEM 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, DIFAMEM 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.	Acrónimo y título del proyecto	Países participantes
1	DiGuMet. Diet x gut microbiome-based metabotypes 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 metabolites 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 metabolotyping 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 metabolotypes 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	ENDOBESITY. 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

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 early childhood 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 early childhood, 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€



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)

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 farm land 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: 2 (2019, 2020)

Participación de la AEI en convocatorias conjuntas: 2 (2019, 2020)

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	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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€

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
11	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'Élevage), Austria (Universitaet Klagenfurt), Alemania (Bayerische Landesanstalt für 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 (MINTCIT)); 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 (BMBWF), 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)

Participación de MINECO-AEI en convocatorias conjuntas: 3 (2016, 2018; 2019-2)

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. MEmbrane 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 (Université 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 (Technische Universität Darmstadt), Eslovenia (National Institute of Biology)

Presupuesto total: 1.643.000€

Concedido ES: 197.000€

Proyecto 17

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

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

IP: Delft Technical University, Países Bajos

Socios: Francia (CNRS), **España (Instituto de Catalisis y Petroleoquimica-Agencia Estatal Consejo Superior de Investigaciones Científicas (ICP-CSIC)**, Países Bajos (Isobionics BV)

Presupuesto total: 850.000€

Concedido ES: 150.000€

Convocatoria conjunta internacional 2018

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

No.	Acrónimo y título del proyecto	Países participantes
1	MILIMO. Microbial conversion of lignin to monomers for bio-based plastics using synthetic biology	Reino Unido , España, Alemania y Francia.
2	MIPLACE. Microbial integration of plastics in the circular economy	Reino Unido , España, Alemania y Francia
3	SyCoLim. Synthetic microbial communities for the production of limonene derived products	Reino Unido , España, Alemania, Eslovenia
4	SYNBIOGAS. Synthetic landfill microbiomes for enhanced anaerobic digestion to biogas	Reino Unido , Alemania y Francia
5	SynConсор4Butanol. Sustainable Production of n-Butanol by Artificial Consortia Through Synthetic and Systems Biology Approaches	Reino Unido, España, Alemania y Francia

Convocatoria APCIN 2019-2

Proyecto 1

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

IP: University of Warwick, HES, United Kingdom

Socios: University of Stuttgart, HES (Germany), Spanish National Research Council (CSIC), REC, (Spain), Institut National de la Recherche Agronomique (INRA), REC (France), nova-Institut GmbH, SME (Germany), Biome Technologies plc, SME (United Kingdom)

Presupuesto total: 1.149.000€

Concedido ES: 150.000€

Proyecto 2

MIPLACE. Microbial integration of plastics in the circular economy

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

IP: Imperial College London, HES, United Kingdom

Socios: RWTH Aachen University, HES (Germany), Universität Leipzig, HES (Germany), SOPREMA, PRC (France), y University of Valencia, REC (Spain)

Presupuesto total: 1.442.000€

Concedido ES: 149.714€

Proyecto 3

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

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

IP: Imperial College London (RLA) Surrey, HES, United Kingdom

Socios: Imperial College London (GBS), HES (United Kingdom), Charité University Medicine Berlin, HES (Germany), Consejo Superior de Investigaciones Científicas, REC (Spain), Acies Bio d.o.o., SME, (Slovenia)

Presupuesto total: 1.119.000€

Concedido ES: 150.000€

Proyecto 5

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

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

IP: LISBP, INSA, University of Toulouse, HES, France

Socios: University of Nottingham, HES, (United Kingdom), Technical University of Munich, HES (Germany) y Universitat de Girona, HES (Spain)

Presupuesto total: 1.210.000€

Concedido ES: 150.000€

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

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

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

Socios: Coordinador Francia (National Research Agency (ANR), Argelia (Ministry of Higher Education and Scientific Research (MESRS), Bélgica (Belgian Federal Science Policy Office (BELSPO), National Fund for Scientific Research (FNRS), Research Foundation Flanders (FWO), Universite Catholique de Louvain (UCL), Burkina Faso (National Fund For Research And Innovation For Development (FONRID), Camerún (Ministry of Science Research and Innovation (MINRESI), Costa de Marfil (Ministry of Higher Education and Scientific Research (MESRS), Egipto (Ministry of Higher Education and Scientific Research (MHE SR), Finlandia (Academy of Finland (AKA), The University of Jyväskylä (JYU), Francia (Agence Française de Développement (AFD), Center for International Cooperation in Agronomic Research for Development (CIRAD), Research Institute for Development (IRD), Alemania (Federal Agency for Agriculture and Food (BLE), German Aerospace Center (DLR), Ghana (Council for Scientific and Industrial Research (CSIR-GH), Italia (Mediterranean Agronomic Institute of Bari (IAMB), Kenia (The Ministry of Education, Science and Technology (MoEST), Países Bajos (DLO Foundation (DLO), Ministry of Economic Affairs (MinEZ/MinEA), Netherlands Organisation for Scientific Research (NWO), Noruega (Research Council of Norway (RCN), Portugal (Foundation for Science and Technology (FCT), Senegal (Ministry of Scientific Research (MBERRS), Sudáfrica (Department of Science and Technology (DST), National Research Foundation (NRF), Nepad (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 Societies in West Africa	Burkina Faso, Francia , Países Bajos, Senegal
12	MeTVAC. Ecosmart Alternative Control Strategies against <i>T. annulata</i> 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-Saharan Africa	Kenia, Países Bajos, Portugal, Uganda
17	SERVInnov. Strengthening innovation support SERVICES to enhance INNOVations for sustainable food production, ensuring well-being of rural populations and reducing environmental degradation and resource depletion	Burkina Faso, Camerún, Francia , Alemania, Madagascar
18	Food4Cities. Exploring food system transformations in rapidly changing African cities	Bélgica, Países Bajos, Sudáfrica, Uganda
19	SmallFishFood. Small Fish and Food Security: Towards innovative integration of fish in African food systems to improve nutrition	Alemania, Ghana, Kenia, Países Bajos, Noruega , Uganda
20	CASSANDRA. CASSava Sustainable Advancement & Nurturing by discovery of Disease Resistance Alleles	Bélgica, Francia, Kenia, Sudáfrica
21	OPTIBOV. Genetic characterization of cattle populations for optimized performance in African ecosystems	Egipto, Finlandia, Países Bajos, Portugal, Sudáfrica, Uganda
22	MuVHA. Multivalent inactivated vaccine against heartwater in Africa	Benín, Burkina Faso, Francia , Níger, Portugal, Sudáfrica
23	ATMA4FS. Agricultural Trade and Market Access for Food Security: Micro- and Macro-level Insights for Africa	Bélgica, Alemania, Ghana, Países Bajos, Senegal, Sudáfrica
24	Ento-Economy. Enhancing food and nutrition security through promotion of edible insects value chain in Eastern Africa	Bélgica, Alemania, Kenia, Uganda
25	NUTRIFOODS. Innovative approaches to value-addition and commercialization of climate smart crops for enhanced food security and nutrition in Africa and beyond.	Finlandia, Kenia, Países Bajos, Sudáfrica, Uganda
26	SESASA. A Social-Ecological System Approach towards a Sustainable Intensification of Agricultural Production in Sub-Saharan Africa	Burkina Faso, Francia, Alemania, Ghana
27	MycoSafe-South. European–African partnership for safe and efficient use of mycotoxin-mitigation strategies in sub-Saharan Africa	Austria, Bélgica , Etiopía, Kenia, Noruega, Sudáfrica, Reino Unido

Convocatoria nacional APCIN 2018

Proyecto 1

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

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

IP: Instituto de Agricultura Sostenible- Agencia Estatal Consejo Superior de Investigaciones Científicas (IAS-CSIC), España

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

Presupuesto total: 1.105.880€

Concedido ES: 150.000€

Proyecto 2

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

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

IP: Makerere University, Uganda

Socios: Alemania (University of Hohenheim), Kenia (University of Nairobi), Uganda (Daktari,), España (Universidad Autónoma de Barcelona (UAB), Universidad de Navarra (UN), Centro de Investigación y Tecnología Agroalimentaria de Aragón (CITA), CZ Veterinaria)

Presupuesto total: 738.733€

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
11	SUSCHOICE. Towards Sustainable Food and Drink Choices among European Young Adults: Drivers, Barriers and Strategical Implications	Italia , Noruega, Suecia, Alemania, Rumanía
12	PLATEFORMS. 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 Arizmendiarrieta 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€

Borrador V5

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

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

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

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales: 1 (2016)

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

Convocatoria conjunta internacional 2016

Países participantes	Austria; Bélgica; Bulgaria; Dinamarca; Estonia; Finlandia; Francia; Alemania; Italia; Letonia; Países Bajos, Noruega, Polonia; Rumanía; Suiza; España; Eslovenia; Suecia; Turquía
Temáticas	Animal feed; Livestock systems; Organic food processing; Plant production Systems
Presupuesto total	14.705.000€
Presupuesto ES	250.000€
Proyectos aprobados	12
Proyectos con financiación AEI	2

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

Convocatoria APCIN 2018

Proyecto 1

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

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

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

IP: Università Cattolica del Sacro Cuore, Italia

Socios: **España (Universitat Politècnica de València)**, Suiza (Agroscope), Rumanía (Research Station for Viticulture and Enology Murfatlar), Eslovenia (Agricultural Institute of Slovenia), Francia (Institut National de la Recherche Agronomique).

Presupuesto total: 895.400€

Concedido ES: 100.000€

Proyecto 11

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

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

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

IP: Aarhus University, Dinamarca

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

Presupuesto total: 1.327.800€

Concedido ES: 75.000€+75.000€= 150.000€

ForestValue - Innovating forest-based bioeconomy

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

Socios: Coordinador Filandia (Ministry of Agriculture and Forestry (MMM); Argentina (Ministry of Science, Technology and Productive Innovation (MINCYT); Austria (Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW); República Checa (Forestry and Game Management Research Institute (FGMRI), Ministry of Agriculture, Department of Research, Education and Advisory Services (MZE); Egipto (Academy of Scientific Research and Technology (ASRT); Finlandia (Academy of Finland (AKA), Finnish Funding Agency for Technology and Innovation (TEKES), Ministry of the Environment (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	1. Innovative sustainable management of multifunctional forests 2. Innovative industrial production and processing technologies, products, concepts and services
Presupuesto total	21.500.000€
Presupuesto ES	641.324€
Proyectos aprobados	17
Proyectos con MINECO/AEI	5

No.	Acrónimo y título del proyecto	Países participantes
1	AVATAR. Advanced Virtual Aptitude and Training Application in Real Time	Alemania, Noruega, Suecia
2	CLICK DESIGN. Delivering fingertip knowledge to enable service life performance specification of wood	Reino Unido, Canadá, Alemania, Finlandia, Francia, Noruega, Suecia, Eslovenia
3	DynaTTB. Dynamic Response of Tall Timber Buildings under Service Load	Suecia, Francia, Noruega, Eslovenia, Reino Unido
4	FIREWOOD. Improved fire design of engineered wood systems in buildings	Noruega, Suiza, Alemania, Suecia
5	FunEnzFibres. From fundamentals to valorization: Enzymatic oxidation of cellulosic fibres and underlying mechanisms	Finlandia, Austria, Noruega
6	GreenLane. Fast-tracking value and resilience for industrial wood supply	Noruega, Austria, Suecia
7	hardwood_joint. Innovative joints in hardwoods	Alemania, Austria, Francia, Suecia
8	I-MAESTRO. Innovative forest MAnagEment STRategies for a resilient bioeconomy under climate change and disturbances	Francia, Alemania, Polonia, Eslovenia
9	InFuTUReWood. Innovative Design For the Future – Use and Reuse of Wood (Building) Components	Suecia, España, Alemania, Finlandia, Irlanda, Eslovenia, Reino Unido
10	InnoCrossLam. Innovative Solutions for Cross Laminated Timber Structures	Eslovenia, Austria, Alemania, España, Suecia
11	MultiForest. Management for multifunctionality in European forests in the era of bioeconomy	Finlandia, Austria, Alemania, Noruega, Suecia
12	MULTIFOREVER. Towards intensification of conifer production through multi-varietal forestry based on somatic embryogenesis	Francia, Argentina, Alemania, España, Finlandia, Francia, Suecia
13	NOBEL. Novel business models and mechanisms for the sustainable supply of and payment for forest ecosystem services	Austria, Alemania, España, Francia, Noruega, Portugal, Suecia
14	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
16	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 value-added 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	<ul style="list-style-type: none"> • New bio-resources • Improvements in fisheries and aquaculture • Synergies across sectors
Presupuesto total	27.242.000 €
Presupuesto ES	871.880 €
Proyectos aprobados	19
Proyectos con MINECO/AEI	6

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

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

Convocatoria nacional APCIN 2020

Proyecto 3

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

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

IP: Institute of Technology of Agricultural Products, Grecia

Socios: Grecia, Malta, Italia, Irlanda, Alemania, España

Presupuesto Total: 1.493.636 €

Concedido ES: 150.000 €

Proyecto 4

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

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

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

IP: Nord University, Noruega

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

Presupuesto Total: 1.921.854€

Concedido ES: 149.000€

Borrador V5

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: University of Iceland, Faculty of Food Science and Nutrition, Reykjavik, Islandia

Socios: DTU Aqua, Lyngby, Dinamarca; Matis ohf., Food and Biotech R&D, Islandia; Icelandic University Hospital (LSH), Islandia; Università' di Bologna, Dept. of Agricultural and Food Sciences – DISTAL, Italia; Universitat Politècnica de Valencia, Department of Food Technology, España; FF Skagen Magangement, Dinamarca; Síldarvinnslan (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 $\omega 3$ 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: 1 (2020)

Participación de la AEI en convocatorias conjuntas: 1 (2020-2)

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 Autonoma 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 desarrollaran 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 patogenicidad, 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 €



Reto 3: Energía, seguridad y modelos energéticos seguros, sostenibles y eficientes

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
1	1500-SiC. Develop a new photovoltaic Inverter with SiC full power operation at 1500V	España, Austria, Suiza
2	BI-FACE. High-efficiency bifacial PV Modules and Systems for flat roof applications	Austria, Países Bajos
3	CEFRABID. Clean energy from road acoustic barriers infrastructure development	Polonia , España, Austria, Chipre
4	Cover Power. Smart Glass Coatings for Innovative BiPV Solutions	Austria, Suiza
5	ENMESH. 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
12	PANELPV. Sandwich 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 Albero S.A.U), Alemania (Matin-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	<ol style="list-style-type: none"> 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
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1	1C4PV - 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 production	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 Efficient 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 Politecnica 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 QUES 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)

Dynamo 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	6. Advanced industrial PV technologies 7. Emerging PV technologies 8. Building and infrastructure integrated PV 9. Operation, diagnosis and system integration of PV plants 10. 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 stability-related 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: 1 (2019)

Participación AEI en convocatorias conjuntas: 1 (2020-2)

Convocatoria conjunta internacional 2016

Países participantes	Alemania, Grecia, Israel, España (CDTI + AEI + Agencia Extremeña de la Energía AGENEX), Italia, Portugal, Suiza y Turquía.
Temáticas	<ol style="list-style-type: none"> 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 2018

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 ES149.000€+199.000€

Proyecto 4

EUROPATMOS. European parabolic trough with molten salt. EuroPaTMoS pulls together the European expertise and testing infrastructure for parabolic trough (PTC) with molten salt (MS), to accelerate transfer of technology from R&D to commercial deployment. Two leading European CSP companies (TSK Flagsol and Rioglass Solar) join forces with three SMEs providing risk assessment and quality assurance services (CSP Services GmbH), quality assurance equipment and measurement services (CSP Services España), electrical scope and operating teams for CSP (Ductolux) to develop a selling proposition with reduced risk and competitive cost.

IP: Deutsches Zentrum für Luft- und, Alemania

Socios: Deutsches Zentrum für Luft- und Raumfahrt EV, CSP Services GmbH, DUCTOLUX, S.L. (DUCTOLUX) R&D, Italian National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA) Energy Technologies Department, Rioglass Solar SCH S.L. TSK Flagsol Engineering GmbH, Universidad Complutense de Madrid (UCM). Chemical and Materials Engineering, Universidad de Extremadura (UEX) Mechanical, Energetic and Materials Engineering, University of Évora (UEVORA) Renewable Energies Chair, CSP Services España, S.L. Presupuesto total: 3.404.387€
Concedido ES: 138.930€ + 149.700€

Proyecto 5

NEWCLINE. Advanced thermocline concepts for thermal energy storage for csp. Hermocline is a cost efficient thermal storage system able to reduce capital costs up to 40%. The objective of this project is to develop new thermocline concepts that can be applicable to different csp plants (pt, cr, lf). Two different, but complementary, concepts related to the materials (media) are proposed. The first concept involves the use of innovative structured ceramic filler refractories. The other is an innovative combination of solid filler material (the ceramic one is the preferred option) with specially selected encapsulated phase change material (pcm) located at the top and bottom regions of the tank (multi-layered thermocline concept with pcm and filler). Both concepts will be experimentally tested in a lab-scale set up, where attention is focused on the analysis of the relevant thermal and fluid dynamic aspects that characterize the new packed bed. The two concepts will also be experimentally tested at relevant pilot scale of 4 mwh with at least 50 charge/discharge cycles.

Detailed simulation of both concepts will be mainly validated with the experimental data generated in this project. based on the simulation tools already developed by the partners, both concepts will be evaluated and optimized in terms of system integration and lcoe savings on a csp system level and up-scaling for CSP target applications.

IP: Universitat Politècnica de Catalunya, España

Socios: Universitat Politècnica de Catalunya- BarcelonaTech (UPC) Máquinas y Motores Térmicos, German Aerospace Center (DLR) Institute of Engineering Thermodynamics, University of Applied Sciences Rapperswil (HSR) Institute for Solar Technology (SPF), NEBUMA GmbH KRAFTBLOCK, Empresarios Agrupados. Presupuesto total: 2.453.130€
Concedido ES: 248.830€

Proyecto 6

SI-CO. High performance parabolic trough collector and innovative silicone fluid for csp power plants. The Si-CO project aims to techno-economically demonstrate a new optimized and large-scale parabolic trough collector (Si-PTC) design that operates using HELISOL®XLP at 430°C, a siliconebased heat transfer fluid (Si-HTF). This project also pursues to demonstrate and evaluate the exchange of this Si-HTF in existing power plants. The combination proposed (Si-PTC + Si-HTF), enables a cost reduction in the solar field, HTF and TES CAPEX of 12% and a 14% in OPEX for new solar plants.

The technology proposed will enhance the annual energy production of a commercial PTC plant by 7.5% and the global capacity factor by 2%. Altogether, this translates in a LCOE reduction of up to 15%. Furthermore, the exchange application of the Si-HTF in existing plants, designed for an operation T of 400°C, has the potential to fix the H2 permeation issues because HELISOL®XLP shows almost zero formation at 400°C. After the HTF exchange, the use of HELISOL®XLP will avoid any future H2-HCE issues increasing its performance while prolonging its service time and reducing power plant down time, presenting clear O&M and environmental advantages for

existing plants even if they can't operate at 430°C. This also applies to new power plants with higher working T.

Therefore, Si-CO pursues the 2 independent actions above mentioned, both based on the new HELISOL®XLP, which has additional cost reduction and better performance potential with respect to the other 2 commercial existing HELISOL®XLPgrades, because it has a lower vapour pressure during operation and can be operated at 430°C. The Si-CO project stands in a row with three international demonstration projects (SING, SITEF, SIMON) that successfully established Si-HTF as a very promising alternative with respect to the state-of-the-art HTF.

IP: ACCIONA INDUSTRIAL S.A. España

Socios: ACCIONA INDUSTRIAL S.A., Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR) Solarforschung, WACKER Chemie AG Silicones, Rioglass Solar Systems LTD. R&D, THERMAL POWER ENGINEERING SL, Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT) Plataforma Solar de Almería, Rioglass Solar SCH S.L., Senior Flexonics GmbH

Presupuesto total: 3.375.589€

Concedido ES: 200.000€



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:	ES-	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
Financiación MINECO: 265.000€
2. IP: Fundacio Privada Institut Catala de Ciencies del Clima
Financiación MINECO: 88.000€
3. IP: Universidad de las Islas Baleares
Financiación MINECO: 120.000€
4. IP: (Centro de Investigación Energética Medioambiental y Tecnológica (CIEMAT)
Financiación MINECO: 150.000€
5. IP: Universidad Complutense de Madrid (UCM)
Financiación MINECO: 85.000€
6. IP: Universidad Complutense de Madrid (UCM)
Financiación MINECO: 86.000€
7. IP: Barcelona Supercomputing Center
Financiación MINECO: 107.000€

Convocatoria nacional APCIN 2016

Proyecto 1

1. IP: Universidad Complutense de Madrid (UCM)
Financiación MINECO: 45.000€
2. IP: Barcelona Supercomputing Center- Centro Nacional de Supercomputación
Financiación MINECO: 94.000€
3. IP: Universidad Complutense de Madrid (UCM)
Financiación MINECO: 45.000€
4. IP: Centro de Investigación Energética Medioambiental y Tecnológica (CIEMAT)
Financiación MINECO: 65.000€

Proyecto 2

1. IP: Universidad de las Islas Baleares
Financiación MINECO: 7.000€
2. IP: Fundación CENER-CIEMAT
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
1	Segrabilio. Develop and demonstrate the production of bio-ethanol and biogas from second grade and low cost biomass	Dinamarca, Suecia
2	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.	España, Reino Unido
3	Phoenix. Development of port injection of gas engines to provide a novel approach to power generation from syngas 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 Alcudia, 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: 2017, 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 CO2 leakage along fractures in caprocks using an integrated monitoring and hydro-mechanical - chemical approach	Países Bajos, Alemania, Reino Unido
5	ECO-BASE. Establishing CO2 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 CO2 storage - Accelerating CCS Technologies	Noruega, Reino Unido, Alemania, Países Bajos

Convocatoria nacional APCIN 2017

Proyecto1

GasTech. Demonstration of Gas Switching Technology for Accelerated Scale-up of Pressurized Chemical Looping Applications

The GaSTech project will accelerate the development of gas switching technologies by developing a business case for further technology scale-up.

The business case will have two main components: lab-scale demonstration (TRL 4) of gas switching reactor concepts; and large-scale technology implementation studies to evaluate the techno-economic feasibility of process concepts incorporating gas switching reactors.

IP: Shahriar Amini, SINTEF, Noruega

Socios: Noruega (Norwegian University of Science and Technology NTNU), Países Bajos (Euro Support Advanced Materials B.V.), Alemania (Technische Universität Hamburg TUHH), Rumanía (Universitatea Babeş 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 CO2 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 CO2 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 CO2 storage operations	Noruega , Francia, Países Bajos, Rumanía y Reino Unido
10	SUCCEED. Synergetic Utilisation of CO2 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 CO2	Reino Unido , Francia, España, Países Bajos
12	SENSE. Asegurar la integridad de los lugares de almacenamiento de CO2 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 CCS 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 Geológico y Minero de España (IGME) Y Fundación Ciudad de la Energía), 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€



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

BiodivScen tiene como objetivo promover y apoyar la investigación internacional coordinada sobre escenarios de biodiversidad y servicios ecosistémicos. Reforzaré 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 (MINCYT); 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), 2020-2

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	<ul style="list-style-type: none"> • 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.	Acrónimo 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	Noruega, Finlandia, Suecia, Estados Unidos

	monitoring schemes to model impacts of global change scenarios	
20	GloBAM. Towards monitoring, understanding and forecasting global biomass flows of aerial migrants	Suiza, Bélgica, Finlandia, Países Bajos, Estados Unidos
21	OBSErv. 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. SECBIVIT 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. SECBIVIT 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 interacionales s: 1 (2019)

Participación de AEI en convocatorias conjuntas: 12 (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
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No.	Acronimo 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, Cánada, 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€

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 (MESC/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 interacionales s: 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:	<ol style="list-style-type: none"> 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
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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 enviroNmentalL 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-oflife 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 enviroNmentalL issuEs

Antimony (Sb), a critical metal for Europe strategic for the European (EU) aircraft industry & battery manufacturing plants, is widely used in industrial operations. Its most promising use may be for rechargeable Li- & Na-ion batteries. The project is based on disruptive concepts: i) new 3D large-scale metallogenic model integrating deep-seated processes to determine the spatial distribution of ore deposits; ii) the use of mineral prospectivity data weighted by surface data to determine the probability of environmental risk over large areas. Despite a high EU potential, the knowledge on Sb remains poorly constrained. EU remains under the threat of the Chinese supply. In parallel, metalloids (Sb, As, Hg) of geogenic origin are recognised as a global threat for human health. Then, a large-scale identification of these areas should be a priority. In this 3 year project, it will produce i) a new 3D metallogenic model that will contribute to the understanding of the mineralising processes; ii) a new understanding of surface processes that control the mobilisation & transport of metalloids; iii) a new large-scale mineral prospectivity and iv) a new large-scale environmental risk assessment by weighting mineral prospectivity with earth surface properties. The consortium of 4 leading research entities from 3 EU countries in the field of ore genesis and environmental risk assessment is completed by the Antea Group, whose core business is the analysis and quantification of environmental risk. The expected outcomes will result in high impact deliverables devoted to the targeting of new Sb deposits and a new large-scale environmental assessment maps for decision-making dealing with human health. Long term expected impacts would be an increase of EU Sb resources & sustainable supply. The

project will provide new results to the SCREEN, IMP@CT, FRAME projects and will interact with consortiums about electromobility such as the EU Lithium Institute and the EU Battery Alliance.

IP: Bureau de Recherches Géologiques et Minières, Francia

Socios: Francia (Institut des Sciences de la Terre d'Orléans (ISTO), Antea Group), España (Universidad de Castilla-La Mancha), Portugal (University of Porto – FCUP)

Presupuesto total: 454.122€

Concedido ES: 98.000€

Proyecto 4

SbRECMEMTEC. Electro-electrodialysis technology on the copper minerals processing industry to the recovery of antimony from mining tailings and recycling the solution media

The main objective of Sb-RECMEMTEC project is the recovery of antimony (Sb), a Critical Raw Material, from wastes and effluents generated during the pyro- and hydrometallurgical processing of copper (Cu) using membrane separation processes (MSP): electrodialysis (ED) and electro-electrodialysis (EED). While Sb is of fundamental importance to newly developed technologies, it is generally obtained as a by-product of other metallic ores. Therefore, the current and future supply of Sb depends not only on Sb production, but also on the efficient recovery of other primary ores. Sb-RECMEMTEC will address the challenging subject of applying MSP in the processing of Cu-low-grade mining tailings and of Cu-sulphide minerals, not only to concentrate/purify the electrolytes, but also to recover Sb and acid solutions. ED/EED processes will be studied, using the circular economy approach, to the primary Cu-production, avoiding Sb losses and minimizing the generation of effluents. Sb-RECMEMTEC consortium consists of a multidisciplinary team, bringing together 5 partners from 3 countries (Chile, Brazil and Spain). Wastewaters, containing, besides Cu, elements of added-value, such as Sb, will be managed by the company TRANSDUCTO (Chile), being characterized by the USACH group (Chile). ED/EED processes will be evaluated with commercial membranes and with membranes produced at FEEVALE (Brazil). The UPV group (Spain) will carry out the scientific studies of the Sb electrorecovery on different cathodes and the characterization of the ion transport through the membranes provided by FEEVALE. The group of UFRGS (Brazil) will be responsible for performing small-scale pilot studies of ED/EED in order to demonstrate its feasibility for recovering acid solutions and Sb. USACH and TRANSDUCTO will incorporate the results obtained to implement a new production process. A high enhance innovation capacity is expected, since a new process will be incorporated directly on the copper line production.

IP: Universidade Federal do Rio Grande do Sul, Brasil

Socios: Brasil (ASPEUR / Feevale), Chile (Universidad de Santiago de Chile, Transducto S.A.), España (Universitat Politècnica de Valencia)

Presupuesto total: 577.900€

Concedido ES: 141.000€

JPI OCEANS - JPI Healthy and Productive Seas and Oceans.

El objetivo de JPI Oceans es aunar esfuerzos para fomentar la cooperación y la coordinación trans-nacional 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: 12 (2015, 4 en 2018, 2 en 2019, 4 en 2020 y 2 en 2021) Participación de MINECO/AEI en convocatorias conjuntas: 2 (2014, 2019)

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. Direct and indirect ecotoxicological impacts of microplastics on marine organisms	Noruega, Alemania, Francia, Países Bajos, Suecia, Italia, Portugal, Irlanda, Bélgica, Reino Unido
4	WEATHER-MIC. How microplastic weathering changes its transport, fate and toxicity in the marine environment	Alemania, Noruega, Suecia, Bélgica

Convocatoria nacional APCIN 2015

Proyecto 1

BASEMAN. Defining the baselines and standards for microplastics analyses in European waters.

The ubiquitous presence and massive accumulation of microplastics in marine habitats and the uptake of microplastics by various marine biota is now well recognized by scientists and authorities worldwide. BASEMAN teams experienced scientists (from different disciplines and

countries) to undertake a profound and detailed comparison and evaluation of all approaches from sampling to identification of microplastics. BASEMAN deploys cutting-edge approaches to tackle the two major themes of the call: 1) “The validation and harmonisation of analytical methods” which is indispensable for 2), the “Identification and quantification of microplastics”.

IP: Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research, Alemania

Socios: Alemania (GEOMAR, University of Oldenburg, University of Bayreuth), Noruega (Norwegian Institute for Water Research, Norwegian Institute of Air Research, The National Institute of Nutrition and Seafood Research), Francia (University of Maine, CNRS-LOV), Portugal (NOVA.ID FCT, Instituto Português do Mar e da Atmosfera), Irlanda (Galway-Mayo Institute of Technology), Italia (CNR-IAMC, OGS- National Institute of Oceanography and Experimental Geophysics), **España (Instituto Español de Oceanografía, Universidade da Coruña)**, Suecia (University of Gothenburg, The National Institute of Nutrition and Seafood Research).

Concedido ES: 125.000 € + 125.000 € = 250.000 €

Proyecto 2

EPHEMARE. Ecotoxicological effects of microplastics in marine ecosystems.

The project targets (1) the uptake, tissue distribution, final fate and effects of microplastics in organisms representative of pelagic and benthic ecosystems, and (2) the potential role of microplastics as vectors of model PPs that readily adsorb to their surfaces.

IP: Universidad de Vigo, España

Socios: **España (Instituto Español de Oceanografía (IEO), Universidad de Murcia)**, Francia (University of Bordeaux, IFREMER), Alemania (University of Heidelberg), Bélgica (University of Antwerp), Portugal (Interdisciplinary Centre of Marine and Environmental Research, University of Algarve), Italia (Marche Polytechnic University, National Research Council), Suecia (University of Örebro), Noruega (University of Oslo), Irlanda (University College Cork).

Concedido ES: 100.000 € + 60.000 € + 140.000 € = 300.000 €

CONVOCATORIA CONJUNTA 2019

Países participantes	Bélgica, Francia, Noruega, Malta, Suecia, Alemania, España Portugal, Italia, Brasil, Alemania, Irlanda, Estonia, Dinamarca
Temáticas	1.Sources of microplastics 2.Methods for identifying smaller micro- and nanoplastics 3.Monitoring their circulation in marine systems and their effects on marine organisms
Presupuesto total	10.500.000€
Concedido ES	650.000 €
Proyectos aprobados	6
Proyectos con financiación AEI	4 (1 proyecto coordinado)

Nº	Acrónimo y título del proyecto	Países participantes
1	ANDROMEDA. Analysis techniques for quantifying nano-and microplastic particles and their degradation in the marine environment	Francia, Bélgica, Noruega, Malta, Suecia, Alemania, España
2	HOTMIC. Horizontal and vertical oceanic distribution, transport and impact of microplastics.	Alemania, Bélgica, Dinamarca, Irlanda, Italia, Portugal
3	I-PLASTIC. Dispersion and impacts of micro- and nano-plastics in the tropical and temperate oceans: from regional land-ocean interface to the open ocean	España, Portugal, Italia, Brasil
4	FACTS. Fluxes and Fate of Microplastics (MP) in Northern European Waters.	Dinamarca, Alemania, Italia, Noruega, Suecia
5	MICROPLASTIX. Integrated approach on the fate of MicroPlastics (MPs) towards healthy marine ecosystems	Suecia, Brasil, Francia, Alemania, Irlanda, Italia, España
6	RESPONSE. Toward a risk-based assessment of microplastic pollution in marine ecosystems	Italia, Estonia, Francia, España, Dinamarca, Portugal, Irlanda, Noruega, Suecia, Alemania, Bélgica

Convocatoria nacional APCIN 2020

Proyecto 1

ANDROMEDA. Analysis techniques for quantifying nano-and microplastic particles and their degradation in the marine environment

Current methods for microplastic (MP) analysis can be divided into low-cost versus more advanced methods. ANDROMEDA recognizes that further development and validation is needed for both approaches. Low-cost methods are needed that can identify a broad range of MP polymers with acceptable accuracy. Advanced methods need further development in order to push the limit of detectability for smaller sizes of MP and nanoplastics (NP) and improve their ability to analyze MP types that are currently difficult to analyze by microspectroscopy.

Moreover, to study plastic degradation mechanisms over a reasonable time frame, lab-based accelerated degradation approaches are required that mimic natural fragmentation and additive chemical leaching. Within ANDROMEDA, in situ MP detection, efficient sampling and cost-effective laboratory methods will be developed and optimized to analyze MP. Approaches will be based on hyperspectral imaging, chemical markers and fluorometric detection techniques. Advanced analysis techniques making use of μ FTIR, Raman imaging and SEM-EDX

(amongst others) will be applied to quantify and characterize MP and NP down to 1 μm , 0.2 μm or lower. Specific tasks will focus on challenging types of MP such as microfibers, tire wear particles (TWPs) and paint flakes. UV, hydrolytic and thermo-oxidative methods to study accelerated plastic degradation at the lab-scale will be developed and used to prepare partially degraded reference materials.

Comprehensive degradation studies will be conducted to study in detail the mechanisms of UV and microbial degradation, as well as to investigate the influence of parameters such as temperature, pH and hyperbaric pressure, where attention will be paid to additive chemical leaching. Quality assurance will be a central theme in all aspects of the project. Partners specialized in dissemination, communication and data management will ensure strong stakeholder involvement and efficient outreach of the project results.

IP: Université d'Aix-Marseille. Institut Méditerranéen d'Océanologie. Marsella, Francia

Socios: Bélgica, Francia, Noruega, Malta, Suecia, Alemania, España

Presupuesto: 2.619.000€

Concedido ES: 150.000 €

Proyecto 3

I-PLASTIC. Dispersion and impacts of micro- and nano-plastics in the tropical and temperate oceans: from regional land-ocean interface to the open ocean

Recently the acceleration of “smaller plastic” pollution has increased the need to develop novel collaborative tools for synergistic problems affecting coastal and oceanic ecosystems. One of the main hurdles is the lack of standardized, comparable and integrated information on smaller (micro- and nano-) plastic pollution (including plastic fragmentation, abundance and microplastic/nanoplastic sources, regional hotspots of accumulation, and transport at the land-sea interface). The i-plastic project aims to assess the dispersion and impacts of micro- and nano-plastics in the tropical and temperate oceans, from the regional land-ocean interface to the open ocean. We will quantify the seasonal transport and dispersion in three selected estuaries (hotspots of plastic sources) and adjacent coastal waters and shorelines under distinct flow and climate regimes (i.e., tropical and temperate systems). In-situ monitoring will be performed in the selected system of the eastern and western Atlantic Ocean and Mediterranean Sea. The impacts on distinct commercially valuable species (as part of the human diet) from the target regions will be addressed through in-situ observations and laboratory experiments. New approaches will be implemented to detect and characterize nanoplastics in environmental matrices (i.e.: water, short-term sediment trap, sediment and biota) and ascertain processes of macroplastic fragmentation. Finally, the data generated during the i-plastic project will be used to feed regional models for the dispersion of micro- and nano-plastics, which in turn will be used to elaborate a model of their dispersion at the Atlantic scale. In this context, the i-plastic project will provide missing knowledge concerning the fate of plastics in the ocean and the effects of smaller plastics on the ecosystems of different areas worldwide, by making projections to understand the impacts and dispersion of micro and nano-plastics in the next decades of the Anthropocene.

IP: Catalan Institution for Research and Advanced Studies (ICREA), Institute of Environmental Sciences and Technologies (ICTA), Autonomous University of Barcelona (UAB) Universitat Autònoma de Barcelona. España

Socios: Portugal, Italia, Brasil

Presupuesto: 929.000 €

Concedido ES: 185.000 €

Proyecto 5

MICROPLASTIX. Integrated approach on the fate of MicroPlastics (MPs) towards healthy marine ecosystems

Once a promising material for the future, plastic has exponentially become an environmental threat with ubiquitous distribution. The UN and the G7 have recognised marine litter and microplastic pollution to have negative effects on aquatic ecosystems and, potentially, on human health. Despite the scientific progress in this field so far, researchers are only starting to unveil the tip of the iceberg. After being released in the marine environment, plastics undergo weathering and biofouling processes shaped by environmental conditions that lead to the fragmentation of larger items into microplastics (MPs). These increase the difficulty of accurately estimating abundances and polymer types in aquatic ecosystems.

MicroplastiX aims to overcome knowledge gaps concerning MP weathering, degradation and fragmentation processes. MicroplastiX distinctively develops a holistic approach combining field data with laboratory experiments; deploys a comprehensive quality assurance scheme; evaluates MP interaction with biota (including release of plastic chemicals and sorbed pollutants); creates an inventory of colonization taxa; assesses horizontal and vertical transport, gradients and temporal distribution, all which will contribute to advanced multiscale models to predict fate and pathways.

An experienced research team from several countries and diverse backgrounds will study a wide geographical area of ecologic and economic relevance, including Brazil, France, Germany, Ireland, Italy, Spain and Sweden (including two regions of upwelling, which is a novelty). Efforts for a synergistic collaboration ensure successful achievement of scientific objectives. MicroplastiX will thus contribute to the UN Sustainable Development Goals towards healthy and sustainable marine ecosystems and its results will potentially serve as benchmark guidelines for future work on MPs dynamics in the Atlantic Ocean and Mediterranean Sea, while complying with European and international policies.

IP: Royal Institute of Technology (IKTH), Suecia

Socios: Suecia, Brasil, Francia, Alemania, Irlanda, Italia, España

Presupuesto: 2.698.000€

Concedido ES: 146.000€

Proyecto 6

RESPONSE. Toward a risk-based assessment of microplastic pollution in marine ecosystems

RESPONSE integrates expertise on oceanography, environmental chemistry, ecotoxicology, experimental ecology and modelling to answer key research questions on fate and biological effects of microplastics (MPs) and nanoplastics (NPs) in marine ecosystems. Hydrological transport dynamics will identify possible accumulation zones in European coastal ecosystems, while characterization of vertical distribution of MPs and NPs in the water column and sediments will optimise practical monitoring and sampling efforts. Links between oceanographic conditions, environmental distribution of MPs and NPs, trophic transfer and impact on pelagic food webs and benthic communities will be addressed by analysing their abundance and typologies in representative marine species, as well as relevant ecosystem functions and services. Innovative mesocosm and laboratory studies will validate weighting factors and toxicological thresholds for MPs and NPs. The approach will assess the role of size, shape and other polymer characteristics in modulating biological effects of particles, both alone and in combination with other environmental stressors. A technological Smart Hub, combining complementary instrumental facilities and expertise of some partners and external companies, will support analytical needs of the consortium and further methodological developments. The overall aim of RESPONSE is to develop a quantitative Weight Of Evidence (WOE) model for MPs and NPs in the marine environment. The model will be designed to integrate and differentially weight data from a suite of lines of evidence, including (1) the presence of MPs and NPs in water

column and sediments, (2) their bioavailability and bioaccumulation in key indicator species from benthic and planktonic communities (3) sublethal effects measured via biomarkers, (3) the onset of chronic adverse effects at the organism level, and (4) ecological functioning. The results will provide support for development of MSFD monitoring strategies.

IP: Polytechnic University of Marche - Ancona, Italia.

Socios: Italia (Università Politecnica delle Marche), Estonia (TAL-TECH), Francia (Université de Bordeaux), España (Universida de Vigo), Dinamarca (Danmarks Tekniske Universitet), Portugal (Universidade do Algarve), Francia (Ifremer), Portugal (CIIMAR), Italia (CNR IAS), Noruega (Universitetet i Oslo), Suecia (Örebro Universitet), Alemania (Universität Meidelberg), Bélgica (Universiteit Antwerpen), Irlanda (University College Cork)

Presupuesto: 2.633.000€

Concedido ES: 140.000€

Borrador V5

JPI WATER - JPI Water challenges for a changing world

La Iniciativa de Programación conjunta 'Water Challenges for a Changing World' (the Water JPI) tiene como objetivo abordar el ambicioso desafío de "Lograr sistemas de agua sostenibles para una economía sostenible en Europa y en el extranjero".

Se han identificado desafíos específicos en los dominios económico, ecológico, social y tecnológico. Los objetivos abordan la necesidad de una mayor coordinación en la investigación, el desarrollo y la innovación europeos y abordan temas como la participación de los usuarios, el logro de objetivos en el uso coordinado de fondos y el progreso en la integración de las agendas y actividades de I+D+I. Las preguntas de investigación se reparten en cinco ejes:

- mantener la sostenibilidad del ecosistema;
- desarrollar sistemas de agua segura para los ciudadanos;
- promover la competitividad en la industria del agua;
- implementar una bio-economía basada en el uso inteligente del agua;
- cerrar la brecha del ciclo del agua.

Coordinador: España (MINECO)

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número de convocatorias conjuntas: 3 (2013, 2014 y 2017)

Participación de MINECO en convocatorias conjuntas: 3 (2013, 2014 y 2017)

Convocatoria nacional APCIN 2013

Proyecto 1

METAWATER. New metagenomics and molecular based tools for European scale identification and control of emergent microbial contaminants in irrigation water.

Irrigation water may be the source of microbiological contamination of fresh vegetables and has been associated to important food-borne epidemics of gastroenteritis, acute hepatitis and other important diseases. The proposed project will investigate what pathogenic microorganisms are contaminating irrigation water used in Europe, where are there they coming from, what treatments are more useful for removing microbial pathogens from reclaimed water and how to improve management of irrigation water and National and International regulations.

IP: Universidad de Barcelona, España.

Socios: **España (Universitat Rovira i Virgili, Universitat Politècnica de Valencia)**, Alemania (Bavarian Health and Food Safety Authority, Technische Universität München), Chipre (State General Laboratory of Cyprus), Dinamarca (Technical University of Denmark)

Concedido ES: 248.000€+ 50.000€+100.000€ = 398.000€

Proyecto 2

MOTREM. Integrated processes for MOntoring and TReatment of EMerging contaminants for water reuse

The MOTREM project focuses on the development of integrated processes for monitoring and treatment of emerging contaminants (ECs), improving the efficiency of the removal of these pollutants in urban wastewater treatment plants (WWTPs), especially for water reuse. For this goal, the project combines cross- and multi-disciplinary expertise on water treatment processes

design and engineering, analytical chemistry and ecotoxicology applied to ECs that guarantee the generation not only on new scientific knowledge but also of innovative commercial solutions to the market.

IP: Universidad Rey Juan Carlos (URJC), España

Socios: **España (FCC Aqualia S.A, Bruker Española)**, Alemania (Universität Stuttgart), Finlandia (University of Helsinki), Italia (Università di Torino)

Concedido ES: 225.000€

Proyecto 3

PERSIST. Fate and PERSISTence of emerging contaminants and MRB in a continuum of surface water groundwater from the laboratory scale to the regional scale

The project aims to increase our knowledge on the behaviour of a selection of targeted pharmaceutical products and multi resistant bacteria in both surface water and groundwater bodies. The study will be carried out at two complementary hydrogeological field sites, in Spain, the Empordà basin, and in France, the Vistrenque basin, chosen for their complementarities.

IP: La Salle, University of Nîmes, Francia

Socios: **España (Fundació Institut Català de Recerca de l' Aigua)**, Alemania (Helmholtz Zentrum München)

Concedido ES: 136.000€

Proyecto 4

PROMOTE. PROtecting water resources from MOBILE TracE chemicals

PROMOTE focuses on persistent, mobile organic contaminants (PMOC). PMOC are highly polar compounds and as such likely to occur in the water cycle and in raw waters used for drinking water production. PROMOTE follows two strategies to identify and monitor PMOC: (a) developing and applying analytical methods for screening of water samples for PMOC and (b) selection and prioritization of candidate substances based on REACH data and developing analytical methods for their quantitative analysis.

IP: Helmholtz Centre for Environmental Research (UFZ), Alemania

Socios: Alemania (Fresenius University of Applied Sciences, Federal Environment Agency), **España (Universidade de Santiago de Compostela)**, Francia (Institut de Chimie des Milieux et Matériaux de Poitiers), Noruega (Norwegian Geotechnical Institute), Países Bajos (University of Amsterdam).

Concedido ES: 162.000€

Proyecto 5

StARE. Stopping Antibiotic Resistance Evolution

StARE will investigate a large number of European urban wastewater treatment plants (UWTPs) to evaluate ARB&G abundance versus chemical contamination and regional backgrounds. Guidelines for ARB&G (Antibiotic Resistant Bacteria & Genes) monitoring in water will be developed. The efficiency, impact and cost-effectiveness of advanced wastewater technologies will be evaluated, based on an innovative biological risk control strategy. This will integrate chemical and biological contaminants, such as priority hazardous substances, pathogenic bacteria and viruses, ARB&Gs, and mobile genetic elements.

IP: Universidade Católica Portuguesa, Portugal

Socios: Portugal (University of Aveiro), Finlandia (University of Helsinki), Chipre (University of Cyprus), **España (Fundació Institut Català de Recerca de l' Aigua, Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC))**, Noruega (Norwegian School of Veterinary Science), Alemania (Technische Universität Dresden), Irlanda (National University of Ireland).

Concedido ES: 115.000€ + 183.000€ = 298.000€

Proyecto 6

TRACE. Tracking and assessing the Risk from Antibiotic resistant genes using Chip technology in surface water Ecosystems

TRACE will develop detection technologies that allow for a simpler on-site detection of antibiotic resistance, thereby enabling a much higher throughput and faster result-to-user turnaround.

IP: Leibniz Institute of Photonic Technology Jena, Alemania

Socios: Alemania (Food GmbH Jena Analytik-Consulting Jena), Portugal (Universidade Nova de Lisboa), Irlanda (University College Dublin), Italia (Sapienza University of Rome), **España (Fundació Institut Català de Recerca de l' Aigua).**

Concedido ES: 150.000€

CONVOCATORIA CONJUNTA INTERNACIONAL 2014 (Cofinanciada por la UE)

En el marco de la ERA-Net COFUND WaterWorks 2014

Países participantes	
Temáticas	Research and Innovation for Developing Technological Solutions and Services: for Water Treatment, Reuse, Recycling and Desalination for Water Resources Management; Mitigate Impacts of Extreme Events (Floods and Droughts) at Catchment Scale.
Presupuesto total	11.350.000€
Concedido ES	1.500.000€
Proyectos aprobados	16
Proyectos financiados por AEI	12 (5 proyectos coordinados)

No.	Acrónimo y título del proyecto	Países participantes
1	ACWAPUR Accelerated water purification during artificial recharge of aquifers - a tool to restore drinking water resources	Dinamarca, Italia, España, Suecia
2	Biorg4Waste WaterVal+ Bioorganic novel approaches for food processing waste water treatment and valorisation: Lupanine case study	Portugal, Chipre, Italia, España
3	DESERT Low-cost water DEsalination and SENsoR Technology compact module	Italia, España, Bélgica
4	DOMINO Dikes and Debris Flows Monitoring by Novel Optical Fiber Sensors	Italia, Países Bajos, España
5	IMDROFLOOD Improving Drought and Flood Early Warning, Forecasting and Mitigation using real-time hydroclimatic indicators	España, Estonia, Moldavia, Portugal, Rumanía, Sudáfrica
6	INXCES. INnovations for eXtreme Climatic Events	Noruega, Suecia, Países Bajos, Rumanía
7	IRIDA Innovative remote and ground sensors, data and tools into a decision support system for agriculture water management	España, Italia, Noruega, Rumanía
8	MEPROWARE Novel methodology for the promotion of treated wastewater reuse for mediterranean crops improvement	Italia, Portugal, España
9	MUFFIN. Multi-Scale Urban Flood Forecasting: From Local Tailored Systems to a Pan-European Service	Suecia, Países Bajos, Finlandia

10	PROGNOS. Predicting In-Lake Responses to Change Using Near Real Time Models	Suecia, Irlanda, Dinamarca, Noruega, Israel
11	Pioneer_STP The Potential of Innovative Technologies to Improve Sustainability of Sewage Treatment Plants	España , Dinamarca, Italia, Suecia
12	SIM Smart irrigation from soil moisture forecast using satellite and hydro meteorological modelling	Italia , China, Países Bajos, España
13	STEEP STREAMS. Solid Transport Evaluation and Efficiency in Prevention: Sustainable Techniques of Rational Engineering and Advanced Methods	Italia, Suecia, Portugal
14	TH.E.R.BIO.R Thermal energy recovery from a novel sequencing batch biofilter granular reactor	España , Dinamarca, Italia
15	Watintech Smart decentralized water management through a dynamic integration of technologies.	España , Dinamarca, Italia, Portugal
16	WE-NEED WatEr NEEDs, availability, quality and sustainability	Italia , Israel, Portugal, España

Convocatoria nacional APCIN 2015 – 2

Proyecto 1

ACWAPUR: Accelerated water purification during artificial recharge of aquifers - a tool to restore drinking water resources

Water is essential for life, not only for direct consumption, but also for sanitary requirements, and for agricultural and industrial production. Pure drinking water is a limited resource and the demand for water is increasing globally due to human population growth, increased wealth, and climate change. Development of efficient and cost-effective techniques for water purification and reuse is therefore urgent. Artificial recharge of aquifers is an often used technique to replenish deficient water resources. Water being insufficient for drinking water is infiltrated via basins or surface spreading through soils and aquifer sediment thereby improving the water quality. Although artificial recharge has been used for decades, the technique is often operated as a black box without knowledge of the microorganisms and the metabolic processes and pathways involved. ACWAPUR aims at developing techniques, steering tools and management guidelines to prevent leaching of pathogens, inorganic nutrients and organic pollutants to underlying aquifers during artificial recharge processes. This will be achieved by the construction of advanced treatment membranes with a porosity that prevent leaching of pathogens and at the same time provide optimal conditions for microbial degradation processes.

IP: Geological Survey of Denmark and Greenland, Dinamarca

Socios: **España (Instituto de Diagnóstico Ambiental y Estudios del Agua, Universitat Politècnica de Catalunya (UPC))**, Suecia (Swedish University of Agricultural Sciences (SLU)), Italia (Italian National Council of Research (CNR))

Concedido ES: 110.000€+ 110.000€=220.000 €

Proyecto 2

Biorg4WasteWaterVal+: Bioorganic novel approaches for food processing waste water treatment and valorisation: Lupanine case study

Food processing industry uses a large volume of fresh water to deliver safe food for humanity, which is obtained from public water providers or ground and spring water sources. The resulting brackish wastewater is often disposed of in public sewers or using different suboptimal solutions. The food processing industry is comprised of several factories of small/medium size, calling for a modular technological solution able to be quickly implemented at the companies' site. In this project, novel separation processes using low energy and chemicals at low cost will

be developed based on novel membrane processes and adsorbers capable of purifying the water for in-situ recycling at zero cost for the company.

IP: University of Lisbon, Portugal

Socios: Portugal (Associação do Instituto Superior Técnico para a Investigação e Desenvolvimento (IST-ID/UL), A Tremoceira Estrela da Piedade (TEP) Lda (SME), Italia (Politecnico di Milano (POLIMI), **España (Basque Centre for Macromolecular Design & Engineering (Basque Excellence Research Centre)**, Chipre (Cyprus University of Technology)
Concedido ES: 105.000€

Proyecto 3

DESERT: Low-cost water DESalination and SENsor Technology compact module

Irrigated agriculture is the primary user of water in Europe and is a very competitive economic sector of the European Union. Almost the 46% of the region's population lives in places (almost nine European countries), which are water-stressed (EEA, 2009[1]). Moreover, in Europe also the problem of water quality degradation of surface and groundwater bodies has received great interest because of the excessive use of mineral fertilizers in agriculture (OECD, 2013[2]). The present project proposal, with participating partners from Italy, Spain and Belgium, addresses these issues and is in line with the topics of this call, by proposing an innovative water desalination and sensor technology compact module for continuously monitoring water quality and nutrient content. The effectiveness of these solutions will be tested by means of sustainability assessment, energy and cost efficiency of the system. DESERT technology, in order to contrast water scarcity and increase the water quality, looks for increase energy savings keeping part of the nutrients and using solar energy to treat the non-conventional water. The water value as a scarce resource will be evaluated by combining water characteristics, soil and climate features with environmental impacts and energy efficiency indicators in the crop-water function model.

IP: Università degli Studi di Bari Aldo Moro, Italia

Socios: **España (Centro de Edafología y Biología Aplicada del Seguro Agencia Estatal Consejo Superior de Investigaciones Científicas CEBAS-CSIC, Novedades Agrícolas S.A.)**, Bélgica (Univesité de Liège), Italia (Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria)
Concedido ES: 115.000€

Proyecto 4

DOMINO: Dikes and Debris Flows Monitoring by Novel Optical Fiber Sensors

With more than 5 million people affected, more than 1000 killed, and with estimated total damages exceeding 4.5 billion Euros just in Europe and during the last decade, floods are among the most disruptive natural events threatening our Society. Due to increase in extreme weather events and rapid socio-economic developments in vulnerable locations, the risks connected to floods in general are growing rapidly, and the awareness of these risks and of the need to face them efficiently with an integrated approach is well testified in the "7th Environment Action Programme" of the EC. Strategies for adaptation and protection can range from reinforcing civil structures, such as dikes and drainage channels, to careful planning of land use and definition of apt evacuation plans; in any case, these strategies would strongly benefit from effective monitoring tools and early warning systems. In this perspective, project DOMINO aims at developing novel fiber optic sensors (FOS) for the monitoring of dikes and debris flows, that could eventually be used to prevent disasters and manage the related emergency. DOMINO will pursue this goal along two main research lines: the development of a distributed FOS for ground vibration measurement, to be employed in debris-flows monitoring, and the development of distributed and quasi-distributed FOSs for pressure measurement, to be employed mainly in the monitoring of dikes.

IP: University of Padova, Italia

Socios: Países Bajos (Delft University of Technology), **España (Universidad de Alcalá)**, Italia (National Research Council – Research, Institute for Geo-Hydrological Protection)
Concedido ES: 125.000 €

Proyecto 5

IMDROFLOOD: Improving Drought and Flood Early Warning, Forecasting and Mitigation using real-time hydroclimatic indicators

Strengthen drought and flood forecasting and early warning is essential to improve adaptation to climate change. Project plans different actions to improve the mitigation of the impact of droughts and floods at the catchment level. All these actions will be implemented in different catchments of Europe and South Africa, covering contrasted environmental conditions and specific problematic. IMDROFLOOD will make use of currently available information sources on meteorological, hydrological and remote sensing data to generate new information relevant for flood and drought risk management. New monitoring networks and Doppler radar images will be tested for the generation of more suitable and operative drought indices and the role of ecosystems and vegetation communities in the mitigation of the impact of floods and droughts will be assessed, while probabilistic flood forecasting systems will be developed, integrating all these tools to implement a powerful Early Warning System.

IP: Agencia Estatal Consejo Superior de Investigaciones Científicas CSIC, España

Socios: Portugal (Fundacao da Faculdade de Ciencias da Universidade de Lisboa (FFCUL), Sudáfrica (University of Cape Town), Rumanía (National Meteorological Administration), Estonia (University of Tartu), Moldavia (Research Institute of Field Crops "Selectia"), España (Farisa Asesores y Consultores S.L. (commercial name: MeteoGRID), **Universidad de Vigo**)

Concedido ES: 200.000€+100.000€=300.000

Proyecto 7

IRIDA: Innovative remote and ground sensors, data and tools into a decision support system for agriculture water management

Efficient agriculture water use is of crucial importance for water resources management. Consequently, accurately determining evapotranspiration (ET) is the first step for improving irrigation efficiency and productivity and for quantifying the ecosystem water balance. Several approaches for determining ET have been proposed in literature, but the relation between high and low spatial resolution methods still remains unresolved in irrigation studies and water management planning. The present proposal will create a mixed model where isolated actual ET and soil moisture measurements, obtained in the representative areas within a plot, can be correlated with actual ET results obtained by means of low-resolution methods. In this sense, the combination of on-the-ground high-resolution ET methods with the analysis of thermal and hyperspectral imagery provided by unmanned aerial vehicle (UAV/RPAS/UAS) (at plot scale), manned vehicles and satellites (at catchment scale) should ease the mixing performance and solve the upscaling. The proposal will integrate the methodologies and routines into a decision support system (DSS) that will serve to manage the large amount of inputs (Big Data Analysis) and to provide simple irrigation recommendation to the end-users.

IP: Centro de Edafología y Biología Aplicada del Segura Agencia, Estatal Consejo Superior de Investigaciones Científicas CEBAS-CSIC, España

Socios: **España (Innovati Servicios Tecnológicos, SL, Agencia Estatal Consejo Superior de Investigaciones Científicas (IAS-CSIC)**, Italia (University of Catania, Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria), Rumanía (National Meteorological Administration), Noruega (NIBIO, Norwegian Institute of Bioeconomy Research)

Concedido ES: 105.000€+ 210.000€=315.000€

Proyecto 8

MEPROWARE: Novel methodology for the promotion of treated wastewater reuse for mediterranean crops improvement

With the decreasing availability of fresh water resources, particularly for the agricultural sector, the use of treated wastewater has gained popularity over the last decades. Wastewater treatment and reuse have reached extremely high levels of technological advancement and flexibility, providing multipurpose uses of treated water ranging from safe restoration of natural water bodies up to drinking standards. The present proposal introduces an innovative methodological approach to treated wastewater reuse specifically addressing well-defined types of crops, agronomic practices, and water constraints that are typical of Mediterranean countries. The underlying idea is to provide evidence of the positive relationships between treated wastewater reuse and plants growth and crops productivity with specific reference to the Mediterranean. To obtain this, in a framework of water and nutrient use efficiency, reuse practices will be made more easily acceptable by stakeholders through their direct participation to the implementation of the proposed methodology.

IP: IRSA CNR, Water Research Institute-National Research Council, Italia

Socios: Italia (CIHEAM-IAMB, Centre International de Hautes Etudes Agronomiques Mediterraneennes - Istituto Agronomico Mediterraneo di Bari), Portugal (University of Lisbon)

España (Universidad de Castilla-La Mancha)

Concedido ES: 110.000€

Proyecto 11

Pioneer_STP: The Potential of Innovative Technologies to Improve Sustainability of Sewage Treatment Plants

Pioneer_STP addresses the challenges related to wastewater treatment (WWT) from a holistic perspective. Concepts such as resource recovery, sludge management, energy balance optimization, new effluent quality requirements (Emerging Pollutants, EP) and emission of greenhouse gases (GHGs) are compulsory to drive the European water sector to be more innovative, productive and competitive. The project aims at assessing the impact of the integration of (4) innovative Unit Technological Solutions (UTS) (comprising in total 9 technologies), nowadays developed at lab- or pilot-scale, targeted to energy recovery and nutrients removal/recovery, into a Sewage Treatment Plant (STP). Each UTS will be characterised not only in terms of efficiency but also concerning their environmental (LCA, Risk), economic (LCC) and energetic impacts.

IP: Universidad de Santiago de Compostela, España

Socios: Italia (University of Verona), Dinamarca (Technical University of Denmark), Suecia (Royal Institute of Technology), España (FCC Aqualia)

Concedido ES: 220.000€

Proyecto 12

SIM: Smart irrigation from soil moisture forecast using nd Hydro-Meteorological Modelling

The work aims at developing an operational tool for real-time forecast of irrigation water requirements to support parsimonious water management in case of actual or forecasted drought period. The system will be a prototype version of a World Wide Web platform (smart device), that will support users in parsimonious irrigation water management from basin authority to single farm. In particular in water limited period: i) farmers to maintain soil moisture in an optimum value interval allowing water saving and reducing plant stress, ii) irrigation consortiums to manage the water among users, according to the actual and forecasted water need; iii) water authorities to manage at basin scale the water withdraw of reservoirs respect to the actual and forecasted water request, and quantitative meteorological forecast. The system combines satellite monitoring of soil moisture and of evaporative fluxes, quantitative meteorological forecast and detailed distributed hydrological modelling of soil water balance

and crop water needs. It provides real-time and forecasted soil moisture behavior at high spatial and temporal resolutions (from 10 m to 250 m, from 1 hour to daily) with forecast horizons from few up to fifteen days. This compared to water stress thresholds defined for each specific crop and its growth stage will determine the correct timing of irrigation and the amount of water. Economic impacts at basin scale of the developed technology will be evaluated starting from single farm to larger irrigation districts considering not only the role of water and energy saved in financial terms based on the local cost of the water and crop production, but also the environmental benefit due to a parsimonious use of the water.

IP: Politecnico di Milano, Italia

Socios: Italia (Università della Tuscia, Modellistica e monitoraggio idrologico, Meteo Operations Italia - Centro Epsom Meteo), Países Bajos (Delft University of Technology), China (RADI-CAS), España (**Universidad de las Islas Baleares, Universidad de Valencia**)

Concedido ES: 115.000€+115.000€=230.000€

Proyecto 14

TH.E.R.BIO.R: Thermal energy recovery from a novel sequencing batch biofilter granular reactor

THERBIOR focuses on the development, implementation and diffusion of technologies to improve energy efficiency in wastewater treatment plants (WWTPs) using a fully off-grid solar-assisted heat pump (SHP) system, applicable Europe-wide but centred on the Mediterranean region. The THERBIOR project aims to provide solution for the tourism sector, which is characterised by intense seasonal water demand and wastewater discharge. The integration of physical infrastructure such as a highly efficient tubular heat exchanger coupled to a fully off-grid reversible watersource heat pump with a pioneering, novel Sequencing Batch Biofilter Granular Reactor (SBBGR) already installed in the Water Research Institute (CNR-IRSA, Italy), which creates new value through reuse and repurposing. This technology may help to produce benefits for local populations in the form of wastewater management, giving people access to clean water, and thus contributing to societal well-being through better human health as a result of better water quality. Projections for future climate change point to increasing resource depletion and water scarcity, which will have a serious socio-economic and environmental impact.

IP: Universidad de Almería, España

Socios: Dinamarca (2.0.-LCA Consultants), España (Hedera Helix Ingeniería y Biotecnología S.L.), Italia (CNR-IRSA National Research Council- Water Research Institute)

Concedido ES: 170.000€

Proyecto 15

Watintech: Smart decentralized water management through a dynamic integration of technologies

The project proposes a combination of concepts of sewer mining with urban run-off treatment in decentralized treatment facilities to enhance the recovery of valuable resources including water, methane (heat, energy) and value-added chemicals, either extracting or producing them from the fluxes inside a sewage pipe. It is also postulated that this combination improves the management of centralized wastewater infrastructures under variable weather events (such as heavy rain episodes combined with long dry periods). The impact of sewer mining and wastewater characteristics on downstream wastewater treatment plants (WWTP) will also be analysed. In an ideal scenario, besides generating the value-added products for local reuse, decentralized treatment will also impact positively on the existing centralized sewage collection and treatment facilities, an aspect rarely taken into account in the design of decentralized infrastructure.

IP: Catalan Institute for Water Research ICRA, España

Socios: España (ACCIONA Agua S.A.), Italia (Universita' di Catania (UNICT), Dinamarca (Technical University of Denmark (DTU), Portugal (NOVA.ID.FCT Universidade Nova de Lisboa)
 Concedido ES: 220.000€

Proyecto 16

WE-NEED: WatEr NEEDs, availability, quality and sustainability

Groundwater (GW) is a major source of water supply in Europe. This natural resource is endangered by several factors, such as improper water management policies, including over-exploitation, and contamination by anthropogenic activities. Ignoring the profound consequences of GW depletion and quality deterioration is the foundation on which unsustainable water policies are built. The goal of this project is to develop new management strategies to assist in the sustainable use of two key components of the GW resource: pumping wells, used to obtain water for drinking purposes, and natural springs, typically employed for crop irrigation as well as for recreational use. We ground our activities on observations linked to two field sites in Italy. These sites are archetypal of two distinct realities and can be considered representative of diverse environmental settings and conditions of Europe-wide interest. As such, key features of our approach and techniques are resilience and adaptability, so that the approach can be readily adapted and employed in other European aquifer systems. We will (i) build conceptual models to describe groundwater system functioning under the influence of uncertain parameters and processes defined at diverse spatial-temporal scales; (ii) characterize the fate of emerging contaminants (ECs) such as pharmaceuticals, personal care products and engineered nanomaterials, as well as agricultural and industrial chemicals, in aquifers and the way they may threaten the quality of GW; and (iii) quantify the effect of multiple sources of uncertainty on sustainable management and protection of groundwater, here including hydrogeological settings, well abstraction rates, sources of contamination, anthropogenic actions, EC loads, natural attenuation processes, spatial and temporal distribution of redox conditions and ecotoxicological concerns.

IP: Politecnico di Milano Italy, Italia

Socios: Israel (Weizmann Institute of Science), Portugal (Universidade de Aveiro), España (Universitat Politecnica de Catalunya)

Concedido ES: 110.000€

CONVOCATORIA CONJUNTA INTERNACIONAL 2016 “Sustainable management of water resources in agriculture, forestry and freshwater aquaculture sectors”

En el marco de la ERA-Net COFUND WaterWorks 2015

Países participantes	Bélgica, Canadá, Chipre, Dinamarca, Egipto, Finlandia, Francia, Alemania, Irlanda, Italia, Moldavia, Países Bajos, Noruega, Polonia, Portugal, Rumanía, Sudáfrica, España (CDTI, MINECO), Suecia, Taiwán, Túnez, Turquía
Temáticas	1: Increasing the efficiency and resilience of water uses 2: Monitoring and reducing soil and water pollution 3: Integrating social and economic dimensions into the sustainable management and governance of water resources
Presupuesto total	16.754.924€
Concedido ES	1.178.213 €
Proyectos aprobados	21
Proyectos con MINECO/AEI	8 (3 coordinados)

No.	Acrónimo y título del proyecto	Países participantes
1	ABAWARE. Advanced biotechnology for intensive – freshwater aquaculture wastewater reuse	Noruega, Alemania, Finlandia, Irlanda, Rumanía, Suecia
2	AgriAs. Evaluation and management of As contamination in agricultural water and soil	Finlandia, Alemania, Francia, Suecia
3	AGRINuPeS¹ Integrated monitoring and control of water, nutrients and plant protection products towards a sustainable agricultural sector	Portugal, España, Países Bajos, Suecia, Turquía
4	AgWIT. Agricultural Water Innovations in the Tropics	Canadá, Alemania, Costa Rica, Brasil, Dinamarca, Suecia, Taiwán
5	AquaVal. Valorisation of water use in aquaculture using multi trophic systems	Portugal, España, Italia
6	AWARE. Assessing the fate of pesticides and wastewater-borne contaminants in agricultural crops and their environmental risks	España, Alemania, Francia, Noruega
7	CLEARANCE. Circular Economy Approach to River pollution by Agricultural Nutrients with use of Carbon-storing Ecosystems	Polonia, Alemania, Dinamarca
8	ECOSAFEFARMING. Development and testing of a novel photocatalytic system for efficient cogeneration of clean water and hydrogen for ecosafe agriculture	Turquía, Alemania, Canadá, España
9	Eutro-Sed. Eutrophication hotspots resulting from biogeochemical transformations and bioavailability of phosphorus in the fluvial suspended sediment of geologically contrasting agricultural catchments	Irlanda, Canadá, Suecia,
10	FORWARD. Operational monitoring and Forecasting system for Resilience of agriculture and forestry under intensification of the WAtER cycle: a bid Data approach	España, Bélgica, Dinamarca
11	IMPASSE. Impacts of MicroPlastics in AgroSystems and Stream Environments	Noruega, Canadá, España, Países Bajos, Suecia
12	INNOMED. Innovative options for Integrated Water Resources Management in the Mediterranean	España, Chipre, Francia, Italia, Moldavia, Portugal
13	LEAP. Legacies of Agricultural Pollutants (LEAP): Integrated Assessment of Biophysical and Socioeconomic Controls on Water Quality in Agroecosystems	Canadá, Dinamarca, Portugal, Suecia
14	OPERA. Operationalizing the increase of water use efficiency and resilience in irrigation	Países Bajos, Sudáfrica, Francia, Italia, Polonia, España
15	POTENTIAL. Variable rate irrigation and nitrogen fertilization in Potato; engage the spatial variation	Bélgica, Alemania, Dinamarca, Países Bajos
16	ProWspER. How to PROtect Water, Soil and Plants production all together	Rumanía, Francia, Portugal
17	REWATER. Sustainable and safe water management in agriculture: Increasing the efficiency of water reuse for crop growth while protecting ecosystems, services and citizens' welfare	Portugal, Rumanía, España, Suecia
18	SMARTECOPONICS. On-site microbial sensing for minimising environmental risks from aquaponics to human health	España, Francia, Italia
19	SOSTPRO. SORce Stream (headwater) PROtection from forest practices: what are the costs and benefits, and how best to do it?	Canadá, Finlandia, Suecia
20	Water4ever. Optimizing water use in agriculture to preserve soil and water resources	Portugal, España, Italia, Turquía

21	WaterFARMING. Improvement of water and nutrient retention and use efficiency in arable farming systems from field to catchment scale in Europe and North Africa	Dinamarca, Alemania, Egipto, Países Bajos, Túnez
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Convocatoria APCIN 2017

Proyecto 5

AquaVal. Valorisation of water use in aquaculture using multi trophic systems

AquaVal is framed in the subtopic in Challenge I the "water reuse and water recycling technologies in the agriculture and freshwater aquaculture sectors", with clear relation to other challenges and subtopics and the European Strategy on Bioeconomy. AquaVal aims to the development of technological solutions for the treatment of water used in freshwater aquaculture facilities. The technological solutions will be combined to comprise a full treatment system, to remove pollutants and valorise effluents following the circular economy precepts. Treated water will be obtained with quality for recycling/reuse to the producing facility or discharge into natural water sources. This system will include the application of biological treatment technologies where biomass is grown in the form of granules and enriched in microbial populations able to remove nutrients and micropollutants. Application of new processes, which are less energy requiring, will be evaluated.

IP: Universidade Católica Portuguesa-UCP, Portugal

Socios: España (**Universidade de Santiago de Compostela**, Grupo Tres Mares S.A.- GTM), Italia (University of Torino)

Concedido ES: 129.852€

Proyecto 6

AWARE. Assessing the fate of pesticides and wastewater-borne contaminants in agricultural crops and their environmental risks

The AWARE project aims to investigate the fate and potential reduction of pesticides and wastewater-borne contaminants in soil/plants from agricultural crops. Moreover, in the AWARE project we will evaluate environmental risks in agricultural fields due to the use of pesticides and the irrigation practices involving reused wastewater. Both pollution sources may have some inherent risks associated to food production.

IP: Instituto de Diagnóstico Ambiental y Estudios del Agua del Consejo Superior de Investigaciones Científicas (IDAEA-CSIC), España

Socios: Alemania (Helmholtz Zentrum München GmbH (HGMU)), Francia (Institut National de la Recherche UMR Agroécologie, Dijon (UM-HSM, INRA)), Noruega (Norwegian Institute of Bioeconomy Research (NIBIO))

Concedido ES: 222.770€

Proyecto 8

ECOSAFEFARMING. Development and testing of a novel photocatalytic system for efficient cogeneration of clean water and hydrogen for ecosafe agriculture

This project aims to bring a solution to water and energy issues by achieving an optimized and energy free disinfection of urban wastewater using novel solar assisted-treatment technologies for production of safe food and clean energy with reduced water footprint.

IP: Istanbul University (IU), Turquía

Socios: Turquía (MIR Arastirma ve Gelistirme A.S. (MIR)), Alemania (Brandenburg University of Technology (BUT)), Canadá (University of Ontario Institute of Technology (UOIT)), España (Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas – Plataforma Solar de Almería (CIEMAT-PSA))

Concedido ES: 111.780€

Proyecto 11

IMPASSE. Impacts of MicroPlastics in AgroSystems and Stream Environments

In IMPASSE, we propose to develop and communicate new understanding of MP behavior in agrosystems which is urgently needed to avoid the potential of serious and long lasting environmental contamination. The highly interdisciplinary project includes risk communication, stakeholder engagement, ecotoxicology, catchment modelling, decision support tools, monitoring and experimental work needed to understand and then minimize threats associated with MPs in agrosystems.

IMPASSE will contribute substantially to an avoidance of current and future pollution in soils and waters in agricultural landscapes and develop guidance on how drainage management may influence MP mobility.

IP: Norwegian Institute for Water Research (NIVA), Noruega

Socios: Canadá (Trent University, Winsor University), España (IMDEA Agua), Países Bajos (Vrije University Amsterdam), Suecia (Swedish University of Agriculture)

Concedido ES: 135.000€

Proyecto 12

INNOMED. Innovative options for Integrated Water Resources Management in the Mediterranean

The main goal of INNOMED is to develop and apply a multidisciplinary approach to quantify the physical and economic effects of alternative management options in forestry and agriculture on the catchment's water balance, in order to ensure efficient water use systems and practices in both sectors and to promote sustainable water management solutions at the catchment level.

IP: Consejo Superior de Investigaciones Científicas (EEAD-CSIC), España

Socios: Chipre (The Cyprus Institute, CYI), Francia (Centre International de Recherche sur l'Environnement et le Développement, CIRAD-UMR-CIRED), Italia (National Research Council, CNR-ISAFOM, Politecnico di Milano, POLIMI), Moldavia (RIFC), Portugal (Research Institute of Field Crops 'Selectia', RIFCNOVA.ID.FCT)

Concedido ES: 179.523€

Proyecto 14

OPERA. Operationalizing the increase of water use efficiency and resilience in irrigation

OPERA aims to bring advances from remote sensing, soil moisture monitoring and forecasting rapidly towards implementation and commercialization. A series of case studies demanding precision irrigation, increased water use efficiency and resilience are used to research the practitioner needs, ways to increase the robustness of information supply, alternative crops, and concrete local barriers that had prevented the transfer of research results into the farmer and water manager practice. While water scarcity and the urgency to increase water use efficiency is the common nominator at all sites, the case studies will offer the access to different types of irrigation systems under different climatic conditions. In contrary to technological driven research projects, OPERA will apply a transdisciplinary approach to identify jointly (i) the user demands of farmers, farmer associations, extension services as well as water management organization, (ii) best possible combinations of information technologies and (iii) innovative service models to realize a practical transition towards an increased use of precision irrigation in practice. In this way the project contributes to optimal watering strategies and water saving, increase of agricultural productivity (tuning water supply to demand) and farm competitiveness in the agricultural market, and contributes to the creation of "green" job opportunities and economic growth for the EU and the associated international countries.

IP: Wageningen Environmental Research (Alterra), Países Bajos

Socios: Sudáfrica (Stellenbosch University (SU), España (Evenor Tech (Evenor), Instituto de Recursos Naturales y Agrobiología de Sevilla (IRNAS – CSIC), Francia (French National Institute for Agricultural Research (INRA – EMMAH), Italia (University of Florence (UNIFI – DISPAA), Council for Agricultural Research & Analysis of Agricultural Economics (CREA), Polonia (Institute of Technology and Life Sciences (ITP)

Concedido ES: 130.188€

Proyecto 18

SMARTECOPONICS. On-site microbial sensing for minimising environmental risks from aquaponics to human health

The main objective of SMARTECOPONICS is the design and development of a novel approach for monitoring the main biological hazards affecting consumers of aquatic foods. This includes pathogens (coliforms and cyanobacteria) and biotoxins that, when consumed in excess of threshold quantities, can lead to illness. The proposal offers a complete solution to monitor microbiological species involved into maintain the equilibrium among microbial activity, nutrients and wastes along the value chain of aquaponics regards human health risks. Some aspects regard this equilibrium like reduction new water make-up consumption, could increase bacterial concentration, and tis risk have to be minimised.

IP: Instituto de Microelectrónica de Barcelona (IMB-CNM-CSIC), España

Socios: España (Waterologies SL), Francia (INRA - Pisciculture Expérimentale INRA des Monts d'Arrée), Italia (CONSIGLIO NAZIONALE DELE RICERCHE CNR-IREA)

Concedido ES: 179.100€

Proyecto 20

Water4ever. Optimizing water use in agriculture to preserve soil and water resources

The project builds on three basic statements (1) diffuse agriculture pollution is an extra cost for farmers that needs to be minimized; (2) plot scale monitoring can be achieved using low cost sensors and remote sensing; and (3) models are the interdisciplinary tools required to optimise irrigation and fertilization practices and to link spatial and temporal scales. The consortium was built by grouping teams from various disciplines with experience and tools on the various subjects to be addressed in the project. Every team will carry new developments, but at the beginning of the project the consortium they will have all sensors and models necessary to set up the experiments, which will then be improved based on partners' experiences and following a multidisciplinary approach.

IP: Instituto Superior Técnico (IST), Portugal

Socios: Portugal (Deimos, INESC TEC), España (isardSAT, Universidad Politécnica de Cartagena (UPCT), Italia (Istituto per le Macchine Agricole e Movimento Terra (IMAMOTER), Turquía (AIBU)

Concedido ES: 90.000€

WaterWorks - Water Works 2018-2022 in Support of the Water JPI (WaterWorks2017) and of the EC Call SC5-33-2017: Closing the water cycle gap

La nueva ERA-NET Cofund Water Works 2017 nace en el marco de la Iniciativa de Programación Conjunta del Agua (Water JPI), con la misión de promover la cooperación internacional y movilizar recursos dentro y fuera de Europa, para afrontar los retos prioritarios asociados al agua y contribuir a la consecución de los Objetivos de Desarrollo Sostenible (ODS) del agua (ODS6) y el clima (ODS13), dentro de la Agenda 2030 de Naciones Unidas.

Water Works 2017 se enmarca en el reto 5 del Programa H2020 de la UE, en concreto en la temática SC5-33-2017, "Cerrando el Ciclo del Agua", cuya ambición radica en lograr implementar la temática 5 de la Agenda Estratégica de Investigación (SRIA) de la Water JPI. La misión de esta iniciativa consiste en reconciliar el suministro y demanda de recursos hídricos, en términos tanto de calidad como de cantidad, y en todas las escalas espaciales y temporales.

Con una destacable dimensión internacional, Water Works 2017 reunirá a un compendio de 20 agencias de financiación de 18 países/regiones de Europa, África y América, con el objetivo principal de lanzar una convocatoria conjunta, cofinanciada por la UE, para promover proyectos transnacionales de I+D, en la esfera del uso sostenible y eficiente de los recursos hídricos, cerrando el ciclo entre la oferta y la demanda. Esta iniciativa se convierte en una oportunidad para impulsar actividades de cooperación internacional y transferencia del conocimiento, que contribuyan a reducir la fragmentación de la I+D, estrechar los lazos y sinergias entre programas nacionales y avanzar en la implementación de la Agenda Estratégica de la Water JPI.

Convocatoria conjunta 2018

Países participantes	Francia, Bélgica, Brasil, Chipre, Egipto, España (CDTI y AEI-MINECO), Estonia, Finlandia, Francia, Países Bajos, Irlanda, Israel, Italia, Noruega, Polonia, Rumanía, Sudáfrica, Suecia, Túnez.
Temáticas:	<ul style="list-style-type: none"> - Enabling sustainable management of water resources - Strengthening socio-economic approaches to water management - Supporting tools for sustainable integrative management of water resources.
Presupuesto total	15.200.000€ (incluyendo financiación de la UE)
Presupuesto ES	600.000€
Proyectos aprobados	18
Proyectos con financiación AEI	6

No.	Acrónimo y título del proyecto	Países participantes
1	ATeNaS. To ally technology, nature and society for integrated urban water management	Polonia, Finlandia, Francia
2	BLOOWATER. Supporting tools for the integrated management of drinking water reservoirs contaminated by Cyanobacteria and Cyanotoxins	Italia, Noruega, Suecia
3	EnTruGo. Enhancing Trust in government through effective water Governance strategies	Países Bajos, Noruega, Sudáfrica, Suecia
4	EviBAN. Evidence based assessment of NWRM for sustainable water management	Noruega, Finlandia, Francia, Sudáfrica

5	FLUXMED. Strategies for increasing the water use efficiency of semi-arid Mediterranean agrosilvopastoral systems under climate change	Italia, Chipre, Egipto, Francia, Túnez
6	iAqueduct. An integrative information aqueduct to close the gaps between global satellite observation of water cycle and local sustainable management of water resources	Países Bajos, Israel, Italia, Suecia, España
7	IN-WOP. Mind the Water Cycle Gap: Innovating Water Management Optimisation Practice	Países Bajos, Francia, Italia, Túnez
8	MARadentro. Managed Aquifer Recharge: Assessing the Risks of Recharging Regenerated Water	España, Francia, Italia, Suecia
9	NATWIP. Nature Based Solutions for Sustainable and Resilient Water Management in the Anthropocene	Suecia, Noruega, Polonia, Sudáfrica, España, Brasil
10	NEWTS. Nudges for Economics of Water Tariffs	Francia, Sudáfrica, España, Túnez
11	RainSolution. Research-based Assessment of Integrated approaches to Nature-Based solutions	Suecia, Brasil, Estonia, Irlanda, Países Bajos, Noruega, Rumanía
12	RECOWATDIG. Sustainable technology for the staged recovery of an water from of high moisture fermentation products	Polonia, Países Bajos, Suecia
13	REFORM WATER. Reducing the effects of forest management on inland waters	Finlandia, Estonia, Irlanda, Suecia
14	Sense and Purify Spy. Combining remote sensing with in-situ sensing to track the spatial and temporal in fresh and transitional waters	Irlanda, Francia, Irlanda, Sudáfrica, España
15	SIMTWIST. Simulating tourism water consumption with stakeholders	Países Bajos, Italia, España
16	URBANWAT. Tools and criteria for URBAN groundWATER management	España, Francia, Países Bajos
17	WaterHarmony. Closing the Water Cycle Gap With Harmonised Actions for Sustainable Management of Water Resources	Noruega, Israel, Países Bajos, Polonia, Rumanía, España, Suecia
18	WATERPEAT. Water management for sustainable use and protection of peatlands	Finlandia, Irlanda, Noruega

Convocatoria nacional: APCIN 2019

Proyecto 6

iAqueduct. An integrative information aqueduct to close the gaps between global satellite observation of water cycle and local sustainable management of water resources

An integrative information aqueduct (iAqueduct) is proposed to close the gaps between global satellite observation of water cycle and local needs of information for sustainable management of water resources. In the past decades, various satellite missions have been developed to monitor the global water cycle, in particular the variables related to precipitation, evapotranspiration and soil moisture, often at (tens of) kilometre scales of spatial resolution. Whilst these data are highly effective to characterise water cycle variation on regional to global scale, they are not suitable for sustainable management of water resource, which always needs more detailed information on local (e.g. in terms of information provided by an in-situ sensor, e.g. a TDR for soil moisture or a piezometer for groundwater level) and field scale. To effectively exploit existing knowledge at different scales we thus need to answer the following questions: How to downscale the global water cycle products to local scale? How to convert the coarse resolution data into fine scale water information at the management scale for water, vegetation and soil processes? And how to use such fine-scale water information to improve the management of soil and water resources? The envisioned iAqueduct aims to accomplish these goals combining EC/ESA Copernicus satellite data (with intermediate resolution) with high

resolution Unmanned Aerial System (UAS) and in-situ observations to develop scaling functions for soil properties and soil moisture and evapotranspiration at meter scales. iAquaduct will integrate the various components from the global water cycle observation to local soil and water states in an open-source water information system and test and demonstrate their utility on pan-European scale at a set of carefully selected research sites for sustainable management of water resources. iAquaduct complements the actions developed under the European Strategy Forum for Research Infrastructures (ESFRI) by coordinating a set of European research groups and sites allowing the scaling up to pan-European level under the aegis of the COST action Harmonization of UAS techniques for agricultural and natural ecosystems monitoring (HARMONIOUS) in which 70 institutions from 32 countries participate.

IP: University of Twente, Países Bajos

Socios: Israel (Tel Aviv University), Italia (Università degli Studi della Basilicata, University of Naples Federico II), Suecia (Swedish University of Agricultural Sciences), **España (Universitat Politècnica de València)**

Presupuesto total: €

Concedido ES: 147.000€

Proyecto 8

MARadentro. Managed Aquifer Recharge: Assessing the Risks of Recharging Regenerated Water

Severe shortage in good quality water reserves is a global problem that will increase with a growing world population. Managed Aquifer Recharge (MAR) will contribute to replenish depleted aquifers and restore ecological services in fresh water ecosystems. However, risks associated to the occurrence of pathogens and anthropogenic emerging pollutants in groundwater have led to question the reuse of reclaimed water for MAR. MARadentro aims to assess and minimize these risks, and to increase the benefits of MAR guaranteeing human health and environment protection through the development of affordable and effective permeable reactive layers. These integrate biotic and abiotic processes to enhance pathogen retention and inactivation and pollutant adsorption and degradation by making available a broad range of sorption sites and a sequence of redox states. The applicability of the proposed MAR layers will be validated by upscaling from lab and pilot experiments to field scale studies. Transport modelling, risk assessment, economic balance and establishment of recommendations to stakeholders and authorities in the water sector will guarantee the smooth implementation of this MAR concept and the positive public response to water reuse. The transfer of the knowledge gathered in MARadentro to policy makers will help in EU regulation on MAR.

IP: Instituto de Diagnóstico Ambiental y Estudios del Agua-Agencia Estatal Consejo Superior de Investigaciones Científicas (IDAEA-CSIC), España

Socios: Francia (HydroSciences Montpellier CNRS), Italia (Centre Nationale pour le Recherche), **España (Universidad Politècnica de Cataluña, Aqualia Gestion Integral del Agua SA)**, Suecia (Swedish University of Agricultural Sciences)

Concedido ES: 149.090€+100.000€=249.090€

Proyecto 9

NATWIP. Nature Based Solutions for Sustainable and Resilient Water Management in the Anthropocene

The project "Nature Based Solutions for Water Management in the Periurban" aims to contribute to closing the water cycle gap by exploring the potentials that Nature Based Solutions (NBS) offer to address water management challenges in landscape areas that have been neglected because they lie in the transition zones between the urban and the rural, hereby referred to as periurban areas. The main objective is to exchange learning experiences among the partnership and promote the debate between science and society in order to increase awareness among practitioners and users on the application of NBS to manage water scarcity,

pollution, and risks related to extreme hydrological events. There are 4 project sub-objectives which will be reached through four workpackages (WPs) aiming at (1) review of international experiences, (2) establish methodological framework to assess NBS, (3) apply the framework at each of the case study sites, and (4) create a common narrative. Besides, a fifth workpackage will be responsible for project management and communication. NATWIP aims to progress beyond the state of the art where the question of closing the water cycle gap is restricted to urban cores, ignoring the specificities of the peri-urban areas. The innovativeness of the project lies in developing an integrated methodological framework for assessing nature-based solutions for water in the peri-urban, developing a 'best practices' guidebook for promoting adoption of NBS, and in general, building and sharing knowledge on the potential of NBSs for water in the peri-urban spaces. The project will include case study sites in Norway, Sweden, Spain, Poland, South Africa, India and Brazil where the project partners have established contacts. The project is expected to contribute to themes 2 and 3 of the call.

IP: Royal Institute of Technology, Suecia

Socios: Noruega (Norwegian Geotechnical Institute), Polonia (University of Agriculture in Krakow), Sudáfrica (Stellenbosch University), **España (Universitat Politècnica de Catalunya)**, Brasil (Centre for Conservation & Sustainability Science, Pontifical Catholic University of Rio de Janeiro)

Concedido ES: 82.500€

Proyecto 10

NEWTS. Nudges for Economics of Water Tariffs

The project aims to provide a socio-economic assessment of green nudging policies, focusing on water consumption controlling and/or proper understanding by the households of the charging system, taking into account adjustments in pricing policy that nudges, by their effects on water demand functions, may generate. From an operational point of view, it consists in developing a microsimulation model, based on econometric estimates of household water demand, to assess socio-economic returns of mix policies, combining nudges and pricing instruments, and identify financially sustainable DSM policies that improve existing pricing of water. The effects of nudges on household water consumptions are examined through the realization of controlled experiments, in laboratory and in the field. Controlled field experiments are deployed on a large scale in Gijon (Spain), Saint Paul (Reunion Island - France) and Sfax (Tunisia). Econometric estimation of residential water demand is carried out to measure basic needs of the households, price-sensitivity of demand and perceived prices of water, and to infer the effects of behavioural interventions on these factors. Using a broad set of appropriate indicators to measure affordability, incentive efficiency and distributional effects, cost-benefit analysis are conducted to infer the effects of nudges on the socio-economic performance of the existing pricing system (that may be improved) and propose optimal policies, according to well-defined decision criteria for local public decision-makers, in various frameworks. These methodologies articulate to construct a decision support model that will be posted on line, with an evaluation software package on a web platform.

IP: University of La Réunion, Francia

Socios: Francia (Laboratoire d'Economie Appliquée de Grenoble, Centre de Recherche en Economie et Management, Groupe de Recherche Angevin en Economie et Management), Sudáfrica (Economics Policy Research Unit), **España (Universidad de Oviedo)**, Túnez (Laboratory for Research in Quantitative Development Economics)

Concedido ES: 147.400€

Proyecto 15

SIMTWIST. Simulating tourism water consumption with stakeholders

Tourism tends to be concentrated in warm and dry regions and seasons, competing with local populations, nature, agriculture and other sectors for scarce water resources. Tourism water use has long been overlooked, but has gained (renewed) interest as a result of the realities of climate change. In many tourism destinations, a sustainable water system is untenable without a central role for tourism. The proposal's ultimate aim is to inform public and private decision-makers in tourism on the effectiveness of measures to increase water efficiency and reduce water consumption. The proposal takes a systemic and stakeholder-centred look at tourism-related water use. Systemic in the sense that it addresses both supply and demand, is interdisciplinary and dynamic, and takes feedbacks into account. Stakeholder-centred in the sense that individual stakeholders are the basic unit of analysis, putting stakeholder heterogeneity centre-stage, and that stakeholder behaviour is studied in its social and economic context. Through interviews, statistical analyses and behavioural simulations, insights are collected on how tourists and tourism stakeholders behave with respect to water use. The Companion Modelling approach that we propose provides stakeholders with a simplified but clearly recognizable spatial setting, which allows them to more easily position themselves in the socio-environmental system at hand. In our proposal, the spatial setting is constituted by the river catchments and reservoirs that provide the tourism destination with fresh water. The dynamics of these river catchments and reservoirs are represented by reservoir models as well as hydrological models. Such representation sets the scene for the water consumption work and allows for the exploration of various scenarios of future water availability. In each of the mass tourism case study areas, Benidorm (Spain) and Rimini (Italy), water supply and water demand are confronted in an Agent-Based Model. The agents in such a model are the tourism stakeholders. They exhibit different behaviour as they differ in terms of resources, relationships, perceptions, and other features. Once the current interactions between supply and demand are understood, the agent-based model is used to explore future development, for example through climate change scenarios (that influence both the supply and demand side) or the introduction of water saving policies. The agent-based model can be used as a safe laboratory for policy experimentation, testing the effectiveness of policy measures for achieving reductions in water consumption. The project will provide decision-makers with a better grasp of the way possible interventions affect the tourism water system at hand.

IP: Wageningen University and Research, Países Bajos

Socios: Italia (University of Bologna), España (Universidad de Alicante)

Concedido ES: 146.000€

Proyecto 16

URBANWAT. Tools and criteria for URBAN groundWATER management

The aims of the research presented in this pre-proposal is to propose an improvement of tools and criteria for groundwater management in urban areas to ensure the sustainability of urban water resources and define their potential uses, from an integral approach. In this way, it is committed to the circular economy of water, trying to make the hydrological cycle circular, efficient and sustainable, thereby improving quantitative and qualitative aspects. The research will involve a multidisciplinary approach including the investigation of the natural state of the hydrological cycle, identification of pollutants (general chemistry, pollutants of emerging concern (CECs) and microbiology studies) and their risks developing innovative technologies and methodologies. This research will focus in Barcelona city. Furthermore, we will make use of the full-scale testing and demonstration facility called 'WaterStreet' at TUDelft. The results will provide novel, cost-efficient technologies for urban groundwater management, with beneficial environmental, economic and societal effects, for the European Union (EU) as a whole are expected. In addition, the focus on emerging contaminants and their transformation compounds and the microbiological studies can be expected to provide additional valuable knowledge required to help assess the risks associated with groundwater human use from both

environmental and human health perspectives. On the other hand, URBANWAT propose to use novel approaches based on liquid chromatography high resolution mass spectrometry (HLC-RMS) approaches to identify differences in degradation in different anoxic conditions using CECs as indicators of contamination and their transformation products (TPs) as indicators of degradability, the use of selected infrastructures to analyse fate and transport of selected contaminant in the soil-plant continuum as a remediation system, the use of encapsulated DNA nanoparticles to research the movement of the contaminants and the application of viral metagenomics to explore the presence of new and emergent viruses in groundwater samples.

IP: Instituto de Diagnóstico Ambiental y Estudios del Agua-Agencia Estatal Consejo Superior de Investigaciones Científicas (IDAEA-CSIC), España

Socios: **España (Universidad de Barcelona)**, Francia (HydroSciences Montpellier), Países Bajos (Delft University of Technology)

Concedido ES: 154.877€ + 75.000 €= 229.877€

Borrador V5

ERA4CS ERANET Cofund - European Research Area for Climate Services

El objetivo general de ERA4CS es mejorar la adopción y la satisfacción de los usuarios con los servicios climáticos (incluidos los servicios de adaptación) así como mejorar la calidad de los servicios climáticos. Al mismo tiempo, ERA4CS tiene como objetivo mejorar la experiencia científica sobre los riesgos del cambio climático y las opciones de adaptación, y conectar ese conocimiento con la toma de decisiones, por ejemplo, desarrollando y evaluando estrategias y vías de adaptación al clima a diferentes escalas (regiones, ciudades, zonas de captación, sectores vulnerables, etc.). ERA4CS impulsará la iniciativa JPI Clima movilizándose más profundamente, dentro de los Estados miembros de la UE y los países asociados, involucrando tanto a las organizaciones de investigación como a las organizaciones de financiación de la investigación, los distintos servicios nacionales de clima y las diversas disciplinas de la academia, incluidas las humanidades y las ciencias sociales.

Francia (Agence Nationale de la Recherche (ANR), Alemania (Deutsches Zentrum für Luft- und Raumfahrt EV (DLR), Alfred-Wegener-Institut Helmholtz-Zentrum für Polar- und Meeresforschung (AWI), Helmholtz-Zentrum Geesthacht Zentrum für Material- und Küstenforschung (HZG), Austria (Bundesministerium für Wissenschaft, Forschung und Wirtschaft (BMWFW), Universitaet Graz (Uni Graz), Austrian Research Promotion Agency (FFG), Bélgica (Service Public Fédéral de Programmation Politique Scientifique (BELSPO), Institut Royal Météorologique de Belgique (RMI), Dinamarca (Innovationsfonden (IFD), Danmarks Meteorologiske Institut (DMI), Eslovaquia (Slovenska Akademia Vied (SAS), España (Agencia Estatal de Investigación (AEI), Agencia Estatal de Meteorología (AEMET), Barcelona Supercomputing Center - Centro Nacional de Supercomputacion (BSC), Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC), Universidad de Cantabria (UC-IHC), Universitat Rovira i Virgili (URV-C3), Finlandia (Ilmatieteen Laitos (FMI), Suomen ympäristökeskus (SYKE), Francia (Bureau de Recherches Géologiques et Minières (BRGM), Commissariat à l'Énergie Atomique et aux Énergies Alternatives (CEA), Centre National de la Recherche Scientifique (CNRS), Institut national de l'information géographique et forestière (IGN), Institut national de la recherche agronomique (INRA), Météo-France (Météo-France), Grecia (National Center for Scientific Research "Demokritos" (NCSR)), Irlanda (Environmental Protection Agency of Ireland (EPA), Department of the environment, community and local government (Met Eireann), Italia (Centro Euro-Mediterraneo sui Cambiamenti Climatici SCARL (CMCC), Consiglio Nazionale delle Ricerche (CNR-DTA), Ministero dell'Istruzione, dell'Università e della Ricerca (MIUR), Noruega (Norges forskningsrad (RCN), Meteorologisk institutt (Met Norway), Países Bajos (Nederlandse Organisatie voor Wetenschappelijk Onderzoek (NWO), Koninklijk Nederlands Meteorologisch Instituut-KNMI (KNMI), Portugal (Fundação para a Ciência e a Tecnologia (FCT), Associação para a Investigação e Desenvolvimento de Ciências (FCIENCIAS.ID), Reino Unido (The University of Reading (UREAD), Met Office (Met Office), Natural Environment Research Council (NERC), República Checa (Ustav Vyzkumu Globalni Zmeny AV CR VVI (UVGZ), Rumanía (Administratia nationala de meteorologie R.A. (Meteo-Ro), Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI), Suecia (Forskningsrådet för miljö, areella näringar och Samhällsbyggande (FORMAS), Sveriges Meteorologiska och Hydrologiska Institut (SMHI).

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número de convocatorias conjuntas internacionales: 1 (2016)

Participación de AEI en convocatorias conjuntas: 1 (2016)

Convocatoria conjunta 2016: ERA4CS Joint Call on Researching and Advancing Climate Services Development

Países participantes	Austria, Bélgica, Dinamarca, Comisión Europea, Francia, Alemania, Irlanda, Países Bajos, Noruega, Portugal, Rumanía, España, Suecia
Temáticas	Researching and Advancing Climate Services Development: Advanced co-development with users; Institutional integration.
Presupuesto total	72.000.000€ (in kind + cash)
Concedido ES	1.038.645 €
Proyectos aprobados	26
Proyectos con financiación AEI	7 (1 proyecto coordinado)

No.	Acrónimo y título del proyecto	Países participantes
1	AQUACLEW: Advancing QUALITY of CLimate services for European Water	Suecia, Alemania, Austria, Dinamarca, España , Francia
2	CIREG: Climate information for integrated renewable electricity generation	Alemania, Bélgica, Dinamarca, Ghana, Suecia
3	CitiSense: Citizen Sensing – Urban Climate Resilience through Participatory Risk Management Systems	Suecia, Noruega, Países Bajos, Portugal
4	CLIM2POWER: Translating climate data into power plants operational guidance	Portugal, Alemania, Austria, Francia, Irlanda, Suecia
5	CLIMALERT: Climate Alert Smart System for Sustainable Water and Agriculture	Portugal, Alemania, España
6	ClimApp: Translating climate service into personalized adaptation strategies to cope with thermal climate stress	Suecia, Dinamarca, Países Bajos
7	ClimINVEST: Tailored Climate Information for Investment Decisions	Noruega, Francia, Países Bajos
8	CLISWELN: Climate Services for the Water-Energy-Land Nexus	Alemania, Austria, España , Rumanía
9	Co-Cli-Serv: Co-development of place-based climate services for action	Francia, Alemania, Bélgica, Noruega, Países Bajos
10	CO-MICC: Supporting risk assessment and adaptation at multiple spatial scales: Co-development of methods to utilize uncertain multi-model based information on freshwater-related hazards of climate change	Alemania, Austria, Francia
11	CoCLIME: Co-development of CLimate services for adaptation to changing Marine Ecosystems	Irlanda, Alemania, España , Francia, Noruega, Rumanía, Suecia
12	EVOKEED: Enhancing the value of climate data – translating risk and uncertainty utilizing a Living Labs approach	Noruega, Alemania, Países Bajos, Suecia
13	INNOVA: Innovation in Climate Services Provision	Alemania, España , Francia, Países Bajos
14	INSeaPTION: INtegrating SEA-level Projections in climate services for coastal adaptaTION	Francia, Alemania, España , Países Bajos
15	ISlopedia: The open inter-sectoral impacts encyclopedia	Alemania, España , Francia, Países Bajos, Suecia
16	SALIENSEAS: Enhancing the Saliency of climate services for marine mobility Sectors in European Arctic Seas	Países Bajos, Dinamarca, Noruega, Suecia
17	SENSES: Climate Change ScENario SErviceS: Mapping the future	Alemania, Austria, Países Bajos, Suecia
18	WATExR: Integration of climate seasonal prediction and ecosystem impact modeling for an efficient adaptation of water resources management to increasing climate extreme events	España , Alemania, Dinamarca, Irlanda, Noruega, Suecia

19	DustClim: Dust Storms Assessment for the development of user-oriented Climate Services in Northern Africa, Middle East and Europe	Proyecto in kind España
20	ECLISEA: European advances on CLImate services for coasts and SEAs	Proyecto in kind España
21	EUPHEME: EUropean Prototype demonstrator for the Harmonisation and Evaluation of Methodologies for attribution of extreme weather Events	Proyecto in kind Reino Unido
22	INDECIS: Integrated approach for the development across Europe of user oriented climate indicators for GFCS high-priority sectors: agriculture, disaster risk reduction, energy, health, water and tourism	Proyecto in kind España
23	MEDSCOPE: MEDiterranean Services Chain based On climate PrEdictions	Proyecto in kind Italia
24	SERV_FORFIRE: Integrated services and approaches for Assessing effects of climate change and extreme events for fire and post fire risk prevention	Proyecto in kind Italia
25	URCLIM: URban CLIMate services	Proyecto in kind Francia
26	WINDSURFER: WIND and wave Scenarios, Uncertainty and climate Risk assessments for Forestry, Energy and Reinsurance	Proyecto in kind Reino Unido

Convocatoria nacional APCIN 2017

Proyecto 1

AQUACLEW: Advancing QUALity of CLimate services for European Water

The overall goal of AQUACLEW is to use innovative research techniques and integrated co-development with users to advance the quality, and usability of climate services that provide climate change information to water related sectors. Data and information in present climate services reflect high uncertainties and low resolution, which is difficult to use in practical climate adaptation work. AQUACLEW will therefore work to improve confidence and site specific information by better tailoring climate data and adaptation knowledge. In AQUACLEW, we not only co-develop the climate service with users, we also co-develop the research requirements, the service interfaces and the guidance tools. By integrating users and researchers throughout the climate service production chain, the quality, usability and user uptake of climate services for water will be improved. In AQUACLEW we aim to produce research that will be transferable to improve climate services everywhere. During the project we will develop regional, national and pan-European climate services together with some 30 users to be evaluated in 7 real-world climate adaptation case studies across Europe.

IP: Swedish Meteorological and Hydrological Institute, Suecia

Socios: Alemania (TU Dortmund University), Austria (University of Innsbruck, University of Natural Resources and Life Sciences), Dinamarca (Geological Survey of Denmark and Greenland), **España (Universidad de Córdoba, Universidad de Granada)**, Francia (National Research Institute of Science and Technology for Environment and Agriculture)

Concedido ES: 95.000€+96.000€=191.000€

Proyecto 5

CLIMALERT: Climate Alert Smart System for Sustainable Water and Agriculture

The CLIMALERT project emerges to provide climate information in a format that prospective users find it easy to understand and/or incorporate into decision-making. Main goals are: i) potentiate the link between climate research, water resources, and the agriculture sector to assist in management of natural resources, enhance agricultural livelihoods and reduce

underlying causes of vulnerability, ii) advance the techniques and tools currently used to incorporate weather and climate information at different time scales into risk assessment and decision-making in agriculture (management practices), and iii) contribute to a global framework to improve the transfer and exchange of information on future or near-term climate scenarios to help decision-makers in applying adaptation and mitigation strategies

IP: University of Minho, Portugal

Socios: Portugal (Instituto Português do Mar e da Atmosfera), Alemania (Helmholtz-Centre for Environmental Research), España (Fundació Institut Catala de Recerca de l'Aigua)

Concedido ES: 97.445€

Proyecto 8

CLISWELN: Climate Services for the Water-Energy-Land Nexus

The aim of CLISWELN is to advance the provision of Climate Services (CS) for drought-related decision making, by using the water-energy-land nexus (WELN) to integrate the cross-sectoral links of drought-risk management with further synergistic co-benefits between the provision of climate services and long-term societal objectives like sustainable land planning, mitigation of CO₂ emissions and other locally relevant policy targets connected with the Sustainable Development Goals. CLISWELN will study case studies with conflicting water uses dealing with cities, regions and river basins that have specific drought-related vulnerabilities: large amounts of water used for bioenergy, suboptimal forest management compromising water availability downstream, and a vulnerable touristic sector operating in the dry season.

IP: Helmholtz-Zentrum Geesthacht Zentrum für Material- und Küstenforschung GmbH, Alemania

Socios: Austria (Universität für Bodenkultur Wien), España (Centro de Investigación, Ecología y Aplicaciones Forestales), Rumanía (National Institute for Research and Development in Forestry "Marin Dracea")

Concedido ES: 70.800€

Proyecto 13

INNOVA: Innovation in Climate Services Provision

INNOVA explicitly wants to consider climate services innovations for transformational adaptation in addition to incremental adaptation. In this way, the impacts of the project will be more far-reaching. This includes social innovations next to technological innovations. INNOVA augments its impacts by connecting the private, public and knowledge communities in the development of innovative climate services as climate change adaptation and disaster risk responses. We aim at co-developing advanced climate service that delineate the production, transfer, communication needs for the use of reliable climate information in order to enhance the capacity of decision-makers to deal with climate uncertainties knowledge.

IP: Helmholtz Center Geesthacht, Alemania

Socios: Alemania (Ecologic institut gemeinnützige GmbH, Climate Service Center Germany (GERICS), España (Universidad Politécnica de Valencia), Francia (Universite des Antilles), Países Bajos (Wageningen UR)

Concedido ES: 150.000€

Proyecto 14

INSeaPTION: INtegrating SEA-level Projections in climate services for coastal adaptaTION

The INSeaPTION project aims at addressing these limitations by co-designing and co-developing, together with users, coastal climate services based on state-of-the art sea-level rise, impact, adaptation and transdisciplinary science. The project will deliver coastal climate services based on end-users' needs and their decision and governance context, covering the whole chain of climate service development from global to regional mean and extreme sea-level projections with their impacts and uncertainties to local sea-level, coastal impacts and adaptation pathways.

IP: Bureau de Recherches Géologiques et Minières, Francia

Socios: Francia (CREOCEAN, UMR 7266 Laboratoire Littoral Environnement et Sociétés), Alemania (Global Climate Forum), España (Universidad de las Islas Baleares), Países Bajos (University of Utrecht)

Concedido ES: 107.000€

Proyecto 15

ISlopedia: The open inter-sectoral impacts encyclopedia

This project addresses the coproduction of climate-impacts knowledge, in a hands-on collaboration between scientists and users such as climate-adaptation-policy experts and other stakeholders. The project team boasts world-class experts in science-policy dialogue, cross-sectoral impacts research and research coordination, and scientific excellence in impacts modelling. The end product is an open climate-impacts service portal, ISlopedia, offering tailored access to state-of-the-art climate-impacts assessments and data, based on the cross-sectoral, multi-model simulations conducted within the Inter-Sectoral Impact Model Intercomparison Project (ISIMIP, www.isimip.org). ISlopedia's development will integrate the full chain of climate-impact-service co-development, from research design and implementation, to delivery, with tasks fulfilled by the ISIMIP team, a Stakeholder Engagement Team (SET), and the ISlopedia Assessment and Editorial Team (AET). ISlopedia users may include climate adaptation planners e.g. involved in National Adaptation Plans (NAPs) and implementation practitioners, regional knowledge hubs, trans- and interdisciplinary scientists including climate economists, and regional climate experts from the private sector such as (re-)insurance companies.

IP: Potsdam Institute for Climate Impact Research, Alemania

Socios: Alemania (Karlsruhe Institute of Technology, Global Climate Forum, Senckenberg Biodiversity and Climate Research Centre, Climate Analytics, Institute of Physical Geography), Austria (International Institute for Applied Systems Analysis), **España (Universidad Pablo de Olavide, Universitat Autònoma de Barcelona)**, Francia (Commissariat à l'Énergie Atomique), Países Bajos (Utrecht University), Suecia (Umeå Centre for Global Health Research)

Concedido ES: 75.200€+99.200€= 174.400€

Proyecto 18

WATExR: Integration of climate seasonal prediction and ecosystem impact modeling for an efficient adaptation of water resources management to increasing climate extreme events

WATExR aims to integrate state-of-the-art climate seasonal prediction and water quality simulation in an advanced solution to ensure efficient decision making and adaptation of water resources management to an increased frequency of climate extreme events. Our goal is to assess the potential of solution-oriented, innovative integrative advanced modeling tool implemented in QGIS for understanding and anticipating the impacts of climate extreme events, thus increasing the adoption of Climate Services in water resources management. This will be achieved by identifying end-user demands in 7 case studies in Europe and Australia relating to the impact of climate extreme events on water supply companies, fisheries, and water authorities implementing the Water Framework Directive (WFD). WATExR activities will be implemented in a co-development framework ensuring a solution-oriented approach tailored to user demands. Finally, WATExR will join the Inter-Sectoral Impact Model Intercomparison Project (ISIMIP2), contributing a selected set of water quality impact models following the ISIMIP2 simulation protocol.

IP: Institut Català de Recerca de l'Aigua, España

Socios: España (Universidad de Cantabria), Alemania (Helmholtz-Centre for Environmental Research), Dinamarca (Aarhus University), Irlanda (Marine Institute Galway, Dundalk Institute of Technology), Noruega (Norwegian Institute for Water Research), Suecia (Uppsala University)

Concedido ES: 148.000€ + 140.000€= 288.000 €

AXIS - Assessment of Cross(X)-sectoral climate Impacts and pathways for Sustainable transformation

El consorcio AXIS se creó para mejorar la integración de una variedad de disciplinas de investigación relacionadas con la investigación climática en torno al objetivo común de mejorar la evaluación de los posibles impactos del cambio climático en los sistemas biofísicos y la sociedad humana. Con este fin, AXIS planea lanzar e implementar una única convocatoria transnacional, financiada por 11 financiadores de investigación europeos. El consorcio AXIS está profundamente integrado en JPI Climate y tiene como objetivo implementar elementos de su Agenda Estratégica de Investigación e Innovación. JPI Climate y ERA-NET que promueven los servicios climáticos ERA4CS incluyen una serie de actividades adicionales. Por lo tanto, dentro de esta propuesta no se planean actividades adicionales. Se buscará una estrecha asociación del consorcio AXIS y JPI Climate con otras iniciativas internacionales clave (Foro de Belmont, GFCS, Future Earth, UN PROVIA, Copernicus) para continuar trabajando contra la fragmentación de disciplinas y geografías en ciencias climáticas. A este respecto, está prevista una estrecha conexión con la propuesta paralela de CSA SINCERE

Socios: **Coordinador Alemania** (German Aerospace Center (DLR), Austria (Austrian Research Promotion Agency (FFG), Bélgica (Belgian Federal Science Policy Office (BELSPO), National Fund for Scientific Research (FNRS), Francia (National Research Agency (ANR), Irlanda (Environmental Protection Agency Ireland (EPA), Moldavia (Center of International Projects (CIP), Países Bajos (Netherlands Organisation for Scientific Research (NWO), Noruega (Research Council of Norway (RCN), España (Agencia Estatal de Investigación-AEI), Suecia (Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (FORMAS)

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número de convocatorias conjuntas internacionales: 1 (2018)
Participación de MINECO en convocatorias conjuntas: 1 (2018)

Convocatoria conjunta internacional 2018

Países participantes	Austria, Bélgica, Francia, Alemania, Irlanda, Países Bajos, Noruega, España, Suecia
Temáticas:	<ol style="list-style-type: none"> 1. Cross-sectoral and cross-scale climate change impact assessments 2. Integration of biophysical climate change impact estimates with economic models 3. Developing pathways to achieve the long-term objectives of the Paris Agreement, taking into account interactions with SDGs closely linked to SDG 13 ("climate action")
Presupuesto total	15.586.070€
Presupuesto ES	510.524€
Proyectos aprobados	10
Proyectos con financiación AEI	2019-1 (4); 2019-2 (1)

No.	Acrónimo y título del proyecto	Países participantes
1	CROSSDRO. Cross-sectoral impact assessment of droughts in complex European basins	Alemania, Irlanda, Suecia, España , Moldavia
2	DIRT-X. Evaluating sediment Delivery Impacts on Reservoirs in changing climate and society across scales and sectors	Austria, Alemania, Suecia, Países Bajos, Noruega

3	MAPPY. Multisectoral analysis of climate and land use change impacts on pollinators, plant diversity and crops yields	Austria, Alemania, Bélgica, España , Países Bajos
4	CHIPS. Climate Change Impacts and Policies in Heterogeneous Societies	Francia, Alemania, Suecia, España
5	LAMA CLIMA. LAnd MAnagement for CLimate Mitigation and Adaptation	Alemania, Países Bajos, Noruega, Bélgica
6	BIO-CLIMAPATHS. Assessing climate-led social-ecological impacts and opportunities for resilient pathways in the EU bioeconomy	Austria, Alemania, España
7	SHAPE. Sustainable development pathways achieving Human well-being while safeguarding the climate And Planet Earth	Austria, Alemania, Suecia, Países Bajos, Noruega
8	UNCHAIN. Unpacking climate impact CHAINs. A new generation of action- and user-oriented climate change risk assessments	Francia, Austria, Alemania, Suecia, España , Países Bajos, Noruega
9	MECCA. Targeting mental models of climate change risk to facilitate climate action	Alemania, Países Bajos, Noruega
10	NorthWesternPaths. Scenarios and pathways toward sustainable land-use and food production for Western and the Nordic European countries as part of the global FABLE Consortium	Alemania, Suecia, Noruega

Convocatoria nacional: APCIN 2019-1

Proyecto 1

CROSSDRO. Cross-sectoral impact assessment of droughts in complex European basins

CROSSDRO will develop a multi-sectoral and cross-scale evaluation of drought impacts in complex European basins with contrasting climatic, hydrologic, environmental and socioeconomic conditions and it will assess impacts at the continental level. Project objectives seek to advance scientific understanding and develop practical guidance through the engagement of key stakeholders throughout the work. Specifically, CROSSDRO will determine the interrelated impacts of droughts on forestry and land cover, water resources (over different sub-systems i.e. snow, streamflow, reservoir level and ground water), and different economic sectors that are highly vulnerable to water resources availability: e.g. agriculture, hydro-power and tourism. The objectives will be reached by means of experimental studies, both in the field and the laboratory, remote sensing, historical series and modelling approaches that account for past droughts and future scenarios. The objectives will be underpinned through the involvement of key stakeholders to learn about past drought challenges and problems on the stakeholders' side and specifically address their information needs. Land and water managers, end-users and economic agents will be involved from the outset of the project. This will allow development of more efficient drought management models with potential to improve multi-sectoral adaptation to drought impacts.

IP: Agencia Estatal Consejo Superior de Investigaciones Científicas-Instituto Pirenaico de Ecología (CSIC-IPE), España

Socios: Alemania (Potsdam Institute for Climate Impact Research (PIK)), Irlanda (Maynooth University (MU)), Suecia (Lund University (ULUND)), **España (Universitat Pompeu Fabra)**, Moldavia (Selectia Research Institute of Field Crops (RIFC))

Presupuesto total: 1.042.219€

Concedido ES: 179.989 €

Proyecto 3

MAPPY. Multisectoral analysis of climate and land use change impacts on pollinators, plant diversity and crops yields

The objective of this project is to study quantitatively the feedback processes linking pollinators, plant diversity and crop yields in the framework of climate and land use changes. The response of agricultural yields to climate change is critically dependent on these feedbacks that until now remain largely unexplored. In order to fill this gap, we will focus on studying interactions between three main sectors: biodiversity/nature conservation, forestry and agriculture. Within agriculture, the emphasis will be put on three sub-sectors: fruit crops, food/fodder crops and energy crops. We will use diverse types of crop and vegetation models to estimate the impacts of climate change on each studied sector in several case study regions in Europe. The study will be undertaken with local stakeholders, who will identify most relevant topics to be addressed by the consortium. The interdependencies between the sectors will be analysed through the dynamics of land use and land cover on the one hand and dynamics of pollinator communities on the other hand.

IP: University of Liège, Bélgica

Socios: Austria (University of Natural Resources and Life Sciences), Alemania (Justus-Liebig University Giessen, Senckenberg Biodiversity and Climate Research Centre (BiK-F), Potsdam Institute for Climate Impact Research (PIK), Bélgica (University of Namur), España (Instituto de Agricultura Sostenible-Agencia Estatal Consejo Superior de Investigaciones Científicas (IAS-CSIC), Países Bajos (Naturalis Biodiversity Center)

Presupuesto total: 1.719.577€

Concedido ES: 110.000€

Proyecto 4

CHIPS. Climate Change Impacts and Policies in Heterogeneous Societies

CHIPS brings together a multidisciplinary, international consortium to advance the state-of-the-art in four ways: (i) novel damage functions specific for impact channels relevant for distribution and growth, bridging the scales between spatially explicit impact data and aggregate macro regions; (ii) an explicit representation of household heterogeneity in the REMIND-MAgPIE and NICE IAMs; (iii) conceptual advances to address multi-level equity considerations and new welfare metrics with a focus on poverty; (iv) assessment of the distributional effects of carbon pricing and climate impacts in Europe through empirics and micro-simulation. In a comprehensive analysis the enhanced modeling framework will be applied to study distributional impacts of climate change and climate policies in a rich scenario framework based on the Shared Socioeconomic Pathways. A specific regional focus will be put on Europe and synergies with the SDGs will be explored.

IP: Potsdam Institute for Climate Impact Research (PIK), Alemania

Socios: Francia (Centre d'Economie de la Sorbonne (UMR 8174), Alemania (Mercator Research Institute on Global Commons and Climate Change), Suecia (University of Gothenburg), España (Universidad Nacional de Educación a Distancia)

Presupuesto total: 1.310.466€

Concedido ES: 101.000€

Proyecto 8

UNCHAIN. Unpacking climate impact CHAINS. A new generation of action- and user-oriented climate change risk assessments

UNCHAIN aims at further developing a practical and manageable climate change risk assessment framework based on the concept of Impact Chains. UNCHAIN will address, support and integrate a broad array of stakeholders. Its audiences are local authorities, private businesses, private home owners, and sub-national and national authorities in their capacity of supporting and facilitating local policy-making. UNCHAIN's scientific objectives will in general contributing to enabling accurate, science based, high resolution CC risk assessments, and will in particular relate to six innovations relating to existing climate change risk assessment frameworks: (1) address a shift in adaptation focus from merely adjusting to the possible need for transforming

society; (2) apply the concept of coproduction of knowledge during all stages of knowledge production; (3) analyze how societal change, regardless of climate change, can affect local climate change vulnerabilities and the socioeconomic consequences involved in local climate change adaptation; (4) develop a framework for an improved understanding of uncertainties involved in local decision-making on climate change adaptation, aiming to shift focus from mastering to managing such uncertainties; (5) identify risks of mal-mitigation and mal-adaptation and how to reduce such risks, and (6) identify transnational climate risks and ways to adapt to such risks.

IP: Vestlandsforskning (Western Norway Research Institute), Noruega

Socios: Francia (TEC Conseil, INSA Strasbourg), Austria (Paris-Lodron University Salzburg (PLUS), Alemania (Gesellschaft für Wirtschaftliche Strukturforchung, Fraunhofer Gesellschaft zur Förderung der angewandten Forschung e.v.), Suecia (Stockholm Environment Institute), España (Instituto Español de Oceanografía (IEO), Países Bajos (Wageningen University & Research), Noruega (Nordland research Institute)

Presupuesto total: 2.055.000€

Concedido ES: 119.535€

Convocatoria nacional: APCIN 2019- 2

Proyecto 6

BIO-CLIMAPATHS. Assessing climate-led social-ecological impacts and opportunities for resilient pathways in the EU bioeconomy. The EU is in the process of developing and implementing bioeconomy strategies to foster the transition from a fossil fuel-based to a renewable, biobased economy. Nevertheless, a more direct dependency of economic value chains on the provisioning function of ecosystems increases the socioeconomic system's vulnerability to climate hazards. Hence, innovative, interdisciplinary approaches are needed to assess different climate hazard related, cross-sectoral impacts in society. In particular, there is a need to assess climate-led resilience pathways that account for socio-economic factors, including direct losses, indirect distributive effects and the role of finance. Filling in a major knowledge gap, BIOCLIMAPATHS develops the first interdisciplinary methodological framework that contains the whole logic flow of the knowledge development process based on: 1. A novel databases of cross-sectoral climate risks that allow to map spatially explicit climate hazards' impact of the biophysical dimension (biomass losses) in the bioeconomy;

2. Advances the state of the art in bioeconomy sector modeling to disclose the channels of climate risks' transmission across interdependent biophysical, economic and financial systems at the subnational level with an ABM, integrated in a global input-output framework;

3. Identification of co-produced resilience solutions based on the assessment of challenges and opportunities for sustainable, inclusive and climate-resilient development in the EU under different bioeconomy pathways (food, materials and energy).

IP: Vienna University of Economics & Business, Austria. CO-IP: Elisabeth Marie Louise de Schutter, Vienna University of Economics & Business, Austria

Socios: Prajal Pradhan, Potsdam Institute for Climate Impact Research (PIK), Alemania, Sebastian Poledna, International Institute for Applied Systems Analysis, Risk and Resilience, Advanced Systems Analysis, Austria, Patricia Fuentes Sagar, Pablo de Olavide University, España.

Presupuesto total: 673.000€

Concedido ES: 74.000€

CONCERT-EJP -European Joint Programme for the Integration of Radiation Protection Research

CONCERT-EJP tiene como objetivo contribuir a la integración sostenible de los programas de investigación europeos y nacionales en protección de radiación. CONCERT como acción de cofinanciación se esfuerza por lograr atraer y agrupar los esfuerzos nacionales de investigación en protección radiológica con los programas de investigación EURATOM para hacer un mejor uso de los recursos públicos de I + D y abordar los desafíos comunes europeos en protección radiológica de manera más eficaz mediante esfuerzos conjuntos de investigación En áreas clave.

Socios: **Alemania (BFS- Federal Office for Radiation Protection, HMGU - Helmholtz Zentrum München)**, Finlandia (STUK – Sateilyturvakeskus); Bélgica (CEN- Centre d'étude de l'Énergie Nucleaire), Francia (ANR - Agence National de la Recherche, CEA - Commissariat a l'Énergie Atomique, IRSN - Institut de Radioprotection et de Surete Nucleaire, NERIS-NERIS Platform Association, MELODI-Association Melodi, ALLIANCE-ASSOCIATION ALLIANCE EUROPEENNE ENRADIOECOLOGIE), Reino Unido (DH-PHE - Department of Health – Public Health England), Italia (Uni Pavia - University Pavia, ENEA - Agenzia Nazionale per le Nuove Tecnologie, L'Énergia e lo Sviluppo Economico Sostenibile, ISS - Istituto Superiore di Sanita), Suecia (SSM - Swedish Radiation Safety Authority), **España (Agencia Estatal de Investigación- Ministerio de Economía y Competitividad (AEI-MINECO), Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT)**, Hungría (NRIRR - Frederic Joliot-Curie National Research Institute for Radiobiology and Radiohygiene, MTBA-EK - Centre for Energy Research, Hungarian Academy of Sciences), Bulgaria (NCRRP - National Centre of Radiobiology and Radiation Protection), Austria (MedUni Vienna - Medical University of Vienna), Noruega (NRPA - Norwegian Radiation Protection Authority), Países Bajos (RIVM - Rijksinstituut voor Volksgezondheid en Milieu), Portugal (FCT - Fundacao para a Ciencia e Tecnologia, APA-Agencia Portuguesa do Ambiente IP), Croacia (IMROH - Institute for Medical research and Occupational Health, RBI- Ruder Boskovic Institute), República Checa (SURO National Radiation Protection Institute, COSMT/NPI ASCR- Nuclear Physics Institute of the ASCR VVI), Rumanía (IFA - Institutul de Fizică Atomică), Grecia (EEAE - Greek Atomic Energy Commission), Eslovaquia (VUJE), Estonia (UT - University of Tartu), Lituania (RPC - Radiation Protection Centre), Letonia (UL - Latvijas Universitate), Finlandia (UEF - University of Eastern Finland), Dinamarca (DEMA-Danish Emergency Management Agency), Irlanda (EPA-Environmental Protection Agency); Eslovenia (JSI-Institut JOZEF STEFAN), Polonia (GIG-GLOWNY Instytut Gornictwa), Suiza (FOPH-Eidgenössisches Departement Des Innern)

Convocatoria conjunta internacional 2016

Países participantes	
Temáticas	Improvement of health risk assessment associated with low dose/dose rate radiation Reducing uncertainties in human and ecosystem radiological risk assessment and management in nuclear emergencies and existing exposure situations, including NORM
Presupuesto total	10.400.000€.
Concedido ES	192.501 €
Proyectos aprobados	9
Proyectos con MINECO/AEI	3 (1 coordinado)

No.	Acrónimo y título del proyecto	Países participantes
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1	CONFIDENCE. COping with uNcertainties For Improved modelling and DEcision making in Nuclear emergenCiEs	Alemania, Reino Unido, Francia, Eslovenia, España, Irlanda, Grecia, Noruega, Portugal, Suiza, Finlandia, Dinamarca, Bélgica, Italia, Hungría, Noruega, Países Bajos, Eslovaquia
2	LDLensRad	
3	TERRITORIES. To Enhance unceRtainties Reduction and stakeholders Involvement TOwards integrated and graded Risk management of humans and wildlife In long-lasting radiological Exposure Situations	Francia, Alemania, España (CIEMAT), Noruega, Bélgica, Reino Unido, Finlandia, Estonia
4	ENGAGE. ENhancinG stAkeholder participation in the GovernancE of radiological risks for improved radiation protection and informed decision-making	Bélgica, Francia, España (Barcelona Institute for Global Health (ISG), Grecia, Italia, Eslovenia, Suiza, Eslovaquia, Alemania, Rumanía,
5	LEU-TRACK. The Role of Extracellular Vesicles in Modulating the Risk of Low Dose Radiation-induced Leukaemia	Hungría, Reino Unido, Alemania
6	PODIUM. Personal Online DosImetry Using computational Methods	Bélgica, España, Alemania, Suecia, Reino Unido, Grecia, Irlanda
7	SEPARATE	
8	VERIDIC. Validation and Estimation of Radiation skIn Dose in Interventional Cardiology	
9	SHAMISEN-SINGS.	España, Italia, Francia, Japón, Noruega, Bélgica

Convocatoria nacional APCIN 2017

Proyecto 1

CONFIDENCE. COping with uNcertainties For Improved modelling and DEcision making in Nuclear emergenCiEs

The H2020 CONFIDENCE Project aims to close existing gaps in several areas of emergency management and long-term rehabilitation. It concentrates on the early and transition phases of an emergency, but considers also longer-term decisions made during these phases. The project brings together expertise from all four Radiation Protection Platforms and also from Social Sciences and Humanities, such that it can address the scientific challenges associated with model uncertainties and improve radioecological predictions and emergency management (NERIS and ALLIANCE), situation awareness and monitoring strategies (EURADOS), risk estimation in the early phase (MELODI), decision making and strategy development at local and national levels (NERIS) including social and ethical aspects (Social Sciences and Humanities).

IP: KIT - Karlsruhe Institute of Technology, Alemania

Socios: Alemania (BfS, HMGU, DIALOGIK), Reino Unido (CEH, UK Met. Office, PHE, WARWICK), Francia (CEPN, IRSN, MUTADIS), **España (Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT)**, Universidad de Extremadura), Irlanda (EPA), Grecia (EEAE), Noruega (NMBU, NRPA), Suiza (University of Zurich), Dinamarca (DTU), Países Bajos (RIVM, KNMI, RIKILT), Bélgica (SCK•CEN), Finlandia (STUK), Italia (UMIL), Eslovaquia (VUJE), Eslovenia (REC), Portugal (APA, IST), Hungría (MTA EK), Noruega (Norwegian Met. Institute)

Concedido ES: 35.948€

Proyecto 6

PODIUM. Personal Online DosImetry Using computational Methods

“Personal Online DosImetry Using computational Methods (PODIUM)” is a research project to improve occupational dosimetry by an innovative approach: the development of an online

dosimetry application based on computer simulations, which will calculate individually the occupational doses, without the use of physical dosimeters.

IP: Belgian Nuclear Research Center (CEN), Bélgica

Socios: **España (Universidad Politécnica de Cataluña-UPC)**, Alemania (German Research Center for Environmental Health (HMGU)), Suecia (Lund University), Reino Unido (Public Health England), Grecia (The Greek Atomic Energy Commission (EEAE)), Irlanda (St. James's Hospital Ireland (SJH))

Concedido ES: 100.000€

Proyecto 9

SHAMISEN-SINGS. Nuclear Emergency Situations - Improvement of dosimetric, Medical And Health Surveillance) - Stakeholder INVOLVEMENT IN GENERATING SCIENCE

SHAMISEN-SINGS brings together an experienced multi-disciplinary and multi-national consortium to answer important objectives of the call: to improve countermeasures for nuclear emergency preparedness and provide important knowledge on stakeholder engagement in radiation protection, including a critical assessment of benefits and challenges of citizen science. By taking a practical ethics approach, fostering co-reflection between natural and social scientists, it will strengthen integration of social science in radiation protection. It will also provide an independent channel for collection and management of data for use by authorities for decision making, assessment of doses, evaluation of health/social condition and health surveillance in general, and support in the implementation of BSS.

IP: Barcelona Institute for Global Health, España

Socios: Italia (Istituto Superiore di Sanità (ISS)), Japón (Fukushima Medical University (FMU)), Francia (Institute for Radiological Protection and Nuclear Safety (IRSN)), Centre d'étude sur l'Evaluation de la Protection dans le domaine Nucléaire (CEPN), Bélgica (Belgian Scientific Institute of Public Health (WIV-ISP)), Noruega (Norwegian University of Life Sciences (NMBU)), **España (Universitat Autònoma de Barcelona (UAB))**

Concedido ES: 56.553€

MOSAiC - International Arctic Drift Expedition

MOSAiC es una expedición de investigación internacional que da la bienvenida a una amplia participación de la comunidad investigadora. La iniciativa tiene como objetivo fomentar la colaboración y la coordinación para lograr avances significativos en nuestra comprensión de los procesos de sistemas acoplados del Ártico. Como socio central de MOSAiC y proveedor de la plataforma de investigación primaria (RV Polarstern), el Instituto Alfred Wegener administra este proceso en consulta con la Junta del Proyecto MOSAiC internacional. Hay tres mecanismos principales de participación:

- (1) Participantes en MOSAiC sin necesidad de amarre a bordo del Polarstern.
- (2) Participantes en MOSAiC que necesitan un puesto de atraque a bordo del Polarstern.
- (3) Socios que apoyan a MOSAiC logística o científicamente con infraestructura.

Convocatoria conjunta internacional 2018

Países participantes	
Temáticas	(1) Participantes en MOSAiC sin necesidad de amarre a bordo del Polarstern. (2) Participantes en MOSAiC que necesitan un puesto de atraque a bordo del Polarstern. (3) Socios que apoyan a MOSAiC logística o científicamente con infraestructura.
Presupuesto total	250.000€
Concedido ES	250.000€
Proyectos aprobados	
Proyectos AEI	2

No.	Acrónimo y título del proyecto	Países participantes
1	ICE-MOD. Mejorando los modelos de emisividad del hielo marino en las microondas de baja frecuencia	España
2	SIMPATICO. Contribucion española a MOSAiC: transporte primario de aerosoles en la atmosfera artica	España, Alemania, Reino Unido, Suiza, Suecia, Italia, Estados Unidos, Dinamarca

Convocatoria nacional APCIN 2019-2

Proyecto 1

ICE-MOD. Mejorando los modelos de emisividad del hielo marino en las microondas de baja frecuencia The information provided by remote sensing platforms on sea ice thickness and snow depth is crucial to understand the changes that the arctic is facing under the threat of climate change, and in particular to study the evolution of sea ice mass and sea ice balance. According to issi virtual sea ice mission, there is the consensus that better models for sea ice and snow microwave emission are needed to achieve reliable estimates of thin sea ice thickness and snow depth from radiometry, since remote sensing platforms are the only way to grant continuous, wide area monitoring in the arctic. Mosaic offers a great and unique opportunity to fill this gap, by performing measurements with shortrange lband microwave radiometers with simultaneous in situ measurements, which will serve as ground truth. The experimental approach is the following: three lband radiometers (emirad2, elbara3 and Ariel) shall perform measurements

during the whole year round. The most interesting time periods are during autumn (freezeup) and winter ice growth and snow accumulation. The emirad2 will be installed on the polarstern deck. The elbara3 and Ariel will be deployed over separate sledges to make mobile systems, which can measure under different ice conditions. The radiometers will perform several tracks on the ice camp region. The Ariel system is much lighter and smaller than elbara3, permitting therefore, to measure along longer transects and under more variate ice conditions. The Ariel system will be rented to the balamis company thanks to this Spanish funded call. Many routinely in situ acquisitions will be performed under the regular mosaic acquisition plan.

IP: ICM-CSIC, España

Concedido ES: 125.000€

Proyecto 2

SIMPATICO. Contribucion española a MOSAIC: transporte primario de aerosoles en la atmosfera artica

Northern regions are at forefront of changes in climatic forcing and biogeochemical-ecological interactions. In these particular areas, without delay, we must (1) understand the rate and magnitude of ocean-atmosphere interactions changes likely to occur, and their impact on local and global ecosystems and (2) disseminate it to the scientific community and to the general public. Spain contribution to mosaic: primary aerosol transport in the arctic atmosphere (simpatico) aims to study the polar aerosols dynamics in changing arctic environments during mosaic. In the high arctic, local marine biogenic emissions are an important source of cloud condensation nuclei (ccn) - those aerosol particles that can form into cloud droplets; thereby modulating cloud properties. Within simpatico, we will use instrumentation to determine the size and chemical composition of the particles. The main objective will be - using experimental and field approaches - to link aerosol emission processes with biological activities in surface polar waters, and disseminate results. The simpatico uses a novel state-of-the-art primary aerosol (pa) chamber developed at the icm-csic in Spain, able to study the role of air-water-sea ice interactions in the formation of primary aerosols, and to be deployed in the British antarctic survey (bas) container during mosaic. We aim to collect polar open ocean water, melt pond water and melted ice water - then bubbled these water samples in the pa chamber. In a nutshell, characterization of artificially generated primary polar aerosols with ad-hoc particulate matter pm1 sampling system, and characterization of (a) water, (b) primary aerosol generated within the chamber and (c) ambient aerosols. The results will be compared with the microbial communities, including micro-, nano- and pico-plankton photosynthetic organisms and bacteria, and viruses, with the mosaic collaborators.

IP: ICM-CSIC, España

Socios: Alemania, Reino Unido, Suiza, Suecia, Italia, Estados Unidos, Dinamarca

Concedido ES: 125.000€



Reto 6: Cambios e innovaciones sociales

JPI Cultural Heritage - Joint Programming Initiative on Cultural Heritage

La Iniciativa de Programación Conjunta para el Patrimonio Cultural (JPI CH) se creó en 2010. Agrupa a agencias financiadoras, ministerios y Consejos de Investigación de diversos países de Europa y su objetivo principal es fomentar la investigación y la innovación centrada en el patrimonio cultural, tanto tangible como intangible, digital y natural.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales: 5 (2014, 2015, 2017, 2018, 2019, 2020)

Participación de MINECO en convocatorias conjuntas: 3 (2014, 2017; 2019)

Convocatoria conjunta internacional HERITAGE PLUS Call 2014 (cofinanciada por la CE)

Proyectos aprobados: 16

Proyectos aprobados con participación española: 8 (2 proyectos coordinados)

No.	Acrónimo y título del proyecto	Países participantes
1	Changes: Changes in cultural Heritage Activities: New Goals and benefits for Economy and Society	Italia, Bélgica, Suecia, Países Bajos
2	Chime: Cultural Heritage and Improvised Music in European Festivals	Reino Unido, Suecia, Países Bajos
3	CHT2: Cultural Heritage Through Time	Italia, Reino Unido, España, Polonia
4	Clima: Cultural Landscape risk Identification, Management and Assessment	Italia, Reino Unido, Dinamarca, Chipre
5	Cmop: Cleaning Modern Oil Paintings	Países Bajos, Reino Unido, Italia
6	Euro Magic: A Million Pictures: Magic Lantern Slide Heritage as Artefacts in the Common European History of Learning	Países Bajos, Reino Unido, Bélgica, España
7	Euwather: European Waterways Heritage: Re-evaluating European Minor Rivers and Canals as Cultural Landscapes	Italia, Reino Unido, Países Bajos, España
8	Endow: Enhancing access to 20th Century cultural heritage through Distributed Orphan Work	Reino Unido, Países Bajos, Italia
9	Heat: Heritage and Threat	Dinamarca, Rumanía, Polonia, Italia
10	Heritamus: (In)Tangible: a research on the relationship between tangible and intangible heritage	Portugal, España, Francia
11	Heuright: The Right to Cultural Heritage – Its Protection and Enforcement through Cooperation in the European Union	Polonia, Reino Unido, Italia
12	Himanis: Hlistorical MANuscript Indexing for user-controlled Search	Francia, España, Países Bajos
13	Gastrocert: Gastronomy and Creative Entrepreneurship in Rural Tourism	Suecia, Italia, Reino Unido, España
14	Pich: The impact of urban planning and governance reform on the historic built environment and intangible cultural heritage	Países Bajos, Reino Unido, Italia, Noruega
15	Prothego: PROtection of European Cultural HERitage from GeO - hazards	Italia, Reino Unido, Chipre, España
16	REFIT: Resituating Europe's first towns: A case study in enhancing knowledge transfer and developing sustainable management of cultural landscapes.	Reino Unido, Francia, España

Convocatoria nacional APCIN 2015

Proyecto 3

CHT2. Cultural Heritage Through Time.

The aim of the CHT2 project is to fully integrate the fourth dimension (4D) into Cultural Heritage studies for analysing structures and landscapes through time. CHT2 will collect heterogeneous material (multi-temporal aerial and terrestrial photographs, maps, drawings, etc.) and combine it with contemporary 3D models.

IP: Politecnico di Milano, Italia

Socios: Reino Unido (Newcastle University), **España (Universidad de Salamanca)**, Polonia (Stanislaw Staszic Scientific Association).

Concedido ES: 60.000 €

Proyecto 6

EURO-MAGIC. A Million Pictures: Magic Lantern Slide Heritage as Artefacts in the Common European History of Learning

Resumen:

IP: Utrecht University, Países Bajos.

Socios: **España (Universidad de Salamanca, Universidad de Girona)**, Bélgica (University of Antwerp), Reino Unido (University of Exeter).

Concedido ES: 30.000 € + 30.000 € = 60.000 €

Proyecto 7

EUWATHER. European Waterways Heritage: Re-evaluating European Minor Rivers and Canals as Cultural Landscapes.

The aim is to promote the knowledge and rehabilitation of the unique cultural heritage of minor waterways and historic canals in 4 European pilot regions. The project is aimed at co-designing with people (local and visitor, stakeholder and public sector etc) to generate a body of data that can reveal the cultural and artistic heritage of minor waterways, in order to make a Spatial Data Infrastructure (SDI), interactive maps, and promote associated ways of communicating this heritage to a range of audiences.

IP: Università Ca' Foscari, Italia

Socios: Reino Unido (University of Brighton), Países Bajos (Universiteit Leiden), **España (Universidad de Girona)**.

Concedido ES: 60.000€

Proyecto 10

HERITAMUS. (In)Tangible: a research on the relationship between tangible and intangible heritage.

The aim is to develop an innovative approach through a cooperative research programme with the stakeholders of Fado in Portugal and Flamenco in Spain. In that sense, this project will meet the main priorities of the strategic agenda for JPI Cultural Heritage and Global Change, namely by developing a reflective society involving at the same level academic work and community practitioners,

IP: Universidade Nova de Lisboa, Portugal

Socios: **España (Universidad de Sevilla)**, Francia (CNRS).

Concedido ES: 57.308 €

Proyecto 12

HIMANIS. Historical MANuscript Indexing for user-controlled Search.

HIMANIS aims at developing cost-effective solutions for querying large sets of handwritten document images. To this end, innovative keyword spotting, indexing and search methods will be developed, tested, adapted and/or scaled up to meet the realworld conditions required.

IP: CNRS, Francia

Socios: Francia (CNRS, A2iA), **España (Universidad Politécnica de Valencia)**, Países Bajos (Rijksuniversiteit Groningen).

Concedido ES: 60.000€

Proyecto 13

GASTROCERT. Gastronomy and Creative Entrepreneurship in Rural Tourism.

This project has two aims, to explore (i) how the development of local gastronomy can help to protect rural heritage values, and (ii) how entrepreneurial culture can enhance locally produced food as a value-added touristic experience.

IP: University of Gothenburg, Suecia

Socios: Suecia (University of Mid Sweden), Italia (Mediterranean University of Reggio Calabria), Reino Unido (University of the Highlands and Islands), **España (Universidad de Girona)**.

Concedido ES: 59.419 €

Proyecto 15

PROTHEGO. PROtection of European Cultural HERitage from GeO – hazards.

New space technology based on radar interferometry is now capable to monitor, since 1992 and with mm precision, surface deformation for reflective targets named persistent scatters (PS), which consistently return stable signals to the radar satellites. The present proposal will apply this new technique to monuments and sites that are potentially unstable due to landslides, sinkholes, settlement, subsidence, active tectonics as well as structural deformation, all of which could be effected of climate change and human interaction. To magnify the impact of the project, the approach will be implemented in more than 450 sites on the UNESCO World Heritage List in geographical Europe.

IP: Istituto Superiore per la Protezione e Ricerca Ambientale, Italia

Socios: Italia (University of Milano), Reino Unido (Natural Environment Research Council), Chipre (Cyprus University of Technology), **España (Instituto Geológico y Minero de España (IGME))**.

Concedido ES: 53.000€

Proyecto 16

REFIT. Resituating Europe's first towns: A case study in enhancing knowledge transfer and developing sustainable management of cultural landscapes.

Through research focusing on some of the most significant monuments in European history (Late Iron Age oppida: c.200BC-AD60), this project will focus on understanding and engaging under-represented users (SMEs, wildlife organisations, farmers) unaware of the value of this pan-European phenomenon.

IP: Durham University, Reino Unido

Socios: Francia (Bibracte EPCC), **España (Universidad Complutense de Madrid)**.

Concedido ES: 59.000€

Convocatoria conjunta internacional 2017

Países participantes	Bielorrusia, Chipre, República Checa, Francia, Noruega, Polonia, España, Suecia, Países Bajos, Reino Unido.
Temáticas	Topic 1 The Critical: Engagements with Digital Heritage Topic 2 The Curatorial: Communities and Digital Heritage Topic 3 Safeguarding Digital Heritage

Presupuesto total	4.500.000€
Concedido ES	149.981€
Proyectos aprobados	8
Proyectos con financiación AEI	2

No.	Acrónimo y título del proyecto	Países participantes
1	Digitizing Dogon heritage The legacy of Abirè, the Dogon prophet	Países Bajos, Reino Unido, Francia
2	DigiCONFLICT. Digital Heritage in Cultural Conflicts	Reino Unido, Polonia, Suecia
3	CADEAH. European History Reloaded: Curation and Appropriation of Digital Audiovisual Heritage	Países Bajos, República Checa, Suecia
4	The Dictionary/Grammar Reading Machine: Computational Tools for Accessing the World's Linguistic Heritage	Suecia, Países Bajos, Francia
5	ARCH. Ancient Coinage as Related Cultural Heritage	Reino Unido, España, Francia
6	Safeguarding the Cultural Heritage of Dance through Augmented Reality	Chipre, Reino Unido, Francia
7	HOME - History of Medieval Europe	Francia, España, República Checa
8	READ IT. READING EUROPE ADVANCED DATA INVESTIGATION TOOL	Francia, Reino Unido, Países Bajos, República Checa

Convocatoria nacional APCIN 2018

Proyecto 5

ARCH. Ancient Coinage as Related Cultural Heritage

The ARCH project uses Linked Open Data technology to establish, for the first time, an overarching platform for the study, curation, archiving and preservation of the monetary heritage of the ancient world. Using the newly developed nomisma.org knowledge organisation system it will create a framework consisting at the highest level of a single, unified portal across multiple online typological resources currently under development. These resources will in turn be linked to a body of data drawn from two major European collections, as well as a large corpus of material drawn from commercial contexts (auction catalogues). The overarching portal will serve as a central point of access to this data for multiple audiences, as well as a demonstration of the extensibility of this approach to other geographic areas. Associate Partner-projects based in Germany and the United States will contribute typologies for this purpose. As a proof of concept of the research applicability of this framework, ARCH will develop one geographical focus – Pre-Roman Spain and southern Gaul – in the form of a specific online reference tool that will draw upon both categories of data (public collections and objects in commerce), as well as a program of research designed to exploit the opportunities offered by such a systematic and Linked Open Data infrastructure. This will examine questions of monetary and cultural connectivity and interaction across the borders of Spain and France in antiquity, in collaboration with leading scholars in the field of this geographical area, and monetary and cultural history, working as Associate Partners based in Paris, Orléans, and Valencia.

IP: University of Oxford, Reino Unido

Socios: **España (Universidad de Valencia)**, Francia (Bibliothèque nationale de France)

Presupuesto total: 501.766€

Concedido ES: 74.981 €

Proyecto 7

HOME. History of Medieval Europe

Capitalizing on the success of the JPI-CH Heritage Plus funded HIMANIS project, HOME will associate Computer Science (UPVLC, A2iA, Teklia), Humanities (IRHT) and Cultural Heritage (NACR) institutions, plus a network of Research and cultural heritage institutions (ICARUS as Associate Partner) in order to not only produce technology to generate new, research-based knowledge from historical manuscripts, but also implement a user and researcher friendly environment for fostering a meaningful experience for scholarly research and discovery.

HOME aims at (1) further developing searching approaches specifically designed for querying large sets of text images digitized from historical handwritten documents, (2) linking Digital Cultural Heritage and associated metadata (abstract, indexes and text editions) and authority data (indexes, gazeteers), which are disconnected from the digitized primary sources and stored in separate silos, (3) establishing a knowledge framework and a semantic information retrieval system, to understand the multilingual medieval sources, (4) presenting, visualizing and interpreting the sources on the History of Medieval Europe, (5) leveraging meaningful discovery and research experience in an user-centered and ergonomic environment.

IP: Centre National de la Recherche Scientifique, Francia

Socios: **España (Universitat Politècnica de València)**, República Checa (Národní archiv České republiky), Francia (A2iA)

Presupuesto total: 422.011€

Concedido ES: 75.000 €

Convocatoria conjunta internacional 2019

Países participantes	Chipre, Italia, Portugal, España, Francia, República Checa, Reino Unido, Noruega, Países Bajos
Temáticas	Topic 1: Analysing and modelling change Topic 2: Sustainable protection and enhancement of values Topic 3: Management of cultural heritage at risk Topic 4: Layered conservation
Presupuesto total	6.660.000€
Concedido ES	524.850€
Proyectos aprobados	10
Proyectos con financiación AEI	5 (1 proyecto coordinado por ES)

No.	Acrónimo y título del proyecto	Países participantes
1	SHIELD. Safeguard Heritage in Endangered Looted Districts	Chipre, Italia, Portugal
2	WOODPLAKE. Archaeological Wooden Pile-Dwelling in Mediterranean European lakes: strategies for their exploitation, monitoring and conservation	España, Francia, Italia
3	F-ATLAS. Franciscan Landscapes: the Observance between Italy, Portugal and Spain	Italia, Portugal, España
4	PROCRAFT. PROtection and Conservation of Heritage AirCRAFT	República Checa, Francia, Italia
5	PHE. The Past has Ears	Francia, Italia, Reino Unido
6	CURBATHERI. Curating Sustainable URBAAn Transformations through HERItage	Italia, Noruega, España, Reino Unido
7	EHEM. Enhancement of Heritage Experiences: the Middle Ages. Digital Layered Models of Architecture and Mural Painting over Times.	Chipre, Italia, España
8	StAr. Development of Storage and Assessment of methods suited for organic Archaeological artefacts	Francia, Italia, Noruega, Polonia
9	IRIS. Inspiring rural heritage: sustainable practices to protect and conserve upland landscapes and memories	Francia, Italia, España, Reino Unido
10	CRYSTINART. Crystallization damage at the interface of artworks.	Francia, Italia, Países Bajos

Convocatoria nacional APCIN 2020

Proyecto 2

WOODPLAKE. Archaeological Wooden Pile-Dwelling in Mediterranean European lakes: strategies for their exploitation, monitoring and conservation

Wooden pile dwellings (WPD) are an inexhaustible and precious source of information on landscape evolution and contingent cultural activities. There have been significant investigations on WPD submerged in Alpine areas, but important knowledge gaps are evident regarding Mediterranean volcanic and karstic lakes. The conservation of the latter archaeological remnants is endangered by the climatic change impacts and anthropogenic pressure, further exacerbated by the sensitive and circumscribed lake environments. Wood from pile dwellings is waterlogged, and its conservation mostly depends on the surrounding environment i.e. sediments and water quality. This project aims to study all the aspects of WPD in volcanic and karstic lakes through studies ranging from their potential exploitation, investigation into their conservation and restoration, monitoring lake environment and forecasting scenarios through

an aquarium reproducing the most significant abiotic conditions occurring in the lake. This last study will be achieved by means of an aquarium model. Three case-studies have been selected in which agricultural practices influence climatic stress and pollution impact: Lake Banyoles in Spain and Lakes Bolsena and Mezzano in Italy. The foreseen investigations will employ an extraordinarily wide spectrum of skills and disciplines (palynology, dendrochronology, micromorphology, soil science and innovative tools like isotopic analysis). The characterization of wooden materials will involve gravimetric measurements, solid NMR, microbiological analysis, XRD, FTIR-imaging, Py-GC/MS and thermogravimetry. Samples will derive from different sources to include immersed, reburied finds and restored wood. The main activities will be devoted to field campaigns and UAV, high resolution methods for monitoring environmental conditions, capitalization of results (network of bigdata about lake sites), involvement of local actors and population on the historical, cultural and environmental value of WPDs to establish decision-making processes and to foster high quality tourism. The project fits the topic Management of Cultural Heritage at Risk.

IP: University of Tuscia, Italia

Socios: España, Francia, Italia

Concedido: 100.000 €

Concedido ES: 333.297 €

Proyecto 3

F-ATLAS. Franciscan Landscapes: the Observance between Italy, Portugal and Spain

The spiritual legacy of St. Francis of Assisi (1181/82-1226) characterises European culture and survives through his rules, spiritual texts and mendicant orders, despite this, many architectural complexes have lost their original function and values. The importance of mendicant friars in the transformation of urban and rural landscapes has been recognized only recently. The project aims to study the Italian-Spanish-Portuguese Franciscan Observance network, in order to define a "Atlas" of documentation and knowledge for conservation, protection and promotion of this scattered Cultural Heritage (CH). The remote location of these buildings and their connection with the surrounding landscape and territory instances the issue of peripheral and abandoned areas and contributes to defining a map of criticalities. The proposal aims at combining traditional and innovative techniques in order to develop risk assessment methodologies, protocols, and tools and to create user-friendly interfaces for the management and the enhancement of CH (T1). The poor conditions of some buildings, due to hydrogeological instability, abandonment or earthquakes, require the definition of strategies for the conservation, protection and management of this vulnerable heritage (T3). Furthermore, the project aims at developing new strategies for layered experiences through ICT (T4) and innovative methods to reuse, through the interaction, the CH, by designing hiking and cycling routes (T2). The expected outcomes will facilitate awareness of European citizenship based on the sharing of common values and achievements and will promote an understanding of Europe's history based on its physical, intangible and natural heritage. Noting that the identification of a common European cultural heritage may be achieved via cultural routes tracing the history of peoples, migrations, and the spread of the major European currents of civilization in the fields of philosophy, religion, culture, arts, science, technology, and trade.

IP: Università degli Studi di Firenze. Italia

Socios: Università degli Studi di Firenze (ITALY), Instituto Universitario de Lisboa (PORTUGAL), Universitat de Barcelona (SPAIN), Universidade Catolica Portuguesa (PORTUGAL)

Concedido ES: 99.850€

Proyecto 6

CURBATHERI. Curating Sustainable URBAn Transformations through HERItage

It is well known that cities are constantly changing. As such, cities are composed of added historic layers that, over time, transform into heritage which merits conservation. Within the conservation process, heritage constitutes an inherent dynamic and transformative urban element. However, fragmented heritage structures targeted by urban strategies, often lose the opportunity to offer urban planning a sustainable source for cultural values as these pose difficulties for practitioners and users to agree on what is to be protected. To address this challenge, CURBATHERI proposes an approach in which historical transformation is a value which we need to sustain. In this way, the needs for change and new cultural imprints in the city are addressed through its own deep historic continuity. To achieve this, CURBATHERI's main objective is to develop a management toolbox that considers historical urban transformation as a source of heritage values that will enable decision makers to better understand the deep history of the place. This toolkit is based on cross-cutting research for comparable analysis in Norway, UK, Italy and Spain that integrates conceptual solutions defined by participatory approaches, online and offline, through innovative digital heritage modelling. The toolbox is expected to facilitate the conceptualization of heritage values among stakeholders for the prioritization of best planning solutions. Both the theoretical and practical contributions of the project aim to stimulate reflection on the choices on how to use urban heritage affected by the historical transformation in urban planning. All in all, using these choices as a tool for enabling dialogue will stimulate reflection on how to make room for different ways of implementing time and temporality in future cities.

IP: University of Tuscia, Noruega

Socios: Reino Unido, España, Italia

Concedido: 98.000€

Concedido ES: 299.965€

Proyecto 7

EHEM. Enhancement of Heritage Experiences: the Middle Ages. Digital Layered Models of Architecture and Mural Painting over Times.

The project aims to obtain virtual reconstructions of medieval artistic heritage -architecture with mural paintings- that are as close as possible to the original at different times, incorporating historical-artistic knowledge and the diachronic perspective of heritage, as an instrument for researchers, restorers and heritage curators and to improve the visitor's perceptions and experiences. In the digital models elaborated we intend to develop, as concrete objectives: 1. The understanding of architectural complexity, which is usually regularized geometrically. The collaboration of architects reveals the enormous interest of multidisciplinary dialogue in order to reach a real understanding of the construction of the building and its structural "anomalies". 2. Solving chromatic problems. The different restoration criteria followed over the years have resulted in notable differences in the current chromatic perception, sometimes of different fragments of the same ensemble. The analysis of pigments, the arrangement of the pictorial layers and the successive restorations suffered, with the help of conservation and restoration technicians, will allow us to digitally specify the original colouring of the paintings. 3. Raise and propose the resolution of lighting problems. To date, trials have been carried out for the restitution of these problems in digital models based on the analysis of natural lighting, which we intend to improve. We also propose to deal with artificial lighting by chandeliers or oil lamps, which produced effects of painting vibration at the moment when, for liturgical reasons, the images "acted". 4. To approach digitally the different perspectives of the medieval building and its paintings according to the categories of users. The laity did not have the same visual access as the clergy to the most decorated parts of the church, the iconographic programs did not have a universal addressee.

IP: Universitat de Barcelona, España

Socios: Chipre, Italia

Concedido: 120.000€

Concedido ES: 125.000€

Proyecto 9

IRIS. Inspiring rural heritage: sustainable practices to protect and conserve upland landscapes and memories

Europe's upland landscapes are a rich and complex heritage, born of the interaction of nature and culture over millennia. Local communities can play an active and essential role in conserving and protecting this heritage, benefitting wider society. However, current conservation measures and land use decisions consistently fail to consider the historic dimension of upland landscapes and underestimate the contribution of local practitioners in sustaining their environment through active use. IRIS is a response to these circumstances, and to the threats to upland landscapes from depopulation, abandonment, the loss of traditional skills and land use change driven by the climate emergency and economic trends.

IRIS aims to advance the socially and environmentally sustainable conservation, protection and use of upland landscapes. The project will research and develop a 'living heritage' approach to conservation, promoting the 'protection through use' of upland environments and adjacent rural areas. Through intensive and participatory research in five countries (Spain, France, Italy, Montenegro, the UK) and wider European research and knowledge exchange, IRIS will: Demonstrate how knowledge of historical processes and land use practices supports the conservation and sustainable development of upland landscapes; Define a 'living heritage' approach to conservation and best practices through which local stakeholders can embed their cultural values, expertise and traditions; Support collaboration among local institutions and communities and realise effective and diverse participation in the conservation, protection, sustainable development and use of upland landscapes; Provide local and European policy makers with new tools that will enable them to: (a) take into account the historical dimension of rural places, and; (b) implement a 'living heritage' approach to decisionmaking; Create a new research framework that advances knowledge of upland cultural heritage and its wider social and environmental values and benefits; Communicate and disseminate research results at local, European and wider international levels.

IP: University of Genoa, Italia.

Socios: University of Genoa (UNIGE), Genoa (ITALY), University of Durham, Durham, (UK), University of Granada, Granada (SPAIN), Université Toulouse II Jean Jaurès (GEODE), Toulouse (FRANCE).

Concedido: 100.000€

Concedido ES: 325.310€

HERA-JRP-PS - HERA Joint Research Programme European Public Space, Culture and Integration

El objetivo del programa HERA JRP PS propuesto será investigar los problemas y desafíos de la integración con referencia específica a los roles de la cultura y del espacio público en los procesos de integración (y potencialmente en fallas de integración, como experiencias o prácticas de exclusión). El programa ha sido diseñado para facilitar una amplia gama de enfoques para conceptualizar el “espacio público”, incluidos los espacios físicos donde se expresan ideas, valores y creencias, pero también espacios para la actuación, el entorno construido y los espacios virtuales. La “cultura” también se entenderá ampliamente e incluirá idiomas, así como formas de herencia y práctica creativa como vehículos para la comprensión cultural en el espacio público. Este enfoque inclusivo facilitará respuestas amplias, innovadoras e interdisciplinarias al JRP. Veinticuatro organizaciones de 24 países de la UE han agrupado una cantidad sustancial de sus fondos de investigación en humanidades para este nuevo HERA JRP, lo que aumenta la eficiencia y el impacto de la financiación pública. El consorcio HERA JRP PS también apoyará activamente las actividades de intercambio de conocimientos y estimulará una difusión más amplia sobre las valiosas contribuciones de la investigación en nuevas humanidades. Además, HERA JRP PS llevará a cabo actividades adicionales destinadas a la creación de capacidad internacional en la investigación de humanidades y explorará y preparará nuevas acciones conjuntas.

Socios: **Coordinador: Países Bajos** (Netherlands Organisation for Scientific Research (NWO), Austria (Austrian Science Fund (FWF), Bélgica (Belgium National Fund for Scientific Research (FNRS), Croacia (Croatian Academy of Sciences and Arts (HAZU), República Checa (Academy of Sciences of the Czech Republic (ASCR), Dinamarca (The Danish Agency for Science, Technology and Innovation (DASTI DCTI), Estonia (Estonian Science Foundation (ETAG), Finlandia (Academy of Finland (AKA), Francia (National Research Agency (ANR), Alemania (German Aerospace Center (DLR), Islandia (Icelandic Centre for Research (RANNIS), Irlanda (Higher Education Authority (HEA), Italia (Ministry of Education, University and Research (MIUR), Letonia (State Education Development Agency (VIAA), Lituania (Research Council of Lithuania (LSC/LMT/RCL), Luxemburgo (National Fund for Research (FNR), Noruega (Research Council of Norway (RCN), Polonia (National Science Centre (NCN), Eslovaquia (Slovak Academy of Science (SAS/SAV), Eslovenia (Ministry of Education, Science, Culture and Sport (MESCS/MIZS), **España (Agencia Estatal de Investigación (AEI)**, Suecia (Swedish Research Council (VR/SRC), Suiza (Swiss National Science Foundation (SNSF/SNF), Reino Unido (Arts and Humanities Research Council (AHRC)

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales: 1 (2018)

Participación del MINECO y la AEI en convocatorias conjuntas: 1 (2018)

Convocatoria conjunta 2018

Países participantes	Austria, Bélgica, Croacia, República Checa, Dinamarca, Finlandia, Francia, Alemania, Islandia, Irlanda, Italia, Lituania, Letonia, Luxemburgo, Países Bajos, Noruega, Polonia, Eslovaquia, Eslovenia, España, Suecia, Suiza, Reino Unido
Temáticas	Public Spaces: Culture and Integration in Europe
Presupuesto total	20.000.000€
Concedido ES	649.109€
Proyectos aprobados	20
Proyectos financiados por AEI	6 (proyecto coordinado por ES)

No.	Acrónimo y título del proyecto	Países participantes
1	BESTROM. Beyond Stereotypes: Cultural Exchanges and the Romani Contribution to European Public Spaces	España, Polonia, Reino Unido, Finlandia
2	Cemeteries and Crematoria as public spaces of belonging in Europe: a study of migrant and minority cultural inclusion, exclusion and integration	Reino Unido, Países Bajos, Suecia, Luxemburgo, Noruega,
3	en/counter/points: (re)negotiating belonging through culture and contact in public space and place	Reino Unido, Polonia, Italia, Países Bajos, Alemania
4	European Music Festivals, Public Spaces, and Cultural Diversity	Dinamarca, Países Bajos, Irlanda, Polonia, Reino Unido
5	FESTSPACE. Festivals, events and inclusive urban public spaces in Europe	Reino Unido, Irlanda, Suecia, España
6	FOOD2GATHER: Exploring foodscapes as public spaces for integration	Noruega, Alemania, Francia, Italia, Países Bajos, Bélgica
7	Governing the Narcotic City. Imaginaries, Practices and Discourses of Public Drug Cultures in European Cities from 1970 until Today.	Alemania, Países Bajos, Dinamarca, Francia
8	Healthcare as a Public Space: Social Integration and Social Diversity in the Context of Access to Healthcare in Europe	Alemania, Eslovenia, Croacia, Polonia
9	MMP. Moving Marketplaces: Following the Everyday Production of Inclusive Public Spaces	Reino Unido, Países Bajos, Suiza, España
10	PLURISPACE. Negotiating diversity in Expanded European Public Spaces	Francia, Reino Unido, Noruega, España
11	NITE. Night spaces: migration, culture and IntegraTion in Europe	Países Bajos, Reino Unido, Alemania, Dinamarca, Irlanda
12	Pleasurescapes. Port Cities' Transnational Forces of Integration	Alemania, Países Bajos, España, Suecia
13	PURE. PUBlic RENaissance: Urban Cultures of Public Space between Early Modern Europe and the Present	Reino Unido, Alemania, España, Países Bajos, Italia
14	Public Space in European Social Housing	Dinamarca, Noruega, Suiza, Italia
15	Public Spaces and Psychoactive Revolution. The Impact of New Intoxicants on Public Spaces, Consumption, and Sociability in North-Western Europe, c. 1600 – c. 1850	Reino Unido, Países Bajos, Alemania, Suecia
16	Public transport as public space in European cities: Narrating, experiencing, contesting	Estonia, Bélgica, Alemania, Finlandia
17	The European Spa as a Transnational Public Space and Social Metaphor	Países Bajos, Suecia, Reino Unido, Alemania
18	The everyday experiences of young refugees and asylum seekers in public spaces	Reino Unido, Alemania, Países Bajos, Bélgica
19	The Scientific Conference: A Social, Cultural, and Political History	Suecia, Reino Unido, Francia, Países Bajos
20	VICTOR-E. Visual Culture of Trauma, Obliteration and Reconstruction in Post-WW II Europe	Alemania, Italia, República Checa, Francia

Convocatoria nacional APCIN 2019

Proyecto 1

BESTROM. Beyond Stereotypes: Cultural Exchanges and the Romani Contribution to European Public Spaces

BESTROM goes beyond the historical scholarship which focuses on state practices, instead emphasising Romani agency, and this implies a critique of “integration”: Romanies’ ambivalent

historical experience confounds the familiar inclusion-exclusion binomial, while their practices of challenging normative integration processes, deploying skills of adaptability, mobility and multilingualism, constitute a cultural matrix rich in possibilities for re-visioning European identity. We examine the Romani contribution in four exemplary public spaces, deploying historical, ethnographic and musicological methods. The past and present dynamics of those spaces are explored, with a shared aim of illuminating processes of exchange without ignoring underlying conflicts and asymmetries of power. The case studies have regional foci but are conceived in transnational terms, sensitive to comparisons and transfers.

IP: Universidad de Sevilla, España

Socios: Polonia (Jagiellonian University of Kraków), Reino Unido (University of Liverpool), Finlandia (University of Helsinki)

Presupuesto total: 729.847,10€

Concedido ES: 149.760 €

Proyecto 5

FESTSPACE. Festivals, events and inclusive urban public spaces in Europe

The FESTSPACE project focuses on how festivals and events enable or restrict access to, and use of, public spaces, including the extent to which they might effectively host interactions and exchanges between people from different cultural, ethnic, socio-economic and socio-demographic backgrounds. We are interested in how the design and operation of urban festivals and events might help to dismantle existing divisions. However, we acknowledge that festivals and events have the potential to symbolically, financially and physically exclude marginal populations from conventional public spaces, hence making spaces less public or less diverse. This provides even more justification for a study that seeks to establish if and how festivals and events affect the inclusivity of urban public spaces. There is the potential for cities to go beyond multi-culturalism towards inter-culturalism by harnessing the “the dialogue and exchange between people of different cultural backgrounds to facilitate the transformation of public space, civic culture and institutions”. Therefore, FESTSPACE will also examine the extent to which diversity is embedded in the conception, organisation and delivery of festivals and events and the wider effects of this involvement.

IP: University of the West of Scotland, Reino Unido

Socios: Reino Unido (University of Westminster), Irlanda (Dublin Institute of Technology), Suecia (University of Gothenburg), España (Universitat Oberta de Catalunya)

Presupuesto total: 627.954,09 €

Concedido ES: 100.000€

Proyecto 9

MMP. Moving Marketplaces: Following the Everyday Production of Inclusive Public Spaces

While most research focuses on how marketplaces are consumed, MMP concentrates on the actors that make markets work: the merchants. Investigating both rural and urban marketplaces across four countries (Spain/Switzerland/the Netherlands/UK), MMP not only pays attention to merchants' place-making capacities, but also to their mobility practices. Following merchants from market to market, this translocal perspective helps to deepen theoretical and empirical understandings of how marketplaces are produced as inclusive spaces.

IP: Open University, Reino Unido

Socios: Países Bajos (Radboud Universiteit), Suiza (Université de Neuchâtel), España (Universitat Pompeu Fabra)

Presupuesto total: 878.464 €

Concedido ES: 99.866€

Proyecto 10

PLURISPACE. Negotiating diversity in Expanded European Public Spaces

In Europe, an important issue pertains to the settlement of post-immigrant ethno-religious groups, along with the expression and organization of collective identities, claims for participation/representation and recognition, the role of religion in public space, and the increasing influence of diaspora and transnational politics. PLURISPACE's point of departure is that these questions cannot be properly addressed without at the same time taking into account the multilevel character of the European public space they unfold within, the multiple characters of the groups (some identified by national origins, others by religion etc.) and the multiple modes of integration. Within such a complex European space, we identify four policy and theoretical approaches to diversity management and understanding of public space: multiculturalism, interculturalism, transnationalism and cosmopolitanism.

IP: Fondation Nationale des Sciences Politiques, Francia

Socios: Reino Unido (University of Bristol), Noruega (University of Oslo), España (Universitat Pompeu Fabra)

Presupuesto total: 912.935€

Concedido ES: 100.000€

Proyecto 12

Pleasurescapes. Port Cities' Transnational Forces of Integration

Pleasurescapes is a Humanities-led collaborative research project that explores the relations between public spaces, culture and integration by means of popular culture. We ask for the ways how public pleasures in European port cities have unfolded cultural and social forces of integration in the past and present and thereby fostered traits of modern European urban practices.

IP: Hafencity University Hamburg, Alemania

Socios: Países Bajos (Erasmus University Rotterdam), España (Fundació Privada Joan Bosch), Suecia (Stockholm University)

Presupuesto total: 908.858,74€

Concedido ES: 99.549€

Proyecto 13

PURE. PUBLIC RENAISSANCE: Urban Cultures of Public Space between Early Modern Europe and the Present

The central concept of the project is that of a "Public Renaissance", by which we intend to examine both the urban cultures of public space in the early modern era, and to set this into dynamic dialogue with the recently invigorated discourse around the agency of public space in shaping contemporary events. By proposing a cross-chronological enquiry that sets the relatively remote formative period of many European cities into dialogue with the contemporary world, we explore and reveal how the past is inscribed in the material culture of the public spaces we still inhabit, and how these contribute to shaping actions and events in the present. Our project considers the early modern period (c. 1450–1700) in the urbanised heart of Europe, with particular attention to case examples between the Netherlands (Deventer, Leiden, Amsterdam), Germany (Hamburg), Spain (Valencia, Madrid), Italy (Trento, Venice, Bologna, Florence) and England (Exeter and Bristol).

IP: University of Exeter, Reino Unido

Socios: Alemania (Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), España (Universitat de València), Países Bajos (University of Groningen), Italia (Italian-German Historical)

Presupuesto total: 934.140€

Concedido ES: 99.934€

GENDER NET Plus - ERA-NET Cofund Promoting Gender Equality in H2020 and the ERA

A pesar de los esfuerzos para reducir la fragmentación en el Espacio Europeo de Investigación (ERA), el sistema científico europeo todavía se enfrenta a desafíos para lograr la igualdad de género y la integración de la perspectiva de género en la investigación y la innovación. En este contexto, y de acuerdo con los objetivos de la política de ERA y los contextos nacionales, el cofund GENDER-NET Plus ERA-NET tiene como objetivo fortalecer las colaboraciones transnacionales entre los ministerios y las agencias financiadoras, brindar apoyo para la promoción de la igualdad de género a través del cambio institucional y fomentar la integración del análisis de sexo y género en los programas de investigación y financiación.

Socios: Coordinador: Francia (National Center for Scientific Research (CNRS), Austria (Austrian Science Fund (FWF), Bélgica (National Fund for Scientific Research (FNRS), Canadá (Canadian Institutes of Health Research (CIHR), NATURAL SCIENCES AND ENGINEERING RESEARCH COUNCIL (NSERC CRSNG), Chipre (Research Promotion Foundation (RPF/IPE), República Checa (TECHNOLOGY AGENCY OF THE CZECH REPUBLIC (TACR), Estonia (Estonian Science Foundation (ETAG), Francia (National Research Agency (ANR), Irlanda (Higher Education Authority (HEA), Irish Research Council (IRC), Israel (Ministry of Science, Technology and Space), Italia (Ministry of Health (MOH/MDS), Noruega (Research Council of Norway (RCN), España (La Caixa Banking Foundation (FBLC), Ministerio de Economía y Competitividad (MINECO), Agencia Estatal de Investigación (AEI); Suecia (Swedish Research Council (VR/SRC)

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas: 1 (2018)

Participación del MINECO y la AEI en convocatorias conjuntas: 1 (2018)

Convocatoria conjunta internacional 2018

Países participantes	Austria, Bélgica, Canadá, Chipre, República Checa, Estonia, Francia, Irlanda, Israel, Italia, Noruega, España, Suecia
Temáticas	SDG 5 Gender Equality and one or more of the following SDGs: - SDG 3 Good health and well-being - SDG 9 Infrastructure, Industrialization and Innovation - SDG 13 Climate Action.
Presupuesto total	10.615.700€
Concedido ES	404.000€
Proyectos aprobados	13
Proyectos financiados por AEI	4 (1 proyecto coordinado por ES)

No.	Acrónimo y título del proyecto	Países participantes
1	FUTUREGEN. Evolving gender differences in health & care across cohorts	Austria, Suecia, Canadá
2	G-DEFINER. Gender difference in side effects of immunotherapy: a possible clue to optimize cancer treatment	Italia, Irlanda, Noruega, Suecia
3	GBV-MIG. Violence against women migrants and refugees: Analysing causes and effective policy response	Francia, Canadá, República Checa, Irlanda, Austria, Noruega, Israel
4	GENDER-ARP. Addiction, Health Risks and Recovery in Context of Social Precarity: How to Better Address Complex Needs Taking into Account Gender and Life Stages	Canadá, Francia, Bélgica

5	GENPATH. A life course perspective on the GENDERed PATHways of social exclusion in later life, and its consequences for health and wellbeing	República Checa, Noruega, España, Suecia, Irlanda, Austria, Israel
6	GENRE. Overcoming the Entrepreneurial Ecosystem Gender Divide: A Cross-Cultural Perspective	Irlanda, Noruega, Suecia, Israel
7	GOING-FWD. Gender Outcomes INternational Group: to Further Well-being Development	Canadá, Austria, Suecia, Chipre, España
8	MASCAGE. Gendering Age: Representations of Masculinities and Ageing in Contemporary European Literatures and Cinemas	España, Israel, Austria, Estonia, Suecia, Irlanda
9	PositivMas. Masculinities and violence against women among young people- Identifying discourses and developing strategies for change using a mixed method approach	Suecia, Israel, España, Irlanda
10	RHCforFGC. Sharing Actions and Strategies for Respectful and Equitable Health Care for Women with FGC/M	Canadá, Francia, Suecia, Bélgica
11	SEQUAL. Social-ecological relations and gender equality: Dynamics and processes for transformational change across scales.	Suecia, Noruega, España
12	TIGER. The combined role of genetic and environmental risk factors in the gender-specific development of severe tinnitus	Suecia, Italia, España, Noruega
13	iKASCADE. Identifying Key Prescribing CASCADEs in the Elderly: A Transnational Initiative on Drug Safety	Canadá, Irlanda, Italia, Israel

Convocatoria nacional APCIN 2019

Proyecto 5

GENPATH. A life course perspective on the GENDERed PATHways of social exclusion in later life, and its consequences for health and wellbeing

Social exclusion is a multifaceted social problem with substantial disruptive consequences for individuals and society. One aspect of social exclusion is the exclusion from social relations, which is the key focus of this proposal. Being socially connected is a universal basic human need, but a substantial number of people lack the essential social resources necessary for a healthy and happy life. GENPATH focusses on post-retirement age, a life phase where social inclusion becomes a crucial factor for health and wellbeing. Men and in particular women have an increased risk to be socially excluded after retirement. Women are more often frail, more often widowed, have lower levels of education, have more often disrupted working careers, lower pensions, and less economic resources. The large variation in social exclusion and the varying impact of gender across welfare states indicates a key role of the macro-social context. However, little is known about how precise the welfare state context influences the construction and outcomes of social exclusion. The proposed project aims at analysing the origin of gender differences in the prevalence and generation of exclusion from social relations across European countries, and consequences of this exclusion for health and wellbeing. Findings will inform the scientific debate about gender differences in and social exclusion and instruct policies towards a reduction in social exclusion among older men and women.

IP: Masaryk University, República Checa

Socios: Noruega (Norwegian Social Research, OsloMet-Oslo Metropolitan University), **España (Universidad de Barcelona)**, Suecia (Linköping University), Irlanda (National University of Ireland Galway), Austria (University of Vienna), Israel (University of Haifa)

Presupuesto total: 955.642€

Concedido ES: 74.500 €

Proyecto 8

MASCAGE. Gendering Age: Representations of Masculinities and Ageing in Contemporary European Literatures and Cinemas

The primary objective of this research is to analyse social constructions of ageing masculinities and/through their cultural representations in contemporary European literatures and cinemas. The study specifically seeks: (a) to understand more fully the interrelationship of masculinities with a variety of social issues specifically associated with men's ageing: older men's health, social inclusion and exclusion, sexualities and affective relationships, and ageist stereotypes, (b) to explore men's experiences of, and attitudes to, ageing across different European cultures, exploring their commonalities and differences, at both national and transnational levels, (c) to gain a deeper understanding of ageing masculinities in and through cultural representations, and (d) to share the results of this project with other researchers, practitioners and policy-makers to help them devise strategies and policies designed to promote greater gender and age equity. If age studies focus on youth and gerontology studies of either older women or "ungendered" portraits of ageing (Saxton and Cole 2012), this project will explore the gendered specificities of men's ageing. Applying to the cultural analysis an interdisciplinary corpus of masculinity and age studies, the project seeks to make an impact by crossing the traditional Social Sciences-Humanities boundary and by proving that not only do social notions of masculinity shape their cultural representations, but they simultaneously affect the social (de-)construction of both gender and age.

IP: Universidad de Castilla-La Mancha, España

Socios: Israel (Bar-Ilan University), Austria (University of Graz), Estonia (Tallinn University), Suecia (Södertörn University), Irlanda (National University of Ireland)

Presupuesto total: 997.392€

Concedido ES: 130.000€

Proyecto 9

PositivMas. Masculinities and violence against women among young people- Identifying discourses and developing strategies for change using a mixed method approach

The aims of this project are four-fold: 1) to explore and position the discourses that young people (men and women, 18-24 years) in Sweden, Spain, Ireland and Israel use in their understanding of masculinities, 2) to explore how these discourses influence young people's attitudes, behaviors and responses to violence against women (VAW), (3) to explore individual and societal factors supporting and promoting anti-VAW masculinities discourses and 4) to develop strategies and resources to support and promote anti-VAW masculinities in these settings. We will achieve aims by conducting innovative, participatory research using a multi-country, mixed-methods approach. In the first phase, data will be gathered using semi-structured interviews and focus groups discussions. In this phase, we aim to identify the discourses that young people use to conceptualize masculinities and VAW. Phase two will consist of a concept mapping study that will quantify the coherence, priorities and perceived relationship between the strategies for supporting and promoting anti-VAW masculinities identified in phase one. Phase 3 involves the dissemination of our results and the development of resources to promote and protect anti-VAW masculinities. Building on an inter-disciplinary team and engaging participants in implementation of the study (through interactive workshops and advisory groups), we will provide an evidence-base for the design and implementation of gender-sensitive policies aimed at promoting anti-VAW masculinities and challenging and reducing VAW and patriarchy.

IP: Karolinska Institutet, Suecia

Socios: Israel (Ben-Gurion University of the Negev), España (Universidad de Alicante), Irlanda (University College Cork)

Presupuesto total: 868.170€

Concedido ES: 99.500€

Proyecto 11

SEQUAL. Social-ecological relations and gender equality: Dynamics and processes for transformational change across scales.

The SEQUAL research project addresses the call topic 3.1 Gender Dimension In Climate Behaviour and Decision-Making. Focusing on the sector of natural resource management we investigate gender differences in participation and leadership in climate related processes - everyday practices, decision-making and adaptation strategies - at all levels in society. We extend the frontiers of research in this field to a focus on why gender differences occur, how they are produced and reproduced and their social location (where). We conduct top-down discourse analysis of policy on climate change and gender equality in natural resource management across three countries, Norway, Sweden and Spain. We ground truth our policy analysis through qualitative case studies across national borders in reindeer herding in the Arctic, community farming in the Pyrenees and dry forest communities in Burkina Faso. We then focus on interactions between levels through comparative analysis across case studies and policy. The overall vision of the SEQUAL research project is understanding connections and flows of power to dig deep into processes of climate change and gender relations, and address these issues as social, ecological and political processes across borders and across scales. Our research is framed conceptually as investigations of discourse (politics and power), and processes (the dynamics and effects of flows of power) between and across scales, operating in social-ecological systems.

IP: Stockholm University, Suecia

Socios: Noruega (Nordland Research Institute), España (Universitat de Vic-Universitat Central de Catalunya)

Presupuesto total: 898.962€

Concedido ES: 100.000€

NORFACE network - New Opportunities for Research Funding Agency Cooperation in Europe

NORFACE es un proyecto financiado por la CE que agrupa a agencias nacionales de financiación de la investigación en Europa, dedicada a liderar y desarrollar oportunidades para científicos en el área de las ciencias sociales y del comportamiento. NORFACE desempeña un papel importante en la respuesta a los grandes desafíos sociales promoviendo la investigación de la más alta calidad, compartiendo las mejores prácticas entre los financiadores de la investigación y, especialmente, haciendo posible la colaboración internacional entre científicos sociales en Europa. Desde los desafíos provocados por la migración y la desigualdad, hasta la preparación para el impacto de una sociedad que envejece, los investigadores de las ciencias sociales en Europa están analizando el comportamiento de individuos y grupos y la dinámica de las instituciones y sociedades dentro de Europa para comprender y abordar estos problemas sociales.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales: 2 (2018; 2019)

Participación de la AEI en convocatorias conjuntas: 1 (2019)

Convocatoria conjunta internacional 2019

Países participantes	
Temáticas	<ol style="list-style-type: none"> 1. Inequality and redistribution 2. The evolving politics of threat 3. The democratisation of information 4. Shifting identities and representation 5. The changing authority of institutions
Presupuesto total	17,6 M€
Concedido ES	463.000€
Proyectos aprobados	14
Proyectos con MINECO/AEI	8

No.	Acrónimo y título del proyecto	Países participantes
1	CrimScapes: Navigating citizenship through European landscapes of criminalization	Alemania, Francia, Finlandia, Polonia
2	DATADRIVEN. Data-driven campaigns: intended and unintended consequences for democracy	Países Bajos, Reino Unido, Austria
3	DEEPEN. Democratic Governance of Funded Pension Schemes	Austria, Países Bajos, España
4	EUINACTION: Willingness and Capacity for EU Policy Action in Times of Crises: Conflicts, Positions and Outcomes	Países Bajos, Alemania, Reino Unido
5	Exld. Extreme Identities: A Linguistic and Visual Analysis of European Far-Right Online Communities' Politics of Identity	Reino Unido, Dinamarca, Irlanda
6	INDIGO. Information in the EU's Digitalised Governance	Finlandia, España, Alemania

7	POPBACK. Populist Backlash, Democratic Backsliding, and the Crisis of the Rule of Law in the European Union	Reino Unido, Polonia, Austria, Eslovenia, Alemania
8	QUEST. Qualify Unification in Europe for Shifting Trust	Noruega, Reino Unido, España
9	RECONNECT. RECONNECTING CITIZENS TO THE ADMINISTRATIVE STATE	Reino Unido, España, Holanda, Noruega
10	RUDE. The Rural-Urban Divide in Europe	Reino Unido, España, Francia, Suiza
11	SepaRope. Separation of powers for 21st century Europe	Países Bajos, Suecia, Finlandia
12	TECHNO. How Technological Change Reshapes Politics: Technology, Elections, and Policies	Reino Unido, España, Suiza
13	THREATPIE. The Threats and Potentials of a Changing Political Information Environment	Bélgica, España, Francia, Alemania, Países Bajos, Polonia, Reino Unido
14	UNDPOLAR. Threat, identity, and dissent: Understanding and addressing political polarisation in European democracies	Bélgica, Francia, Polonia, Reino Unido, España

Convocatoria nacional APCIN 2020

Proyecto 3

DEEPEN. Democratic Governance of Funded Pension Schemes

DEEPEN explores the democratic governance of capital-funded occupational pension schemes. We adopt Scharpf's distinction between input legitimacy (are collectively binding decisions in line with citizens' democratically expressed preferences?) and output legitimacy (do collectively binding decisions serve the common interests of the citizens?) to investigate how governments, regulators and labour market actors govern funded pensions (input legitimacy) and whether participants are satisfied with pension fund performance (output legitimacy). The project focuses on Denmark, the Netherlands, Germany, Austria, Ireland and Spain because the structure of funded pension provision varies along key dimensions relevant to input and output legitimacy. The project combines quantitative analysis of survey data with comparative case studies based on elite and expert interviews and analysis of primary and secondary documents. Four work packages investigate the following research questions: How does national policy define participant influence on funded pension provision? How do stakeholders use pension fund governance to influence investment policy? How have capital-funded pension schemes performed in terms of pension outcomes across European welfare states? To what extent are individual attitudes on pension investment aligned with these inputs and outputs?

The project team includes researchers from the fields of Political Science, Social Policy, and Sociology, whose combined expertise includes pension politics and policy, financialization, and the politics and sociology of the welfare state. The project will contribute to academic and policy debates through journal articles, a special issue, conference presentations, and outreach activities aimed at national and European policymakers and other stakeholders.

IP: University College Dublin, Irlanda

Socios: Dr T. Wiss, Johannes Kepler Universität Linz, Austria - Dr N.A.J. van der Zwan, Leiden University, Países Bajos - Professor J.J. Fernández, Universidad Carlos III de Madrid, España

Presupuesto Total: 812.687€

Concedido ES: 98.214€

Proyecto 6

INDIGO. Information in the EU's Digitalised Governance

INDIGO addresses pressing issues affecting the future of democratic governance in Europe and the relation between the individual and the public sphere. Its objective is to develop a framework for the use of advanced machine learning algorithms in the multi-jurisdictional implementation of European policies.

INDIGO cuts across themes 3, 4 and 5 having as subjects inter alia democracy and information, expertise and the locus of engagement influencing public decision-making and questions of the nature of their authority and accountability.

The objectives and outcome are, first, to map the deep and potentially profoundly transformative impact of innovative information technologies on rule-making and decision-making procedures for the implementation of EU policies and their impact on values, principles and rights in EU public law. Second, to develop future-proof regulatory approaches to technological innovation on the basis of structured analysis of policy case studies and phases of a decision-making in cycle-models.

The impact will be the development of a core piece of knowledge regarding decision-making, the interface between citizens, science and law and the notions of discretion in view of AI. INDIGO will thereby develop pathways to ensure that the use of information technology will both enhance the rule of law, democracy, transparency and the protection of fundamental individual rights as well as efficiency in problem solving and provision of public goods.

The consortium will closely work together in working groups with legal scholars, STS social scientists and Cognitive Science experts, led by the originator and coordinator of the ReNEUAL project as PI..

IP: University of Luxembourg, Luxemburgo

Socios: Professor F. Boehm, FIZ Karlsruhe (Alemania) - Professor O. Mir, Universitat Pompeu Fabra (España) - Professor J.P. Schneider, University of Freiburg (Alemania) - Professor P. Leino-Sandberg, University of Helsinki (Finlandia)

Presupuesto Total: 1.488.082€

Concedido ES: 99.500 €

Proyecto 8

QUEST. Quality Unification in Europe for Shifting Trust

This project addresses two themes of the call – the emerging politics of threat and shifting identities and representations – in relation to the question of Muslims in European public spheres. Through two phases of research, followed by an action phase involving civil society and policy actors, the project aims first to consider the common discourses of threat that are associated with the growing presence of Muslims in four European societies with different political culture. It will then seek to move beyond such ‘problem oriented’ approaches by examining the shifting identities and representations of Muslims as these are emerging and evolving in a turbulent era of ‘democratic deficit’.

The aim is to identify individual and collective discourses, practices and strategies in the re-elaboration process of what it means to ‘be Muslim’ in a polarized Europe, by focusing on discourses, practices and strategies to overcome stigmatization and exclusion in the daily life of citizens. A final action phase will seek to transfer innovative practices of engagement and dialogue across the different European contexts. The project will make use of an ethnographic approach that involves mapping cultural production and activism through extended engagement with Muslims in urban settings, with special focus on youth. While acknowledging the discourses of threat that pervade representations of Muslims in European public spheres, the project distinguishes itself from much of the research by focusing on new forms of

engagements and dialogue to promote a more inclusive society in a period of growing anxiety and mistrust.

IP: Ecole des Hautes Etudes en Sciences Sociales (Francia)

Socios: Dr A. Ma Cea D’Ancona, Complutense University of Madrid (España) - Dr A. Hussain, University of Manchester (Reino Unido) - Dr V. Vestel, Oslo Metropolitan University (Noruega)

Presupuesto Total: 1.115.640€

Concedido ES: 100.000€

Proyecto 9

RECONNECT. RECONNECTING CITIZENS TO THE ADMINISTRATIVE STATE

The administrative state is central to democratic governance - it connects citizens to the state. The current age of political turbulence - expressed through citizen dissatisfaction and populist politics - represents a fundamental challenge to the authority of institutions of the administrative state and requires inquiry into processes of citizen dis- and reconnection with the state.

The RECONNECT study investigates how the age of ‘administrative turbulence’, a result of changes in the political environment, cumulative side-effects of decades of public sector reform and changing citizen demands, have led to calls for more ‘responsive’ administrative state institutions. In particular, RECONNECT investigates variation in attitudes and demands by citizens and politicians towards the administrative state and explores how the administrative state has sought to become more responsive to citizens and politicians. RECONNECT focuses on five distinct dimensions of the administrative state covering constitutional, regulatory, enabling, consumer-protecting and consulting dimensions. These dimensions express different, but reinforcing elements of citizenship in democratic governance. Using focus groups and polling data to understand citizen attitudes towards the administrative state and documentary and interviews research regarding political and administrative actors, RECONNECT generates new knowledge to compare and explain variation across dimensions of the administrative state and EU member state jurisdictions. RECONNECT contributes to academic and practitioner knowledge and debates regarding the future of the administrative state in the current age of turbulence. In doing so, RECONNECT points to ways how citizens can be reconnected to the administrative state in particular and wider democratic governance more generally.

IP: London School of Economics and Political Science (UK)

Socios: Dr N. Sitter, Norwegian Business School (Noruega) - Dr C. Koop, University of London (Reino Unido) - Professor J. Jordana, Institut Barcelona d’Estudis Internacionals (España) - Dr C.H.J.M Braun, Leiden University (Países Bajos)

Presupuesto Total: 1.166.970 €

Concedido ES: 91.000€

Proyecto 10

RUDE. The Rural-Urban Divide in Europe

Rising populism and polarization, coupled with declining democratic legitimacy, all point toward a crisis in European democracies. This crisis has a regional dimension: a political and perhaps cultural divide between rural and urban areas. The project examines whether and how urban-rural residency is related to divides in legitimacy beliefs, social identities, perceptions of injustice and threat, political and social attitudes and political behavior of European citizens. It explores “Democratic governance in a turbulent age” from different thematic angles. First, it deals with shifting identities and their consequences for democratic governance and political representation (theme 4). Stable cleavages only emerge when struggles for identity are accompanied by perceptions of social inequality and unfair resource distribution (theme 1). Second, it examines the role played by globalization: increasing rural-urban economic divides create social status threats which exacerbate rural-urban political divides (theme 2). The project

will combine a broad comparative study of all European countries with an in-depth analysis of five established European democracies. The project will result in the provision of significant new evidence on rural-urban disparities in European politics, which will allow us to examine the consequences of – and cures for – the current crisis of democracy, thereby engaging both academic and policymaking audiences.

The coordination of the project, setting of the agenda, and the timely delivery of work packages will be the responsibility of the Frankfurt team. In particular, the project will be coordinated by holding six internal workshops and using a shared cloud server.

IP: Goethe University Frankfurt/Main (Germany)

Socios: Professor S. Zmerli, Université Grenoble Alpes (Francia) - Dr G. Rico, Autonomous University of Barcelona (España) - Dr C. Claassen, University of Glasgow (Reino Unido) - Professor M. Freitag, Universität Bern (Suiza)

Presupuesto Total: 1.347.500 €

Concedido ES: 100.000€

Proyecto 12

TECHNO. How Technological Change Reshapes Politics: Technology, Elections, and Policies

Technological change is disrupting labor markets in advanced democracies and rekindling fears about technological unemployment. While there is little doubt that rapid technological progress has far-reaching economic effects, its political consequences remain largely unexplored. The goal of this project is to study how technological change in the workplace is contributing to the ongoing deep political transformations (including the surge of populist movements), the adoption of policies to address change, and the effectiveness of specific policies at reducing political turmoil.

The empirical plans are organized in four work packages (WP). WP1 develops a novel approach to examine how workers' economic trajectories and political behavior change when their industries digitalize. WP2 studies how the introduction of technology affects electoral outcomes using rich administrative data. WP3 collects, for the first time, cross-national survey data about the preferences of citizens for policies related to technological change and automation. WP4 analyses whether regional policies can mitigate the disruptive political consequences.

The project will contribute to a deeper understanding of how the grievances generated by profound technological change manifest politically and will be able to provide recommendations on which policies to help workers and communities adapt to a fast-changing economic landscape are politically viable and effective. By examining the economic threat posed by automation and providing a novel account of current political turmoil, the project helps understand "The evolving politics of threat" (theme 2 of the call) and the underlying structural causes of "Shifting identities and representation" (theme 4).

IP: Institute for Social Research (Norway)

Socios: Dr A. Kuo, University of Oxford (Reino Unido) - Dr A. Gallego, Institut Barcelona d'Estudis Internacionals (España) - Professor S. Häusermann, University of Zurich (Suiza)

Presupuesto Total: 1.407.468 €

Concedido ES: 100.000€

Proyecto 13

THREATPIE. The Threats and Potentials of a Changing Political Information Environment

This project examines how the current changes in the political information environments in European democracies affect the conditions for a healthy democracy and civil society. As a theoretical background we employ the concept of 'political information environment' that includes both the supply and demand of political news and information. Supply refers to the quantity and quality of news and public affairs content provided through traditional and new

media sources, demand deals with the amount and type of news and information the public wants or is able to consume. In particular, the study aims at investigating the following:

(1) how do citizens gain political information in the complex media environment, what are their attitudes toward information sources, and what is the relationship between these attitudes and political attitudes and behaviour,

(2) what is the content and quality of information citizens are exposed to,

(3) where do divides between being informed and not being informed exist, across and within European societies, and (4) how can citizens be equipped to navigate and find new and valuable information. We will do this through a series of comparative, innovatively designed studies, including web tracking, comparative surveys, focus groups and survey-imbedded experiments in 15 countries: Germany, Spain, Poland, UK, Denmark, Sweden, Belgium, the Netherlands, Austria, France, Italy, Greece, Czech Republic, Romania, and the US. These countries vary on a number of key contextual factors relevant for the study, covering “young” and “new” democracies with different political heritages, democratic traditions, media systems, and news consumption habits.

IP: University of Southern Denmark (Denmark)

Socios: Professor C.H. de Vreese, University of Amsterdam (Países Bajos) - Professor P. Van Aelst, Universiteit Antwerpen (Bélgica) - Professor C. Schemer, Johannes Gutenberg University (Alemania) - Professor J. Stanyer, Loughborough University (Reino Unido) - Professor A.S. Cardenal, Fundació per a la Universitat Oberta de Catalunya (España) - Professor A. Stepinska, Adam Mickiewicz University (Polonia) - Dr K. Koc-Michlska, Audencia Business School (Francia)

Presupuesto Total: 1.464.405 €

Concedido ES: 99.540€

Proyecto 14

UNDPOLAR. Threat, identity, and dissent: Understanding and addressing political polarisation in European democracies

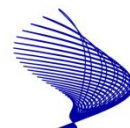
In many European countries public opinion is polarized on issues such as immigration, inequality, populism, and trust in institutions. All of these have been investigated separately but they lack integration. Are opinions on these issues related and, if so, what is the glue that binds them? Do different groups of people polarize on different issues and/or for different reasons?

Our first objective is to determine how identities and threat combine to generate multiple polarized attitudes. First, we use the novel technique of correlational class analysis to identify subpopulations with unique belief systems, consisting of threat, identities, and polarized attitudes. These analyses are followed by experiments that test causal effects of identity and threats on attitudes and polarization, and how these may differ between subpopulations with different belief systems.

Our second objective is to compare subpopulations of belief systems across countries and over time. Therefore, cross-country differences in belief systems will be related to differences in party manifestos and political polarization, and differences in country-level indices such as inequality and meritocratic beliefs. Longitudinally we will examine the impact of the financial crisis on belief systems.

Crucially, identifying subpopulations with different belief systems will help not only in understanding polarization, but also in identifying solutions, because these might differ depending on the nature of the belief system. Democratic innovations such as citizen forums have been developed to overcome polarization. We will test whether using our insights on threats and identity can make such forums more effective.

IP: University of Groningen (the Netherlands)



NORFACE
NETWORK

Socios: Dr M.J. Easterbrook, University of Sussex (Reino Unido) - Dr R. Rodriguez-Bailon, Universidad de Granada (España) - Professor C. Darnon, University of Clermont-Ferrand (Francia) - Dr M. Marchlewska, Polish Academy of Sciences (Polonia) - Dr M.J. Brandt, Tilburg University (Países Bajos) - Dr D. Caluwaerts, Vrije Universiteit Brussel (Bélgica)

Presupuesto Total: 1.383.746€

Concedido ES: 100.000€

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Tecnologías Facilitadoras Esenciales: Materiales, Nanotecnología, TICS

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CHIST-ERA III - European coordinated research on long-term ICT and ICT-based scientific challenges

CHIST-ERA es una red de agencias financiadoras de la I+i, nacionales y regionales, en Europa. El objetivo es reforzar la colaboración transnacional entre los Estados participantes para desafiar la investigación multidisciplinaria en las TIC, y las áreas basadas en las TIC, con el potencial de conducir a avances significativos. Anualmente, las entidades participantes en CHISTERA III identifican áreas científicas emergentes que permiten a los investigadores participar en proyectos de alto riesgo e impacto mediante el lanzamiento de convocatorias transnacionales de propuestas de investigación.

Coordinador: **Francia (National Research Agency (ANR))**

Socios: Austria (Austrian Science Fund (FWF)), Bélgica (National Fund for Scientific Research (FNRS)), Bulgaria (National Science Fund of Bulgaria (BNSF)), República Checa (Technology Agency of the Czech Republic (TACR)), Estonia (Estonian Science Foundation (ETAG)), Finlandia (Academy of Finland (AKA)), Irlanda (Higher Education Authority (HEA)), Italia (Ministry of Education, University and Research (MIUR)), Lituania (Research Council of Lithuania (LSC/LMT/RCL)), Polonia (National Science Centre (NCN)), Portugal (Foundation for Science and Technology (FCT)), Rumanía (Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI)), Eslovaquia (Slovak Academy of Science (SAS/SAV)), **España (Ministerio de Economía y Competitividad (MINECO))**, Suiza (Swiss National Science Foundation (SNSF/SNF)), Turquía (The Scientific and Technological Research Council of Turkey (TUBITAK)), Reino Unido (Engineering and Physical Sciences Research Council (EPSRC)). Observador: Canadá (Quebec Research Fund - Nature and Technology (FRQ-NT)).

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales: 3 (2017, 2018,2019)

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

Convocatoria conjunta internacional 2017

Países participantes	Austria, Bélgica (Wallonia-Bruselas), Bulgaria, Canadá (Québec), República Checa, Estonia, Finlandia, Francia, Grecia, Irlanda, Italia, Lituania, Polonia, Rumanía, España, Suecia, Eslovaquia, Suiza, Turquía, Reino Unido.
Temáticas	1. Object recognition and manipulation by robots: Data sharing and experiment reproducibility – ORMR 2. Big data and process modelling for smart industry – BDSI
Presupuesto total	12.800.000€
Concedido ES	652.000€
Proyectos aprobados	14
Proyectos con financiación AEI	7

No.	Acrónimo y título del proyecto	Países participantes
1	BURG. Benchmarks for UndeRstanding Grasping	Austria , España, Italia, Reino Unido
2	CORSMAL. Collaborative object recognition, shared manipulation and learning	Suiza, Francia, Reino Unido
3	Heap. Human-Guided Learning and Benchmarking of Robotic Heap Sorting	Austria, Suiza, Francia, Italia, Reino Unido

4	InDex. Robot In-hand Dexterous manipulation by extracting data from human manipulation of objects to improve robotic autonomy and dexterity	Austria, Estonia, Francia, Italia, Reino Unido
5	IPALM. Interactive Perception-Action-Learning for Modelling Objects	República Checa, España, Finlandia, Francia, Reino Unido
6	LEARN-REAL. Improving reproducibility in LEARNING physical manipulation skills with simulators using REAListic variations	Suiza , Francia, Italia
7	PeGRoGaM. Perception-guided robust and reproducible robotic grasping and manipulation	Canadá , Italia, Reino Unido
8	ABIDI. Context-aware and Veracious Big Data Analytics for Industrial IoT	Bélgica, Suiza, España, Finlandia
9	BIG-SMART-LOG. The Use of Big Data Analytics for Process Modelling in Smart Logistics Operations Ebru	Grecia, Polonia, Rumanía, Turquía
10	FIREMAN. Framework for the Identification of Rare Events via MACHine learning and IoT Networks	España, Finlandia , Grecia, Irlanda
11	PACMEL. Process-aware Analytics Support based on Conceptual Models for Event Logs	España, Italia, Polonia
12	RadioSense. Wireless Big Data Augmented Smart Industry	Finlandia , Francia, Italia
13	SOON. Social Network of Machines	Suiza , España, Rumanía, Eslovaquia
14	SPuMONI. Smart Pharmaceutical MaNufacturing	España, Grecia, Irlanda, Italia

Convocatoria nacional APCIN 2018

Proyecto 1

BURG. Benchmarks for UndeRstanding Grasping

With the BURG benchmark we propose to focus on community building through enabling and sharing tools for reproducible performance evaluation, including collecting data and feedback from different laboratories for studying manipulation across different robot embodiments. We will develop a set of repeatable scenarios spanning different levels of quantifiable complexity that involve the choice of the objects, tasks and environments. Examples include fully quantified settings with layers of objects, adding deformable objects and environmental constraints. The benchmark will include metrics defined to assess the performance of both low-level primitives (object pose, grasp point and type, collision-free motion) as well as manipulation tasks (stacking, aligning, assembling, packing, handover, folding) requiring ordering as well as common sense knowledge for semantic reasoning.

IP: Technische Universität Wien, Austria

Socios: España (Agencia Estatal Consejo Superior de Investigaciones Científicas), Italia (Italian Institute of Technology), Reino Unido (University of Birmingham)

Presupuesto total: 964.933€

Concedido ES: 111.000€

Proyecto 5

IPALM. Interactive Perception-Action-Learning for Modelling Objects

In IPALM, we will develop methods for the automatic digitization of objects and their physical properties by exploratory manipulations. These methods will be used to build a large collection of object models required for realistic grasping and manipulation experiments in robotics. Household objects such as tools, kitchenware, clothes, and food items are not only widely accessible and in focus of many practical applications but also pose great challenges for robot object perception and manipulation in realistic scenarios. We propose to advance the state of the art by including household objects that can be deformable, articulated, interactive, specular or transparent, as well as shapeless such as cloth and food items.

IP: Imperial College London, Reino Unido

Socios: República Checa (Czech Technical University), España (Institut de Robòtica i Informàtica Industrial), Finlandia (Aalto university), Francia (Universite de Bordeaux)

Presupuesto total: 1.273.738€

Concedido ES: 111.000€

Proyecto 8

ABIDI. Context-aware and Veracious Big Data Analytics for Industrial IoT

ABIDI addresses key challenges of reliable industrial IoT networks, big data analytics, edge computing, contextualization, veracity and knowledge discovery, which are fundamental issues for industrial IoT and big data analytics to be successful in industry. The project carries out fundamental research and the technical results will support a more principled transition towards fully automated processes realized by autonomous and context-aware devices. Moreover, ABIDI applies the technical results in the context of realistic industry use cases and performs systematic studies with professional experts about the usability and reliability of the produced technologies.

IP: Oulun Energia Oy, Finlandia

Socios: Finlandia (University of Oulu), Bélgica (Universite Libre de Bruxelles), Suiza (HES-SO University, Depiopharm), España (Universidad Politécnica de Madrid)

Presupuesto total: 751.332€

Concedido ES: 150.000€

Proyecto 10

FIREMAN. Framework for the Identification of Rare Events via MACHine learning and IoT Networks

We will focus on how to optimize the prediction, detection and respective interventions of rare events in industrial processes based on these three steps. Our proposed general framework, which relies on an IoT network, aims at ultra-reliable detection / prevention of rare events related to a pre-determined industrial physical process (modelled by a particular signal). The framework will be process-independent, but the actual solution will be designed case-by-case. We will consider the CPS working as a complex system so that these three steps, which operate with relative autonomy, are strongly interrelated. For example, the way the sensors measure the signal related to the physical process will affect what is the best data fusion algorithm, which in turn will generate a certain awareness of the physical process that will form the basis of the proposed data analytics procedure. As proof-of-concept, our approach will be applied to predictive maintenance in an automotive industrial plant from SEAT in Spain, in the Nokia base-station factory at Oulu and in the LUT laboratory of control engineering and digital systems.

IP: Lappeenranta University of Technology, Finlandia

Socios: España (Centre Tecnològic Telecomunicacions Catalunya, Sociedad Española de Automóviles de Turismo), Finlandia (University of Oulu), Grecia (Research and Education Laboratory in Information Technologies (Athens Information Technology)), Irlanda (Trinity College Dublin)

Presupuesto total: 1.070.293€

Concedido ES: 110.000€

Proyecto 11

PACMEL. Process-aware Analytics Support based on Conceptual Models for Event Logs

the main objective of PACMEL is to develop a process-aware analytics framework for analyzing data from sensors and devices to enable the use of this data for process modeling and analysis, with the aim of improving the business processes according to the BPM cycle. The framework can be applied to the data system of smart factories to support the business process management activities in the scope of process modeling and analysis. On the one hand, it will

allow the creation of conceptual models of particular industrial processes being executed in the factory, taking into account the various abstraction levels of the collected data, by combining knowledge extraction techniques with semantic technologies such as ontology-based data access and integration. On the other hand, it will support model mapping methods and visualization techniques that allow one to relate the interpreted sensor data to the process models for process analysis. We will use a real dataset, related to a very complex and specific process, from an industrial domain (mining).

IP: AGH University of Science and Technology, Polonia

Socios: España (Universidad Autónoma de Madrid), Italia (Free University of Bozen-Bolzano)

Presupuesto total: 346.445€

Concedido ES: 74.000€

Proyecto 13

SOON. Social Network of Machines

The project Social Network of Machines (SOON) proposes to investigate the impact of the use of autonomous social agents to optimise manufacturing process in the framework of Industry 4.0. In this context, "agents" are process, data, things, and people. "Social" means that cyber-physical entities will act autonomously in order to optimize an industrial process following behaviours models inspired by human social networks. Currently, in Industry 4.0, smart entities do exist. However, intelligence is localised and intelligent heterogeneous entities cannot communicate together even inside the same shop-floor. Our motivation comes from the observation that, if we want to create a real Internet of Everything that brings together processes, data, things, and people, all these entities have to be connected and follow a shared, easy to understand paradigm.

IP: University of Applied Sciences and Arts Western Switzerland, Suiza

Socios: Suiza (TORNOS SA), España (Universidad de Oviedo, ArcelorMittal Innovación Investigación e Inversiones S.L.), Rumanía (Petru Maior University), Eslovaquia (Slovak Academy of Sciences, Mat-obaly s.r.o.)

Presupuesto total: 739.503€

Concedido ES: 95.000€

Proyecto 14

SPuMONI. Smart Pharmaceutical MaNufacturing

The main idea of this project is to systematically assess all data produced by computerised production systems in representative pharma environments: (i) design data quality assessment models based on the Data Quality dimensions agreed by the European Institute for Innovation Through Health Data, including rules derived from regulatory documents, and, (ii) identify behaviour patterns of data probability distributions over time and among the manufacturing sources to identify outliers, i.e. data behavioural patterns which can violate ALCOA premises. To this end, there will be a semi-autonomous data quality control decision support system aiding pharma manufacturing companies to reduce the effort of analysing compliance data. Finally, a system prototype demonstration in an operational environment (Technology Readiness Level 7) will be evaluated using industry-grade real pharmaceutical manufacturing data sets and streams coupled with best pharma industry practices.

IP: Pharma Quality Europe, Italia

Socios: Italia (Istituto De Angeli srl), España (Universitat Politecnica de Valencia), Grecia (Technological Educational Institute of Thessaly), Irlanda (National College of Ireland)

Presupuesto total: 589.923€

Concedido ES: 111.000€

Convocatoria Conjunta internacional 2018

Países participantes	Austria, Bélgica, Bulgaria, Canada, República Checa, Estonia, Finlandia, Francia, Grecia, Irlanda, Italia, Lituania, Polonia, Rumanía, España, Suecia, Eslovaquia, Suiza, Turquía, Reino Unido.
Temáticas	<ol style="list-style-type: none"> Object recognition and manipulation by robots: Data sharing and experiment reproducibility – ORMR Big data and process modelling for smart industry – BDSI
Presupuesto total	13.00.000€
Concedido ES	602.000€
Proyectos aprobados	10
Proyectos con financiación AEI	4

No.	Acrónimo y título del proyecto	Países participantes
1	APROVIS3D. Analog PROcessing of bioinspired Vision Sensors for 3D reconstruction	Francia, Grecia y España, Suiza,
2	AIR. Analogue Intelligent chip for short and middle range Radar signal processing	Finlandia, Francia y Polonia
3	CONNECT. COmmunicatioN-aware dyNamic Edge CompuTing	Turquía, Finlandia y Reino Unido
4	DRUID-NET. Edge Computing Resource Allocation for Dynamic Networks	Grecia, Belgica, Canada, Francia y Reino Unido
5	SMALL. Spiking Memristive Architectures for Learning to Learn	Austria, Suiza, España
6	JEDAI. Event Driven Artificial Intelligence Hardware for Biomedical Sensors	Francia, Estonia e Irlanda
7	SCORING. Smart Collaborative cOmputing, caching and netwoRking paradlgm for next Generation communication infrastructures	Francia, Canadá, Turquía
8	DIPET Distributed Stream processing on Fog and Edge Systems via Transprecise Computing	Reino Unido, España, Francia, Grecia y Rumania
9	UNICO. Unsupervised spiking neural networks with analog memristive devices for edge computing	Canadá, Francia, Polonia y Suiza
10	LEADINGEDGE. Holistic and foundational resource allocation framework for optimized and impactful edge computing services	Grecia, España y Francia

Convocatoria nacional APCIN 2019-2

Proyecto 1

APROVIS3D. Analog PROcessing of bioinspired Vision Sensors for 3D reconstruction

APROVIS3D project targets analog computing for artificial intelligence in the form of Spiking Neural Networks (SNNs) on a mixed analog and digital architecture. The project includes including field programmable analog array (FPAA) and SpiNNaker applied to a stereopsis system dedicated to coastal surveillance using an aerial robot. Computer vision systems widely rely on artificial intelligence and especially neural network based machine learning, which recently gained huge visibility.

IP: : I3S - Université Côte d'Azur – France

Socios: CRISTAL Lille - Université de Lille (France), Institut de Neurosciences de la Timone (France), Instituto de Microelectrónica de Sevilla IMSE-CNM (Spain), University of West Attica (Greece), National Technical University of Athens (Greece), y ETH Zürich (Switzerland).

Presupuesto total I: 867 560€

Concedido ES: 149.772€

Proyecto 5

SMALL. Spiking Memristive Architectures for Learning to Learn

Contemporary AI applications often rely on deep learning, which implies heavy computational loads with current technology. However, there is a growing demand for low-power autonomously learning AI systems that are employed “in the field”. We will investigate in this project options for learning in low-power unconventional hardware that is based on spiking neural networks (SNNs) implemented in analog neuromorphic hardware combined with nano-scale memristive synaptic devices.

IP: Graz University of Technology – Austria

Socios: Graz University of Technology (Austria) , University of Seville (Spain), University of Southampton - United Kingdom, ETH Zurich – (Switzerland) , IBM Research Zurich (Switzerland).

Presupuesto total I: 1 267 900€

Concedido ES: 150.000€

Proyecto 8

DIPET Distributed Stream processing on Fog and Edge Systems via Transprecise Computing.

The DiPET project investigates models and techniques that enable distributed stream processing applications to seamlessly span and redistribute across fog and edge computing systems. The goal is to utilize devices dispersed through the network that are geographically closer to users to reduce network latency and to increase the available network bandwidth. However, the network that user devices are connected to is dynamic.

IP: The Queen's University of Belfast - United Kingdom

Socios: Universitat Politècnica de Catalunya – Spain, Institut de Recherche en Informatique et Systèmes Aléatoires – France, Foundation for Research and Technology - Hellas – Greece, West university of Timisoara - Romania

Presupuesto total I: 1.023.736 €

Concedido ES: 151.200€

Proyecto 10

LEADINGEDGE. Holistic and foundational resource allocation framework for optimized and impactful edge computing services

The LeadingEdge project will deliver a novel and holistic framework to efficiently cope with unresolved challenges in edge computing ecosystems, regarding dynamic resource provisioning to multiple coexisting services amidst unknown service- and system-level dynamics. The project approach is three-faceted; it will optimize intra-service resource provisioning, inter-service resource coordination, and user perceived quality of experience (QoE).

IP: Athens University of Economics and Business - Research Center (Greece)

Socios: StreamOwl (Greece), Universitat Politècnica de Catalunya (Spain), University of Oulu (Finland), EURECOM (France), Huawei Mathematical and Algorithmic Sciences Lab (France)

Presupuesto total I: 1.019.106

Concedido ES: 151.200€

Convocatoria conjunta internacional 2019

Países participantes	Austria, Bélgica, Bulgaria, Canada, República Checa, Estonia, Finlandia, Francia, Grecia, Hungría, Irlanda, Italia, Israel, Lituania, Letonia, Polonia, Rumanía, España, Suecia, Eslovaquia, Suiza, Turquía, Reino Unido.
Temáticas	Proyectos del 1 al 12: Explainable Machine Learning-based Artificial Intelligence (XAI) Proyecto del 13 al 16: Novel Computational Approaches for Environmental Sustainability (CES)
Presupuesto total	13.00.000€
Concedido ES	970.000€
Proyectos aprobados	18
Proyectos con financiación AEI	6 (2 Coordinado)

No.	Acrónimo y título del proyecto	Países participantes
1	ANTIDOTE. ArgumeNtaTlon-Driven explainable artificial intelligence fOr digiTal mEdicine	Bélgica, España, Francia, Italia, Portugal
2	CausalXRL. Causal eXplanations in Reinforcement Learning	Austria, Turquía, Francia, Reino Unido
3	CIMPLE. Countering Creative Information Manipulation with Explainable AI	Austria, Turquía, República Checa, Suiza, Francia, Portugal, Reino Unido
4	COHERENT. COllaborative HiErarchical Robotic ExplaNaTions	España, Italia, Reino Unido
5	EXPECTATION. Personalized Explainable Artificial Intelligence for decentralized agents with heterogeneous knowledge	Suiza, Italia, Lituania, Turquía
6	GraphNEx. Graph Neural Networks for Explainable Artificial Intelligence	Suiza, Francia, Reino Unido
7	INFORM. Interpretability of Deep Neural Networks for Radiomics	Francia, Grecia, Polonia
8	iSee. Intelligent Sharing of Explanation Experience by users for users	España, Francia, Irlanda, Reino Unido
9	MUCCA. Multi-disciplinary Use Cases for Convergent new Approaches to AI explainability	Bulgaria, Italia, Rumanía, Reino Unido
10	SAI. Social Explainable Artificial Intelligence	Austria, Turquía, Bulgaria, Estonia, Italia, Polonia, Reino Unido
11	XAIface. Measuring and Improving Explainability for AI-based Face Recognition	Austria, Turquía, Suiza, Francia, Portugal
12	XPM. Explainable Predictive Maintenance	Francia, Polonia, Portugal, Suecia
13	4Map4Health. Mapping of forest health, species and forest fire risks using Novel ICT Data and Approaches	Austria, Turquía, República Checa, Suiza, España, Finlandia, Portugal

14	ANDROMEDA. Advanced and novel hydrology models based on enhanced data collection, analysis, and prediction	España, Finlandia, Italia
15	SEC-OREA. Supporting Energy Communities- Operational Research and Energy Analytics	Bélgica, Francia, Irlanda, Letonia
16	SEEDS. Stakeholder-Based Environmentally-Sustainable and Economically Doable Scenarios for the Energy Transition	Suiza, Estonia, España, Portugal
17	SWAIN. Sustainable Watershed Management Through IoT-Driven Artificial Intelligence	Austria, Turquía, Suiza, Finlandia, Turquía
18	WATERLINE. New Solutions for Data Assimilation and Communication to Improve Hydrological Modelling and Forecasting	Austria, Turquía, Suiza, Finlandia, Grecia, Polonia

Convocatoria nacional APCIN 2020-2

Proyecto 1

ANTIDOTE. ArgumeNtaTion-Driven explainable artificial intelligence fOr digiTal mEdicine

Providing high quality explanations for AI predictions based on machine learning requires combining several interrelated aspects, including, among the others: selecting a proper level of generality/specificity of the explanation, considering assumptions about the familiarity of the explanation beneficiary with the AI task under consideration, referring to specific elements that have contributed to the decision, making use of additional knowledge (e.g. metadata) which might not be part of the prediction process, selecting appropriate examples, providing evidences supporting negative hypothesis, and the capacity to formulate the explanation in a clearly interpretable, and possibly convincing, way. According to the above considerations, ANTIDOTE fosters an integrated vision of explainable AI, where low level characteristics of the deep learning process are combined with higher level schemas proper of the human argumentation capacity. The ANTIDOTE integrated vision is supported by three considerations: (i) there is a consensus that neural architectures exhibit a weak correlation between internal states of the network (e.g. weights assumed by single nodes) and the network classification outcome; (ii) high quality explanations are crucially based on argumentation mechanisms (e.g. provide supporting examples and rejected alternatives), that are, to a large extent, task independent; (iii) in real settings, providing explanations is inherently an interactive process, where an explanatory dialogue takes place between the system and the user. Accordingly, ANTIDOTE will exploit cross-disciplinary competences in three areas, i.e. deep learning, argumentation and interactivity, to support a broader and innovative view of explainable AI. Although we envision a general integrated approach to explainable AI, we will focus on a number of deep learning tasks in the medical domain, where the need for high quality explanations, both to clinicians and to patients, is perhaps more critical than in other domains.

IP: UCA I3S– Francia

Socios: Bélgica, España (Universidad del País Vasco Euskal Herriko Unibertsitatea), Italia, Portugal

Presupuesto total: 957.478€

Concedido ES: 148.500€

Proyecto 4

COHERENT. COllaborative HiErarchical Robotic ExplaNaTions For robots to build trustable interactions with users two aspects will be crucial during the next decade. First, the ability to

produce explainable decisions combining reasons from all the levels of the robotic architecture from low to high level; and second, to be able to effectively communicate such decisions and re-plan according to new user inputs in real-time along with the execution. COHERENT will develop a novel framework to coordinate explanations originated at the different robotic levels and to be able to deliver these explanations during the execution of the task. To have effective interactions, an interface of communication with the user will be developed to both explain and receive inputs in the form of user preferences, requirements or suggestions to execute a task, at different levels of human expertise. Validation will entail a new benchmark to assess acceptance and effectiveness of explanations based on experiments with subjects.

We will demonstrate our framework for hierarchical explanation components through a manipulation task of assisting a human to fold clothes. Cloth manipulation requires considering bi-manual manipulations, environmental constraints, and perception of textiles for its state estimation. We will build on previous results on cloth manipulation to develop explainable machine learning techniques from the perception, learned movements, task planning and interaction layers, based on a generic state-and-transitions representation that is shared across the layers. The COHERENT framework will be integrated into the standard planning system ROSplan. Finally, one of the objectives of the COHERENT project is to establish measures for the effectiveness of explanations through user studies and define assistive tasks to test our explainable methods creating clear and reproducible protocols.

IP: Consejo Superior de Investigaciones Científicas, CSIC, España

Socios: Italia, Reino Unido

Presupuesto total: 562 736€

Concedido ES: 199.377€

Proyecto 8

iSee. Intelligent Sharing of Explanation Experience by users for users. A right to obtain an explanation of the decision reached by a machine learning (ML) model is now an EU regulation. Different stakeholders (e.g. patients, clinicians, developers, auditors, etc.) may have different background knowledge, competencies and goals, thus requiring different kinds of explanations. Fortunately, there is a growing armoury of ways of interpreting ML models and explaining decisions. Let us use the phrase ‘explanation strategy’ to refer collectively to interpretable models, methods for visualisation, and algorithms for explaining the predictions of models that have been built by Machine Learning (ML). As these explanation strategies mature, practitioners will gain experience that helps them know which strategies to use in different circumstances. Whilst existing XAI libraries provide interfaces to a limited number of explanation strategies, these efforts remain disconnected and provide no easy route to reusability at scale. Our aim goes well beyond the development of a library. We aim to transform the XAI landscape through an open platform that can assist a spectrum of users (knowledge engineers, domain experts, novice users) in the selection and application of appropriate explanation strategies given an AI problem-solving task.

The iSee Project will show how end-users of AI can capture, share and re-use their explanation experiences with other users who have similar explanation needs. We hypothesise that episodes of explanation strategy experience can be captured and reused in similar future task settings.**IP:**

Universidad Complutense de Madrid

Socios: Francia, Irlanda, Reino Unido

Presupuesto total: 846.318 €

Concedido ES: 199.950€

Proyecto 13

4Map4Health. Mapping of forest health, species and forest risks using Novel ICT Data and Approaches

"Forest is the largest terrestrial ecosystem in the European Union (EU) covering around 40% of its areal territory. Forests provide economical, ecological and social benefits to humans, such as timber, biofuel, climate regulation, water supply and regulation, air purification, erosion control, habitats for biodiversity, and many others. EU forests account for 1) € 2 trillion in annual turnover and more than 22 million jobs in bioeconomy; 2) 10% of the global's annual carbon sinks; and 3) is a home to a significant amount of the bloc's terrestrial biodiversity. Increasing causes of forest damages include forest fires and insects, often in combination with or intensified by abiotic stresses such as drought or storm. Tree species information is not accurate enough and is highly needed in any commercial use of the forest resources. What is common to mapping of forest health, tree species, and forest fire risk, is that they are correlated to moisture of canopies. On the other hand, lidar backscatter is strongly dependent on the moisture and recent studies indicate that it can be derived using e.g. bispectral airborne lidar. Collection of such data is possible even at country level at a few years interval. FGI has the world-first multispectral, mobile laser scanner that can be used for such research studies complemented with other data sources to support future laser scanning programs taking place all around Europe.

The major research question of the project is: How should the future multitemporal, multispectral laser scanning data be processed in order to provide information for environmental sustainability and especially for mapping of the forest health, tree species, and forest fire risk.

IP: FGI/NLS, Finlandia

Socios: Austria, Turquía, República Checa, Suiza, España (Universidad de Vigo), Portugal

Presupuesto total: 958.509€

Concedido ES: 148.800€

Proyecto 14

ANDROMEDA. Advanced and novel hydrology models based on enhanced data collection, analysis, and prediction

In the last years, many European countries have experienced the effects of climate change, in the form of a scarcity of drinking water resources, prolonged periods of drought, and extremely heavy rainfall, with unprecedented dramatic environmental, economic, and social costs. Therefore, understanding, modelling, and predicting the movement and distribution of water on Earth, and effectively managing water resources is of paramount importance. Unfortunately, hydrology involves atmospheric, surface, and underground water systems, which are difficult to model on their own, and even more so when considered as a whole. As a result, modern hydrology often relies on a number of mathematical and empirical models that focus on isolated portions of the whole water cycle, thus providing only partial, defective and often times inconsistent information. Furthermore, such models are either based on complex physical theories that involve a large number of variables, which are often difficult to observe in practice, or empirically obtained from observations, thus lacking generality and adaptability and interpretability.

IP: : University of Padova, Italia

Socios: España (Escuela Técnica Superior de Ingenieros Agronomos), Finlandia

Presupuesto total: 411 190€

Concedido ES: 123.700€

Proyecto 16

SEEDS. Stakeholder-Based Environmentally-Sustainable and Economically Doable Scenarios for the Energy Transition. Los esfuerzos urgentes que se llevan a cabo para recortar las emisiones de gases de efecto invernadero en la ue estan limitados por los metodos para diseñar vias de transicion energetica. la vision tecno-economica que esta detras de estos metodos

resulta en escenarios que estan desconectados del resto de los numerosos retos que conlleva su implementacion y que preocupan tanto a stakeholders como a tomadores de decisiones. estos retos son frecuentemente ambientales (como el uso del suelo o del agua) o sociales (como la aceptacion de las infraestructuras por parte de los residentes locales). Hasta ahora no hay una solucion que integre los dos parametros en los metodos de modelado tecno-economico de sistemas energeticos que se usan para diseñar escenarios energeticos futuros. en seeds hacemos una propuesta que desarrolla y testea un flujo de trabajo computacional innovador que incorpora a los humanos en el diseño de escenarios a la vez que modela de forma precisa las limitaciones tecnicas, economicas y ambientales.

para ello, 1) integramos en un marco analitico de acceso abierto bien establecido una aproximacion automatizada para generar un amplio rango de alternativas para los sistemas energeticos que va mas alla de la solucion economica optima; 2) incorporamos factores de impacto ambiental y social en estas alternativas; 3) diseñamos y desarrollamos una interface de usuario interactiva y via web donde expertos y el publico general pueden participar en el diseño del sistema visualizando los resultados y comunicando sus preferencias; y 4) generamos un espacio de decision nuevo incorporando las preferencias de los participantes en un algoritmo de optimizacion del sistema energetico. Todos los componentes del proyecto desarrollan nuevos metodos computacionales pero la innovacion global del proyecto es un metodo para integrar preferencias humanas en la computacion de la infraestructura energetica futura. para testear la hipotesis de que integrar por completo las preferencias humanas en el diseño de la infraestructura energetica resulta en una infraestructura diferente y mas aceptada socialmente, desarrollamos estudios piloto en colaboracion con organizaciones e individuos en portugal.

IP: ETH Zürich, Suiza

Socios: Estonia, España (Institut De Ciencia I Tecnologia Ambientals - ICTA), Portugal

Presupuesto total: 518.593€

Concedido ES: 149.986€

FLAG-ERA II ERA-NET COFUND - The Flagship ERA-NET

FLAG-ERA II, Flagship ERA-NET, reúne a organizaciones de financiación nacionales y regionales con el objetivo de apoyar, junto con la Comisión Europea, las iniciativas FET Flagship y, en general, el programa FET Flagship. La mayoría de las organizaciones de financiación de Europa participan, ya sea directamente o como miembros asociados. FLAG-ERA contribuye a la construcción de las dos iniciativas emblemáticas sobre investigación del Grafeno (Graphene Flagship) y el Cerebro Humano (Human Brain Project), a través de una serie de actividades como el lanzamiento de convocatorias conjuntas de apoyo a proyectos transnacionales en sinergia con los proyectos emblemáticos, la contribución al marco de colaboración emblemático, la identificación de potenciales proyectos de asociación, información sobre oportunidades de financiación para los proyectos emblemáticos y eventos de creación de redes.

Coordinador: Francia (National Research Agency (ANR))

Socios: Austria (Austrian Science Fund (FWF)), Bélgica (National Fund for Scientific Research (FNRS)), Research Foundation Flanders (FWO), Bulgaria (National Science Fund of Bulgaria (BNSF)), Dinamarca (Innovation Fund Denmark (Innofond)), Alemania (German Research Foundation (DFG)), Grecia (General Secretariat for Research and Technology (GSRT)), Hungría (National Research, Development and Innovation Office (NKFIH)), Italia (Ministry of Education, University and Research (MIUR)), Letonia (State Education Development Agency (VIAA)), Lituania (Research Council of Lithuania (LSC/LMT/RCL)), Países Bajos (Foundation for Fundamental Research on Matter (FOM)), Netherlands Organisation for Scientific Research (NWO), Polonia (National Centre for Research and Development (NCBiR)), Portugal (Foundation for Science and Technology (FCT)), Rumanía (Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI)), Eslovaquia (Slovak Academy of Science (SAS/SAV)), Eslovenia (Ministry of Education, Science, Culture and Sport (MESTCS/MIZS)), **España (Agencia Estatal de Investigación (AEI))**, Suecia (Swedish Governmental Agency for Innovation Systems (VINNOVA)), Swedish Research Council (VR/SRC), Turquía (The Scientific and Technological Research Council of Turkey (TUBITAK)), Reino Unido (Engineering and Physical Sciences Research Council (EPSRC)).

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales: 3 (2016, 2017, 2019)

Participación de MINECO-AEI en convocatorias conjuntas: 3 (, 2017, 2019-2; 2020)

Convocatoria conjunta 2017

Países participantes	Bélgica, Bulgaria, Francia, Alemania, Grecia, Hungría, Italia, Letonia, Lituania, Países Bajos, Polonia, Rumanía, España, Eslovaquia, Eslovenia, Suecia, Turquía
Temáticas	Graphene Flagship Human Brain Project
Presupuesto total	14.980.000€
Concedido ES	1.232.807
Proyectos aprobados	23
Proyectos con financiación AEI	10 (2 coordinados)

No.	Acrónimo y título del proyecto	Países participantes
	HBP (Basic and Applied Research)	

1	Brainsynch-Hit: The influence of directional interactions in brain networks in predicting cognitive deficits post-stroke	Italia, Francia, Países Bajos
2	CAUSALTOMICS: Causal connectomics subtending oscillatory spread and information flow in the human brain	Francia, España, Rumanía
3	CORTICITY: Comparative Investigation of the Cortical Circuits in Mouse, NHP and Human	Francia, Alemania, España, Estados Unidos, Rumanía
4	HIPPOPLAST: How rigid and plastic circuits contribute to hippocampal function	Francia, España, Hungría
5	MAC-Brain: Developing a Multi-scale account of Attentional Control as the constraining interface between vision and action: A cross-species investigation of relevant neural circuits in the human and macaque Brain	Italia, Bélgica, Francia
6	SCALES: Studying Cognitive Activity at two Levels with Simultaneous depth and surface recordings	Francia, Rumanía, Suiza
Graphene (Basic Research)		
7	2D-SbGe: Preparation and characterization of antimonene and germanium nanolayers	España, Alemania, Eslovenia
8	CERANEA: Multifunctional Ceramic/Graphene Coatings for New Emerging Applications	Hungría, Alemania, Eslovaquia
9	GATES: nanoporous GrAphene membrane made without TransfEr for gas Separation	Francia, España, Grecia
10	Gransport: Correlations And Defects In Graphene And Related Materials: Chargeand Heat Transport	Países Bajos, Alemania, Francia, Suecia
11	Grasage: Modelling Of The Electrical And Thermal Transport Mechanisms In Graphene Nano-Modified Polymer Compounds And Fibres	Países Bajos, Alemania, Bélgica, España
12	H2o: Heterostructures Of 2d Materials And Organic Semiconductor Nanolayers	Alemania, Países Bajos, Suecia
13	Lames: Layered Structures Of Metal Sulfides	Suecia, Alemania, Francia
14	Mechanic: Modelling Charge And Heat Transport In 2d-Materials Based Composites	Suecia, Bélgica, España, Italia , Turquía
15	More-Mxenes: Magnetically Ordered Rare Earth 2d Mxenes	Francia, Bélgica, Suecia
16	Mx-Osmoped: Mxene–Organic Semiconductor Blends For High-Mobility Printed Organic Electronic Devices	Eslovenia, Bélgica, Alemania, Francia
17	SIMPLANT: Synthesis of few layered transition metal dichalcogenides by ion implantation	Francia, Alemania, Bélgica
18	TopoGraph: Engineering topological superconductivity in graphene	Hungría, España, Países Bajos
Graphene (Applied Research and Innovation)		
19	CO2-DETECT: Waveguide-Integrated Mid-Infrared Graphene Detectors for Optical Gas Sensor Systems	Suecia, Alemania, España
20	EPIGRAPH: GRAPHe biomolecular and electrophysiological sensors integrated in an “all-in-one device” for the prediction and control of EPileptic seizures (towards a general device for most brain disorders)	Suecia, Francia, Grecia
21	GRAFIN: GRAPhene-based Flexible neural Interfaces for the control of Neuroprosthetic devices	España, Francia, Suecia, Turquía
22	GRAPH-EYE: In situ, non-invasive quality control of crystalline quality of GRMs via non-linear optical properties imaging	Grecia, Bélgica, Reino Unido
23	MELoDICA: Disclosing the potential of transition metal dichalcogenides for thermoelectric applications through nanostructuring and confinement	Italia, Bélgica, Grecia, Rumanía

Convocatoria nacional APCIN 2018

Proyecto 2

CAUSALTOMICS: Causal connectomics subtending oscillatory spread and information flow in the human brain

In this project we aim to tackle the challenge to model how structural white matter connectivity shapes and constraints information flow induced through rhythmic patterns of activity tested causally by means of electrical stimulation in implanted human epilepsy patients. We will address the following 2 aims: In AIM 1, we will use iEEG recordings to characterize the causal impact of intracranial rhythmic stimulation patterns on ongoing local brain activity and in interconnected brain areas by means of high-resolution intracranial EEG recordings. In AIM 2, we will combine iEEG recordings and diffusion tensor imaging data from each individual patient and using structural connectomics, effective connectivity measures and dynamical network modeling, we will model how the spread of information across brain areas is constrained by white matter connections. Three teams will contribute anonymized patient iEEG data modulated by intracranial stimulation and signal analysis tools for studying the occurrence and distribution of local and network spread of rhythmic activity patterns. We aim to build a causal connectivity atlas (causal connectome) of the human brain that unambiguously characterizes the electrophysiological features, structural constraints and connection directionality. This compendium will be made available to the scientific and clinical community. It will be used to accelerate the development of largescale models of human brain connectivity and cognition and as a framework for future modeling brain diseases and in particular oscillopathies such as epilepsy.

IP: CNRS UMR 7225 INSERM U 1127 ICM, Francia

Socios: España (Institut Hospital del Mar-IMIM), Rumanía (University of Bucharest Emergency Hospital)

Presupuesto total: 483.921 €

Concedido ES: 105.000 €

Proyecto 3

CORTICITY: Comparative Investigation of the Cortical Circuits in Mouse, NHP and Human

The proposal investigates the differences in physiology, anatomy and organization of the cortex in mouse, nonhuman primate (NHP) and human. This work will require tight collaborations between physiologists, anatomists and theoreticians. Our capacity to successfully integrate across these approaches is strongly supported by the numerous joint publications linking these disciplines in leading international journals by the PI's of the consortium.

IP: Institut Cellule Souche et Cerveau (SBRI), Francia

Socios: Francia (CEA Saclay), Alemania (Ernst Strüngmann Institute (ESI) for Neuroscience in Cooperation with Max Planck Society), España (Universitat Pompeu Fabra), Estados Unidos (University of Notre Dame), Rumanía (Babes-Bolyai University)

Presupuesto total: 762.511€

Concedido ES: 105.000€

Proyecto 4

HIPPOPLAST: How rigid and plastic circuits contribute to hippocampal function

This proposal is organized along 3 objectives. Objective#1 is to determine whether plastic vs. rigid circuits are anatomically separate and analyze their stability across conditions and time. Objective #2 is to understand which cellular/circuit properties critically determine whether a neuron is functionally plastic or rigid. We will examine the developmental origin, intrinsic morpho-physiological properties, and synapto-dendritic physiology and plasticity of rigid vs.

plastic cells in vivo as well as in vitro. Lastly, objective #3 is to understand the computational benefits for navigational strategies of mixing rigid and plastic neurons into the same network. We will provide a predictive model that combines all the experimental datasets from the two previous objectives.

IP: Institut de Neurobiologie de la Méditerranée, Francia

Socios: Francia (Institut de Neurobiologie de la Méditerranée), España (Centre de Recerca Matemàtica), Hungría (IEM)

Presupuesto total: 630.843 €

Concedido ES: 105.000 €

Proyecto 7

2D-SbGe: Preparation and characterization of antimonene and germanium nanolayers

The main goal of 2D-Sb&Ge is to provide the research community with the understanding of the properties and the basics to fabricate and make use of novel 2D materials based on these two elements. This also includes the study of their physical and chemical properties including supramolecular and/or covalent functionalization to produce a series of band gap tunable devices. The 2D-Sb&Ge project is structured in three different interconnected lines: i) Materials production including their chemical functionalization and structural/morphological characterization. ii) Experimental studies of their physical properties. iii) Theoretical modelling for design and rationalization of experimental results. We plan to evaluate the experimental conditions to produce few-layer (FL) germanium and antimonene at a large scale and the possibility of chemical functionalization of the latter. We foresee applications in the context of energy (supercapacitor, water splitting, oxygen reduction, etc.) as well as in prototypes of optoelectronic devices. Theoretical calculations will be used to rationalize their physical and chemical properties and will aid in future materials design.

IP: Universidad Autónoma de Madrid (UAM), España

Socios: Alemania (Friedrich-Alexander-Universität Erlangen-Nürnberg), Eslovenia (Faculty of Information Studies in Novo mesto)

Presupuesto total: 499.000€

Concedido ES: 174.000€

Proyecto 9

GATES: nanoporous Graphene membrane made without Transfer for gas Separation

GATES project aims at making the proof of concept at a TRL level 3 of a new membrane based on CVD graphene, offering simultaneously both, high selectivity (103) between H₂ (He) and CO₂, N₂, O₂, Ar gases, and a high permeance (10⁻⁵ mol m⁻² s⁻¹ Pa⁻¹). The project's concept lies on technological innovations for both device's and pores' fabrication, which will offer these outstanding membranes' performances. Concerning device fabrication, we propose a groundbreaking approach overcoming roadblock graphene's technology based on transfer methods for single-layer CVD graphene (SLG). Indeed, SLG approaches based on transfer techniques are very limiting for industrialization processes. Furthermore, they induce high amounts of macroscopic defects, decreasing the yield of membranes' production. GATES developments for devices' fabrication will provide suspended SLG membranes of high quality and permeance, without employing any transfer step. In addition, this proposed procedure will be compatible with a CMOS technology, ensuring manufacturability.

IP: Pfeiffer Vacuum SAS, Francia

Socios: Francia (Commissariat à l'énergie atomique et aux énergies alternatives /LITEN/DTNM), España (Universidad de Zaragoza (UNIZAR)/INA), Grecia (National Hellenic Research Foundation, TPCI)

Presupuesto total: 353.319€

Concedido ES: 99.807€

Proyecto 11

Grasage: Modelling of the electrical and thermal transport mechanisms in graphene Nano-modified polymer compounds and fibres

The main goal of the “GraSage” project is to develop a model describing the orientation and structural interaction of graphene within a surrounding polymer matrix during a fibre melt spinning process able to predict the electrical- and thermal properties of the nanocomposites. When CNTs and carbon black are combined with a polymer matrix, the spinning conditions have great influence on the orientation of nano-materials in a fibre matrix leading to different mechanical, thermal and electrical properties. Such effects are not yet quantified when graphene is used. Consequently, an experimental study on graphene-modified polymeric compounds and fibres will be performed. The parameters to be modified are the aspect ratio of graphene, the mass concentration of graphene in the polymer, the matrix polymer itself, the number of capillary dies in the melt-spinning process, the length-to-diameter ratio of the capillary dies, mesh configuration of spin filters and finally the melt draw ratio as well as the applied solid-state draw ratio. The obtained fibres will be characterized with respect to their structural, mechanical, thermal and electrical properties. Parallel to the experimental study, the melt-spinning process of the nanocomposites will be simulated at the nano- and microscales to provide an in-depth view of the structure and thermo-electrical properties of the polymer/graphene interface. These predictions obtained at small scales will then be transferred to a macroscopic quantitative model based on neuronal nets and fuzzy logics to finally obtain the electrical and thermal properties of a graphene-reinforced polymeric compound and fibre. This project will result in a multiscale qualitative- as well as quantitative understanding of the thermal and electrical properties of graphene modified polymer matrices.

IP: Maastricht University / Aachen-Maastricht Institute for Biobased Materials, Países Bajos

Socios: Alemania (RWTH Aachen / Institut für Textiltechnik), Bélgica (KU Leuven), España (aitex)

Presupuesto total: 792.680€

Concedido ES: 145.000€

Proyecto 14

MECHANIC: Modelling Charge and Heat Transport in 2D-materials based Composites

The MECHANIC-project targets modelling of charge and heat transport in highly disordered (realistic) GO/rGO thin films, as they appear in composites. We conceive a multi-scale approach spanning from the nano- to the macro-scale, deliberately including any structural/chemical complexity of laboratory samples. We will model charge and heat transport using semiempirical methods, focussing on trends which can only be provided by large-enough computational samples. We will ensure accuracy by using ab-initio, in particular DFT, to extract local quantities and generate input data for the training of interatomic model potentials. Experimental input will be used both for sample-construction and model validation. Hence, the MECHANIC project will move beyond the state-of-the-art by considering transport in large and realistic disordered systems. This will provide meaningful and trustworthy insights on the transport physics and serve as design guides for GRM-composites in the Flagship. The ultimate goal is to accurately predict and control transport in various GO and rGO samples and GO/rGO interfaces with a view to improve efficiency and functionally enrich GO-based composite materials. MECHANIC brings together expertise from modelling on different scales, from the ab-initio level to the continuum

scale and is characterized by a high level of interaction between nodes. CHALMERS will coordinate and provide interatomic force models together with TB-potentials from UCL who has expertise in first-principles modelling of carbon-based nanostructures. The potentials will be used for mesoscale heat and charge transport calculations by ICN2 (tight binding simulations of defected GRM structures), IZ-TECH (influence of nano-structuring and disorder on heat and charge transport) and UNICA (thermal transport calculations in 2D materials using MD).

IP: Chalmers University of Technology, Suecia

Socios: Bélgica (Université catholique de Louvain), España (Catalan Institute of Nanoscience and Nanotechnology-ICN2, AVANZARE INNOVACION TECNOLOGICA S.L.), Italia (University of Cagliari, Italian National Research Council), Turquía (Izmir Institute of Technology)

Presupuesto total: 743.880€

Concedido ES: 100.000€

Proyecto 18

TopoGraph: Engineering topological superconductivity in graphene

The aim of the TopoGraph project is to engineer topological superconductivity and Majorana zero modes (MZMs) in graphene-based van der Waals heterostructures. While there is extensive research both in the field of graphene and in the field of topological materials, graphene as a platform for topological superconductivity has not yet received much attention. Majorana zero modes (MZM) are special excitations of topological superconductors with non-Abelian exchange statistics. This property, together with their topological protection against unwanted perturbations, make MZMs promising for practical implementations of topological quantum computation. This project will leverage the unique properties of graphene (long-range ballistic transport, clean interfaces with superconductors, tuneable properties through van der Waals engineering) to realize a new platform for topological superconductivity and MZMs. We will follow two different complementary routes to engineer MZMs: (a) enhance spin-orbit interaction in graphene by stacking it on high spin orbit 2D materials, and (b) use the peculiar quantum Hall phases in single or twisted bilayer graphene to induce quantum spin-Hall phases. We will then induce topological superconducting phases by coupling these structures to superconducting electrodes.

IP: Budapest University of Technology and Economics, Hungría

Socios: España (Instituto de Ciencia de Materiales de Madrid-Agencia Estatal Consejo Superior de Investigaciones Científicas (ICMM-CSIC), Países Bajos (Technical University Delft)

Presupuesto total: 560.000 €

Concedido ES: 105.000€

Proyecto 19

CO2-DETECT: Waveguide-Integrated Mid-Infrared Graphene Detectors for Optical Gas Sensor Systems

We will develop highly integrated waveguide-based optical gas sensor systems based on mid-infrared (mid-IR) graphene detectors. Existing mid-IR photodetectors typically are based on compound semiconductors, which are not capable of being integrated on wafer-scale with silicon photonics, thus precluding the development of low cost optical gas sensors. The purpose of this project is to fill the current technology gap and demonstrate that a nondispersive infrared (NDIR) gas sensor system can be realized, based on mid-IR graphene detectors that are integrated with silicon photonic waveguide circuits. The proposed NDIR gas sensor consists of a broadband IR emitter that couples light to a mid-IR spiral waveguide, which is exposed to the target gas. Thereby, certain wavelength bands of the light are absorbed by the presence of gas molecules while the light travels through the waveguide, and these bands are then split into different waveguides by on-chip filters. The intensity of the signal at the end of the waveguide

is detected by a graphenebased mid-IR detector and correlates with the concentration of the targeted gas (CO₂) with high sensitivity and specificity.

IP: Frank Niklaus, KTH Royal Institute of Technology, Suecia

Socios: Suecia (SenseAir AB), Alemania (AMO GmbH), España (Catalan Institute of Nanoscience and Nanotechnology)

Presupuesto total: 400.000 €

Concedido ES: 100.000€

Proyecto 21

GRAFIN: GRAPhene-based Flexible neural Interfaces for the control of Neuroprosthetic devices

This project aims at exploring the potential of graphene-based technologies in neural interfaces for motor neuroprostheses. Taking advantage of intrinsic properties of graphene, such as biocompatibility, electronic performance, and easy integration within flexible substrates, we will develop graphene flexible devices to record and stimulate in the nervous system. Efficient stimulation will be based on novel highly porous reduced graphene thin films exhibiting extreme charge injection capacity. Recording with high signal-to-noise ratio will be provided by low noise CVD-grown single layer graphene field-effect transistors. Different designs will be developed to serve as extraneural and intraneural electrodes in peripheral nerve and in brain cortex. Biocompatibility and functionality will be extensively tested in chronic implants in animal models. The ability of these novel interfaces to record electrical signals from nerve and brain and to stimulate for providing sensory feedback will be determined in experimental models of nerve injury and of somatosensory cortex, in order to generate the proof of concept for the usability of interfaces for the control of neuroprostheses and for the neuromodulation of sensory dysfunctions (pain and touch) after nervous lesions.

IP: Universitat Autònoma de Barcelona, España

Socios: España (Catalan Institute of Nanoscience and Nanotechnology), Francia (AXONIC), Suecia (Chalmers University of Technology), Turquía (Bogazici University)

Presupuesto total: 759.359€

Concedido ES: 158.000€ + 36.000€= 194.000€

Convocatoria conjunta internacional 2019

Países participantes	Bélgica, Francia, Alemania, Grecia, Hungría, Italia, Letonia, Lituania, Países Bajos, España, Eslovaquia, Eslovenia, Suecia, Turquía, Israel, United Kingdom
Temáticas	1. FLAG-ERA JTC 2019 Graphene 2. Basic research Graphene 3. Applied research and innovation HBP 4. Basic and applied research €
Presupuesto total	16.590.820 €
Concedido ES	1.085.521 €
Proyectos aprobados	25
Proyectos con financiación AEI	6 (5 en la convocatoria APCIN 2019-2 y 1 en APCIN 2020)

No.	Acrónimo y título del proyecto	Países participantes
	HBP (Basic and Applied Research)	

1	DOMINO – Development of cortical multisensory integration mechanisms at micro- and macro- scales during normal and pathophysiological conditions	Países Bajos, Francia, Grecia, Italia
2	HA-CTion – Hypothalamic histaminergic modulation of brain regions involved in fear memory	Italia, Francia, Países Bajos
3	MILEDI – Multiscale Modelling of Impaired LEarning in Alzheimer’s Disease and Innovative Treatments	Lituania, Francia, Italia
4	MoDeM – The “Motor-way” to Decision-Making: how the motor system drives cue-triggered decisions	Italia, Francia, Países Bajos
5	NeuronsReunited – Neurons reunited: data and software to reconstruct long-range projection neurons, place them in a digital reference brain with high precision, and model their interactions	Países Bajos, Alemania, Bélgica, España, Italia
6	PrimCorNet – Layer-specific characterization and modeling of fronto-parietal dynamics in primate cortical networks	Francia, Alemania, Grecia
7	SENSEI – Segmentation of Neurons using Standard and Super-Resolution Microscopy	Italia, Bélgica, Francia
8	SMART BRAIN – Advanced Morphological Reconstruction of Human Brain Tissue by Multimodal Fusion of Multiscale Optical Imaging Technologies	Italia, Francia, Países Bajos
9	SoundSight – The sight of sound: how vision shapes the development of auditory inputs to the occipital cortex	Países Bajos, Bélgica, España
Graphene (Basic Research)		
10	2DHetero – hBN/Graphene 2D Heterostructures: from scalable growth to integration	Alemania, Bélgica, Francia
11	2D-NEMS – 2D-Material Heterostructure NEMS Sensors	Suecia, Alemania, España
12	DeMeGRaS – Detection mechanisms in graphene radiation sensors	Suecia, Alemania, Francia
13	DIMAG – Electrically controlled ferromagnetism in 2-dimensional semiconductors	Bélgica, Alemania, Francia, Eslovenia
14	OPERA – Nanographene for quantum technologies	Francia, Alemania, Bélgica
15	PROSPECT – PatteRned cOatings based on 2D materials benzoxazine reSin hybrids for broad range Pressure detection	Bélgica, Francia, Eslovenia, Suecia
16	SOgraphMEM – Spin Orbit functionalized GRAPHene for resistive-magnetic MEMories	España, Alemania, Bélgica, Francia
17	TATTOOS – TunAble Twistronics : local tuning and probing of TOpOlogical edge states and Superconductivity in bilayer graphene	Bélgica, Alemania, Francia
18	TO2DOX . Transferable two-dimensional correlated oxide layers	España, Alemania, Francia, Letonia
Graphene (Applied Research and Innovation)		
19	ETMOS – Epitaxial Transition Metal dichalcogenides Onto wide bandgap hexagonal Semiconductors for advanced electronics	Italia, Francia, Hungría, Eslovaquia
20	GO-FOR-WATER – Graphene cOmposites FOR advanced drinking WATER treatment	Italia, Grecia, Suecia, Turquía
21	GRAPHAR – Graphene enabled optical phased array for LIDAR applications	Italia, Israel, United Kingdom
22	LASERGRAPH – In-situ laser fabrication of graphene electrodes and interlayers for next generation CIGS/Perovskite solar cells	Grecia, Bélgica, Eslovenia, Suecia
23	LEGOCHIP – Multifunctional Nanoporous Graphene Integration in Operational Nanophotonic Biosensor Devices	España, Italia, United Kingdom
24	MARGO – MAxillofacial bone Regeneration by 3D-printed laser-activated Graphene Oxide scaffolds	Italia, Epaña, Grecia

25	PeroGaS – Solution-Processed Perovskite/Graphene Nanocomposites for Self-Powered Gas Sensors	Italia , Grecia, Israel
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Convocatoria nacional APCIN 2019-2

Proyecto 5

NeuronsReunited – Neurons reunited: data and software to reconstruct long-range projection neurons, place them in a digital reference brain with high precision, and model their interactions

To2Dox aims at fabricating and characterizing a new class of freestanding 2D layers based on correlated transition metal oxides, and their combination in multifunctional heterostructures with conventional 2D van der Waals (vdW) materials. 2D-oxide freestanding layers will harbor novel spontaneous and externally switchable collective states driven by electronic correlations which will tremendously expand the functional capabilities of current vdW materials and generate synergies with the Graphene Flagship. The new type of freestanding correlated oxide 2D layers will be synthesized from epitaxial ultrathin oxide layers grown on sacrificial layers with atomic level control of their chemistry and structure. 2D oxide layers will be transferred and manipulated using deterministic placement methods developed for 2D vdW materials. A strong effort will be dedicated to the characterization of the unique surface reconstructions and defect structure of these 2D oxide layers and their functional response. Heterostructures combining freestanding layers of correlated oxides with vdW 2D layers will inspire a completely new generation of proximity phenomena. These will be exploited to engineer electronic groundstates with tunable responses, absent in the current vdW materials including electrically controlled topological states, spin-orbit induced spin textures or topological superconductivity.

Our project will realize the hybridization of two emerging fields: oxide interfaces and 2D vdW materials. It will synergize a very large palette of complementary expertise covering all the research methods to achieve project objectives. The consortium includes experts in the epitaxial growth of oxides with atomic control of the interfaces and in their functional characterization, in oxides defects characterization and manipulation, in the fabrication of planar perpendicular devices including proximity interactions and in the synthesis, manipulation and characterization of 2D vdW materials.

Regarding the expected impact of To2Dox, the project relies on a transformative effort for expanding functionalities of 2D materials by incorporating the robust collective states of a completely new family of layered freestanding materials: the 2D oxide materials. On the other hand, it is committed to the study and realization of a novel technological platform based on the oxide nanotechnology for exploiting novel quantum states in correlated oxides. Furthermore, from the applied perspective, collective orders switchable by an external field could inspire new strategies for new device concepts towards future atto-Joule low voltage logic surpassing the (energy) limitations of the current CMOS semiconductor technology.

IP: Radboud –Países Bajos

Socios: Forschungszentrum Jülich – Alemania, Universiteit Antwerpen – Bélgica, Universidad Autónoma Madrid – España y University of Pavia – Italia

Concedido: 150.000€

Presupuesto Total: 786.772€

Proyecto 9

SoundSight – The sight of sound: how vision shapes the development of auditory inputs to the occipital cortex

Despite the fact that what we see, hear, feel, taste and smell is processed separately by our senses, we perceive our environment as a unified and coherent whole. This is because brain

regions that process the inputs from different senses are interconnected and provide contextual information to each other, allowing multisensory integration, which creates a better representation of the world than what is achieved by each sense separately. How these crossmodal inputs develop and are fine-tuned by experience has not been studied extensively. Experiments in the Collignon lab with congenitally blind human subjects have revealed that some visual cortical regions start responding to auditory inputs. For example, regions that normally respond to visual motion are selectively activated by auditory motion. In parallel, work from the Nieto lab showed an exuberancy of intracortical developmental axonal projections. We hypothesize that during early postnatal development, an extensive network of crossmodal axonal projections is laid out between related brain regions that is mostly pruned away through activity of feedforward inputs of the dominant modality. The remaining crossmodal connections allow for multisensory integration in the adult cortex. In the congenitally blind, the crossmodal connections are not pruned, but strengthened, and become drivers of the network. While this plasticity improves the non-deprived senses, it may interfere with the restoration of vision later in life. In this proposal, we will test this hypothesis and its implications for the restoration of vision in the blind from the level of individual synapses in mice to the level of perception in humans. We will study the effects of visual experience during development on functional crossmodal connectivity in visual cortex using newly developed tracing approaches and chronic calcium imaging in mice and functional magnetic resonance imaging (fMRI) studies in human subjects. The functional anatomy of crossmodal connections will be mapped down to the level of dendritic integration in different excitatory and inhibitory neuronal subtypes, using RNAseq and electrophysiological and imaging approaches in mice. We will validate these findings in human subjects with ultra-high-field fMRI and intracranial electrophysiological recordings in humans. We will examine the effects of visual deprivation on the development of the visual system's functional anatomy and use a neuronal modeling approach to understand how crossmodal innervation and visual deprivation affect neuronal dynamics in visual cortex. Finally, we aim to understand the mechanisms underlying the regulation of crossmodal plasticity in mice, and use this information to explain long lasting effects of early visual deprivation in human subjects and mice and take initial steps to improve restoration of vision at a later age.

IP: Netherlands Institute for Neuroscience/Royal Netherlands Academy of Arts and Sciences – Países Bajos

Socios: Université Catholique de Louvain – Bélgica y el Centro Nacional de Biotecnología - España

Concedido ES: 150.000€

Presupuesto Total: 600.000€

Proyecto 16

SOgraphMEM– Spin Orbit functionalized GRAPHene for resistive-magnetic MEMories

The demand for high density, low power and fast spin logic devices requires the combination of materials that can provide suitable spin transport channels with long spin lifetime and spin propagation, as well as topologically stable spin textures that can act as fast information carriers. These prerequisites for the development of spintronic technology in next years can be fulfilled by exploiting the spin and momentum degrees of freedom of electrons (Spin-Orbitronics, SO) in specific multi-layered structures. In addition, the discovery of a strong Dzyaloshinskii-Moriya Interaction (DMI) at the Graphene (Gr)/Ferromagnetic (FM) interface is a crucial step to promote SO technology enabling the electrical control of the transport and manipulation of (topologically protected) magnetic structures. The integration of graphene as efficient spin transport channel in the technology based on chiral spin textures depends, however, on our ability to fabricate Gr-based perpendicular magnetic anisotropy (PMA) systems with tailored interfacial Spin Orbit Coupling (SOC). The partners of the consortium have already demonstrated the ability to tune the SOC by metal intercalation and the important magnetic interactions including the

perpendicular anisotropy, the interlayer dipolar fields or the interfacial DMI by layer engineering, in order to control the chirality of the magnetic domain walls and skyrmions, to detect electrically nanometer spin textures, to realize graphene mediated antiferromagnetic coupling (AFC) between FMs, and finally to engineer ferroelectricity for application in various flavours of ferroelectric memories. SOgraphMEM project aims to i) functionalize the SOC induced parameters, ii) characterize, and iii) test the graphene based SpinOrbitronic systems/devices operating at room temperature by exploiting the advantages of combining FM ultrathin films underneath of a Gr layer, non-magnetic films of heavy metals (HM), and ferroelectric (FE) compounds (doped-HfO₂, HfZrO₂). We aim at exploiting the polarization of the FE in order to ultimately realize voltage-controlled resistive and magnetic switching devices. We will adopt a specific methodology to fabricate the stacks, which will have the following sequence FE / Gr / FM / HM onto insulating oxides. In order to stabilize the spin textures, we will also explore the use of AFC through Gr in synthetic antiferromagnetic (SAF) stack, i.e. FM₂ / Gr / FM₁. Different issues related to the electric field control of the interface-SOC-induced effects will be addressed: a) effects of the electric field onto the surface magnetic anisotropy and DMI, b) spin orbit torque (SOT) and spin transfer torque (STT) characteristics as function of an external magnetic and/or electric field, c) magnetic anisotropy of the induced magnetic moment in Gr, d) electrical and magnetic resistive switches. In view of practical applications, SOgraphMEM will open the way for the development of the next generation of spintronics devices beyond the Moore's law, exhibiting low power, high velocity and large density, as well as efficient spin injection/detection. The SOgraphMEM consortium is composed by seven research institutions (IMDEA, UMPHY, SOLEIL, ALBA, NAMLAB, JUELICH and UCL) from four EU countries (Spain, France, Germany, Belgium) and comprises a group of experts in the required fabrication and characterization techniques, in multiscale theory, as well as the facilities and engineering expertise to produce the proposed systems/devices. In addition, the Consortium complements the capabilities already available at the Graphene Flagship, making available a list of sophisticated techniques.

IP Fundación IMDEA Nanociencia- España

Socios: – Laboratorio de Luz Síncrotrón ALBA –España, – NaMLab GmbH- Alemania, Forschungszentrum Jülich – Alemania, Université Catholique de Louvain- Bélgica, Unité mixte de physique CNRS/Thalès – Francia y Unité de recherche SOLEIL – Francia.

Concedido ES: 58.500€ + 154.500€

Presupuesto Total: 1.104.759,96€

Proyecto 23

LEGOCHIP – Multifunctional Nanoporous Graphene Integration in Operational Nanophotonic Biosensor Devices

One of the major challenges in the advance of biosensor technology is the reproducible biofunctionalization of the sensing area. The lack of precise control during the formation of the biorecognition interface severely limits the detection selectivity and reliability of actual devices, hampering the mass-production and implementation in the clinical field. By proposing a disruptive concept to manufacture functionalized nanoporous graphene (NPG) architectures with atomic precision, LEGOCHIP will face the challenge to develop a universal sensor biofunctionalization protocol. Beyond its universal character, the protocol will facilitate a bio-recognition molecular patterning control in the nanometer scale. Taking advantage of the unimodal pore size distribution in our graphene sheet, we also aim at significantly enhancing the sample pre-treatment by designing highly selective single-layer graphene membranes for advanced filtration of biological samples (blood, plasma, and serum). LEGOCHIP, by integrating the novel multifunctional NPG into cutting-edge photonic sensing nanotechnology (bimodal waveguide (BiMW) interferometers), is thereby foreseen as a key innovation to boost the implementation and technological transfer of biosensor devices to the clinical field. Operational

biosensor devices will be fabricated, tested, and validated for the direct detection and label-free analysis of novel microRNA biomarkers in clinical samples for the early diagnosis of melanoma (i.e., skin cancer) and continuous monitoring of high-risk patients. The nanostructuring and covalent functionalization, the fabrication of single layer membranes, and the realization of biosensors for early diagnostics are independently identified as central milestones in different WPs of the Graphene Flagship. LEGOCHIP targets each of these challenges within an integral scheme by putting together a transversal Consortium that bridges fundamental research at the atomic scale with technology with a level of readiness over 6. By integrating the nanoporous graphene recently developed by the Consortium into pioneering nanophotonic interferometric devices, we aim at realizing a new lab-on-a-chip biosensor to be positioned well beyond the state of the art. Further, the LEGOCHIP system is foreseen as a general-purpose toolkit, which could be easily adapted and implemented for other purposes, such as basic biology studies or environmental monitoring. The strong multidisciplinary component of this project, together with the collaborations and partnerships that will be fostered, will contribute to a groundbreaking progress in different scientific areas, including materials sciences, nanophotonics, chemistry and biochemistry, and clinical oncology.

IP Catalan Institute of Nanoscience and Nanotechnology - España

Socios: – University of Santiago de Compostela –España, University of Bologna, Italia y University of Manchester – Reino Unido.

Concedido ES: 150.154€

Presupuesto Total: 359.536,37 €

Proyecto 25

MARGO – MAXillofacial bone Regeneration by 3D-printed laser-activated Graphene Oxide scaffolds

Reconstruction of maxillofacial defects, with the efficient restoration of tissue morphology, mechanical properties, vascularization, and innervation, is a critical medical challenge, particularly in aging patients. The jaws, with dentoalveolar joints, are crucial sites, in which regeneration is hardly achieved with available approaches, often requiring patient-tailored scaffolds that allow new bone growth and avoid graft retraction. Modern advances in tissue engineering are creating 3D printable scaffolds supporting the growth of bone mesenchymal stromal cells that cope with bone regeneration under suitable environmental stimuli. From computer-aided design (CAD) model obtained by medical imaging of patients, 3D printing technologies allow to accurately replicate the volumetric architecture of defects and improve surgical outcomes. This results in enhanced durability, aesthetics and low inflammatory complications. To ensure the success and widespread application of 3D printed bone scaffolds, biomaterials should be engineered to achieve desired functional, mechanical and supportive properties. However, biomaterials used for 3D printing have yet to be implemented to better control stem cell proliferation and differentiation into bone lineages. The MARGO project aims at constructing implants for stem cells driving on laser-activated 3D-printed CAD-based scaffolds. For this purpose, MARGO will use a Graphene Oxide (GO)-based biomaterial. GO is one of the most valuable graphene-related materials (GRMs) with promising results in bone regeneration and antibacterial activity. GO is a low-cost material, can be embedded in 3D printable polymers and has adjustable mechanical properties. Our strategy is based on the reconstruction of maxillofacial defects by CAD technology, 3D printing and laser modification of scaffold surfaces to enhance mammalian cell growth and finely tuned bone regeneration. Indeed, laser-printing of GO surfaces causes a local photo-thermal chemical reduction by removal of oxygen functionalities and allows the formation of nano-wrinkles along with precise geometric patterns. These reduced GO patterns increase stem cell adhesion and orientation and induce differentiation.

IP: University Sapienza- Italia

Socios: CSIC–España, Università Cattolica del Sacro Cuore–Italia y DHAL Software– Grecia.
Concedido ES: 150.00€
Presupuesto Total: 415.000€

Convocatoria nacional APCIN 2020

Proyecto 18

TO2DOX. Transferable two-dimensional correlated oxide layers

To2Dox aims at fabricating and characterizing a new class of freestanding 2D layers based on correlated transition metal oxides, and their combination in multifunctional heterostructures with conventional 2D van der Waals (vdW) materials. 2D-oxide freestanding layers will harbor novel spontaneous and externally switchable collective states driven by electronic correlations which will tremendously expand the functional capabilities of current vdW materials and generate synergies with the Graphene Flagship. The new type of freestanding correlated oxide 2D layers will be synthesized from epitaxial ultrathin oxide layers grown on sacrificial layers with atomic level control of their chemistry and structure. 2D oxide layers will be transferred and manipulated using deterministic placement methods developed for 2D vdW materials. A strong effort will be dedicated to the characterization of the unique surface reconstructions and defect structure of these 2D oxide layers and their functional response. Heterostructures combining freestanding layers of correlated oxides with vdW 2D layers will inspire a completely new generation of proximity phenomena. These will be exploited to engineer electronic groundstates with tunable responses, absent in the current vdW materials including electrically controlled topological states, spin-orbit induced spin textures or topological superconductivity.

Our project will realize the hybridization of two emerging fields: oxide interfaces and 2D vdW materials. It will synergize a very large palette of complementary expertise covering all the research methods to achieve project objectives. The consortium includes experts in the epitaxial growth of oxides with atomic control of the interfaces and in their functional characterization, in oxides defects characterization and manipulation, in the fabrication of planar perpendicular devices including proximity interactions and in the synthesis, manipulation and characterization of 2D vdW materials.

Regarding the expected impact of To2Dox, the project relies on a transformative effort for expanding functionalities of 2D materials by incorporating the robust collective states of a completely new family of layered freestanding materials: the 2D oxide materials. On the other hand, it is committed to the study and realization of a novel technological platform based on the oxide nanotechnology for exploiting novel quantum states in correlated oxides. Furthermore, from the applied perspective, collective orders switchable by an external field could inspire new strategies for new device concepts towards future atto-Joule low voltage logic surpassing the (energy) limitations of the current CMOS semiconductor technology.

IP: Universidad Complutense de Madrid, España

Socios: Instituto de Ciencia de Materiales de Madrid – España, – Max Planck Institute Festkoerper Forschung – Alemania, Forschungszentrum Jülich– Alemania, Unité mixte de physique CNRS/Thalès – Francia.

Concedido ES: 94.967 + 115.000€

Presupuesto total: 1.033.474€

M-ERA.NET 2 - ERA-NET for materials research and innovation

M-ERA.NET 2 tiene como objetivo coordinar los esfuerzos de investigación de los Estados Miembros de la UE, los Estados Asociados y las Regiones participantes, así como los socios mundiales seleccionados, en materia de investigación e innovación de materiales, incluidos los materiales para tecnologías de energía baja en carbono y tecnologías de producción relacionadas. Una gran red de organizaciones de financiación nacionales y regionales de 23 Estados miembros de la UE y Estados asociados y otros países fuera de Europa ejecutará una serie de convocatorias anuales para financiar una excelente cooperación transnacional innovadora, incluida una convocatoria transnacional conjunta de propuestas con cofinanciación de la UE y calls adicionales no cofinanciadas.

Continuando con las actividades iniciadas bajo el proyecto predecesor M-ERA.NET, el consorcio M-ERA.NET 2 apoya la investigación en áreas temáticas relevantes, como, por ejemplo, superficies, recubrimientos, compuestos, aditivos. Fabricación o ingeniería de materiales computacionales.

Coordinador: Austria (Austria (Austrian Research Promotion Agency (FFG),

Socios: Bélgica (Flanders Region (Department of Economy, Science and Innovation / Flanders Innovation & Entrepreneurship) (EWI / VLAIO), National Fund for Scientific Research (FNRS), Public Service of Wallonia (SPW), Brasil (São Paulo Research Foundation (FAPESP), Bulgaria (National Science Fund of Bulgaria (BNSF), Chipre (Research Promotion Foundation (RPF/IPE), República Checa (Technology Agency of the Czech Republic (TACR), Estonia (Estonian Science Foundation (ETAG), Francia (New Aquitaine Region (RNA), Alemania (Federal Ministry of Education and Research (BMBF), Karlsruhe Institute of Technology (KIT), Project Management Juelich / Research Centre Juelich (PTJ/FZJ), Hungría (National Research, Development and Innovation Office (NKFIH), Islandia (Icelandic Centre for Research (RANNIS), Irlanda (Science Foundation Ireland (SFI), Israel (MATIMOP Israeli Industry Centre for R&D (OLD) (MATIMOP), Italia (Calabria Regione (CaR), Ministry of Education, University and Research (MIUR), Letonia (State Education Development Agency (VIAA), Lituania (Research Council of Lithuania (LSC/LMT/RCL), Luxemburgo (National Fund for Research (FNR), Países Bajos (Materials Innovation Institute (M2i), Netherlands Organisation for Scientific Research (NWO), Noruega (Research Council of Norway (RCN), Polonia (National Centre for Research and Development (NCBiR), National Science Centre (NCN), Portugal (Foundation for Science and Technology (FCT), Rumanía (Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI), Rusia (Foundation for Assistance to Small Innovative Enterprises (FASIE), Eslovaquia (Slovak Academy of Science (SAS/SAV), Eslovenia (Ministry of Education, Science, Culture and Sport (MESCS/MIZS), Sudáfrica (Department of Science and Technology (DST), España (**Agencia de Innovación y Desarrollo de Andalucía, Instituto de Desarrollo Económico del Principado de Asturias, Agencia Vasca de la Innovación-Berrikuntzaren Euskal Agentzia, Gobierno Vasco, Fundación para el Conocimiento Madri+d, Instituto de Desarrollo Empresarial y Competitividad de Castilla y León (ICE), Agencia Estatal de Investigación (AEI)**, Suecia (Swedish Governmental Agency for Innovation Systems (VINNOVA), Taiwán (MINISTRY OF SCIENCE AND TECHNOLOGY (MoST Taiwan), Turquía (The Scientific and Technological Research Council of Turkey (TUBITAK).

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales: 5 (2016, 2017, 2018, 2019,2020)

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

Convocatoria conjunta internacional 2016

Países participantes (geometría variable)	Austria, Bélgica, Brasil, Chipre, Alemania, España, Finlandia, Francia, Hungría, Luxemburgo, Israel, Islandia, Korea, Letonia, Lituania, Países Bajos, Noruega, Polonia, Portugal, Rumania, Rusia, Suecia, Eslovaquia, Taiwán, Turquía
Temáticas	<ol style="list-style-type: none"> 1. Integrated Computational Materials Engineering 2. New Surfaces and Coatings 3. High performance synthetic and biobased composites 4. Materials for Sustainable and Affordable Low Carbon Energy Technologies 5. Tailoring of bioactive material surfaces for health applications 6. Materials for Additive Manufacturing
Presupuesto total	40.000.000€
Concedido ES	1.948.050€
Proyectos aprobados	46
Proyectos con financiación AEI	13 (3 coordinados)

No.	Acrónimo y título del proyecto	Países participantes
1	HEAMODELL. High entropy alloys with predictable mechanical properties by computational modelling	Países Bajos, Rumanía, Eslovenia
2	MuMo4PEC. Multiscale Modeling and Design of Photo-Electrochemical Interfaces	Países Bajos, España, Polonia
3	ALD4MAX. Atomic Layer Deposition For tailored bottom-top growth of MAX and MXene films	Portugal, España, Países Bajos, Polonia
4	CellColor. Fabricating cellulose nanocomposites for structural coloration	Noruega, Portugal
5	CLEARPV. Transparent Perovskite Solar Cell	Taiwán, Hungría, Países Bajos
6	GRAFOOD. Active GRAPHene based FOOD packaging systems for a modern society	Rumanía, Italia, Eslovenia, España
7	GreenCOAT. Green high-performance and low-friction interfaces tailored by the reactivity of novel DLC coatings and ionic liquids	Eslovenia, Portugal, Noruega
8	HEI-Coat. Hard Eco Innovative Coatings	Italia, Francia, Bélgica
9	INSURFCAST. Innovative Surfaces for Superalloys Casting Processes	Italia, Polonia
10	MaSNEC. Material Synthesis in Non-Equilibrium Conditions	Bélgica, Hungría, España
11	NESSIE. New Structured Substrates for Downstream Processing of Complex Biopharmaceuticals	Noruega, Portugal, Austria
12	NICRRE. Innovative Ni-Cr-Re coatings with enhanced corrosion and erosion resistance for high temperature applications in power generation industry	Polonia, Eslovaquia
13	SIOX. Engineering of silicon-oxide interface using the pulsed—laser deposition technique	Eslovenia, Países Bajos, Bélgica
14	TANDEM. Bactericidal hybrid surfaces against Gram-negative and Gram-positive pathogenic bacteria: Smart Tools for Wastewater Purification	Rumanía, Noruega

15	UltraGraf. Harnessing third-harmonic generation in graphene-coated optics - new devices for ultrafast pulse measurement and frequency upconversion	Portugal, España
16	WABASELCOAT. WATER BASED SElective COATings for intelligent facade collectors	Eslovenia, Noruega, Chipre
17	BIOFOODPACK. Biocomposite Packaging for Active Preservation of Food	Portugal, Polonia, Chipre
18	COMPIO. Eco-friendly nanoclay, nanocellulose and MIP composites for microbial formulations	Austria, Turquía, Rumanía, Israel
19	HyBiCo. High performance short-fibre biobased hybrid composites for injection moulding	Polonia, Letonia, Lituania
20	POLYMAGIC. Biodegradable PLA composites reinforced with micro and nano Mg particles: optimisation of processing and design, and scale-up of temporary implants	España, Italia, Bélgica
21	CCSRender. Energy efficient nano-modified renders with CO ₂ -storage potential	Chipre, Hungría
22	CTB Basics. CleanTechBlock - Sustainable Multi-functional Building Block Basics	Eslovenia, Luxemburgo, España (ADE), Portugal
23	GoPhy MiCO. Governing Principles in Hydration of Mixed Conducting Oxides	Noruega, España, Polonia
24	HyMatSiRen. Hybrid materials for Si surface passivation and battery applications	Noruega, España, Turquía
25	MOCO3. Novel molten carbonate/ceramic composite materials for sustainable energy technologies with CO ₂ capture and utilization	Noruega, Polonia, Portugal
26	NanoEMem. Designing new renewable nano-structured electrode and membrane materials for direct alkaline ethanol fuel cell	Eslovenia, Noruega, Taiwán
27	NEILLSBAT. Nanostructured Electrodes and Ionic Liquid Electrolytes for Ultra High Energy Density Lithium Sulfur Batteries	Irlanda, Alemania, Países Bajos
28	PLARASBAT. Planar architecture all solid state batteries	España, Lituania, Taiwán
29	PNANO4BONE. Nanovectors engineered for plasma enhanced theranostics in regenerative medicine	Luxemburgo, Bélgica, España, Polonia
30	RATOCAT. Rational design of highly effective photocatalysts with atomic -level control	Irlanda, Países Bajos, España
31	THERMOSS. Sustainable Thermoelectric Modules based on Non-toxic Silicides and Sulphides for Recovery of Waste Heat to Power Generation	Chipre, Portugal
32	BIOMB. Advanced biodegradable materials based on MgB ₂ resistant to microbial colonization	Rumanía, Italia
33	BIOMEMBRANE. Bioengineered in vitro model of retinal pigmented epithelium of human eye	Italia, Portugal, Sudáfrica, Polonia, España (in kind)
34	INCIPIIT. INtegrated Conductive and biomimetic polymeric Interfaces able to serve as micronanostructured Patches for myocardial regeneraTion	Italia, Portugal, Brasil
35	MagicCELLGene. Localized MAGnetIC hyperthermia CELL-based GENE therapy for immune modulation	España, Portugal
36	NAT4MORE. NATural molecules on the surface of bioactive materials FOR MOdulating the host RESponse to implants	Italia, Islandia, Brasil
37	Pelargodont. Engineering and functionalization of delivery system with Pelargonium sidoides biologically active substance on periodontal inflamed surface area	Lituania, Letonia, Polonia, Italia
38	SmartHyCAR. Smart multifunctional Hyaluronic Acid-Carnosine based bandages for wound care and regenerative therapy.	Italia, Bélgica

39	3D-CFRP. Additive Manufacturing of Continuous Fibers Reinforced Polymer Composite Materials for High Performance Structural Applications	Austria, Rusia, Lituania
40	Addiwerk. Additive Manufacturing of Cutting Tools	Austria, Alemania
41	BauProAddi. New construction materials and product design for additive manufacturing processes in the construction industry	Alemania, Austria
42	BiogenInk. Biogenic Inks combining marine collagen and ionic-doped calcium phosphates for bone tissue engineering	Portugal, Rumanía, Países Bajos, España
43	Dressing4scars. New 4D printing dressing to treat skin scars	Portugal, Irlanda, España (IDEPA)
44	ELAM. Ultrafine eutectics by laser additive manufacturing	Alemania, España, Hungría
45	HiPA²I. High Performance Additive manufacturing of Aluminium alloys	Austria, Portugal
46	jawIMPLANT. Patient-specific bioactive, antimicrobial PLA-PGA/titanium implants for large jawbone defects after tumour resection	Austria, Polonia

Convocatoria nacional APCIN 2017

Proyecto 2

MuMo4PEC. Multiscale Modeling and Design of Photo-Electrochemical Interfaces

We propose an innovative, multi-scale modeling and simulation approach in order to investigate photoelectrochemical (PEC) interfaces. This will pave the way towards targeted design and fabrication of PEC interfaces with advanced properties and performance. It is the first time that four levels of theory from atomistic to continuum level are combined for PEC interfaces and that electrochemical data will be simulated that can be directly compared to experimental data. Hence, we bridge theory and experiment. The kinetic parameters (intrinsic and extrinsic) as well as the structure and the dynamics of the solid-liquid interface will be determined. This will result in the identification of the limiting reaction steps at the interface which will allow for tailored design of photoelectrodes. We focus on the Fe₂O₃- water system due to its abundance, costs, and PEC properties, but also because of its benchmark character. The approach can be transferred to other electrochemical interfaces.

IP: Dutch Institute for Fundamental Energy Research (DIFFER), Países Bajos

Socios: Países Bajos (TUD), España (Universidad Pablo de Olavide), Polonia (PWr)

Concedido ES: 105.000€

Proyecto 3

ALD4MAX. Atomic Layer Deposition For tailored bottom-top growth of MAX and MXene films

ALD4MAX will tackle the deposition of MAX phases and MXenes by Atomic Layer Deposition (ALD). MAX phases are ternary carbides and nitrides with specific stoichiometry and layered structure which show very interesting properties. MXenes are 2D systems equivalent to graphene which result from the elimination of the element 'A' from the MAX phase. There is no simple approach to deposit MAX phases on conventional substrates, e.g. heating at high temperatures is needed, which is inviable in many cases. Moreover, MXenes are only prepared in bulk form by chemical etching of the MAX phase, but the deposition of individual MXene is not reported. In ALD4MAX we will take benefit of the layer-by-layer growth characteristic of ALD to deposit MAX phases and MXenes with high control, and also 'mixed' MAX phases by stacking different types of MAX phases. ALD4MAX will generate a high impact, since not only a new class of materials will be prepared, but also new possibilities for ALD will be proven.

IP: University of Minho, Portugal

Socios: España (Ctech Nano, CIC Nanogune), Países Bajos (University of Groningen), Polonia (Lodz University of Technology)

Concedido ES: 150.000€

Proyecto 6

GRAFOOD. Active GRAPhene based FOOD packaging systems for a modern society

GRAFOOD aims to develop a pilot-scale prototype of active food package based on paper and polylactic acid (PLA) film respectively, modified with graphene oxide activated by probiotics and by nano-Ag-TiO₂, respectively. Specific objectives: - characterize the packages currently used for cheese and meat storage, - design, characterize and validate the prototype of active packages, - start the procedure to homologate the most efficient PLA and paper based active package and to obtain the Romanian and European patents. The result is a pilot-scale prototype of active package based on paper and PLA film, respectively. The project has multi-lateral impact for academic research teams and their universities, environment and society. Economic benefits: - reducing the costs for the processing of unsold goods, - diminishing the amount of the food waste and the costs for their processing, thus increasing the financial profit.

IP: Technical University of Cluj Napoca (UTCN), Rumanía

Socios: Rumanía (Ceprohart (CEPRO), Italia (University of Camerino, (UNICAM), Synbiotec (SYN), Eslovenia (National Institute of Chemistry (NIC), España (Andaltec (ANDA)

Concedido ES: 95.000€

Proyecto 10

MaSNEC. Material Synthesis in Non-Equilibrium Conditions

The MaSNEC project aims to grow innovative surfaces and control their properties via material synthesis in non-equilibrium conditions. The innovation will be to obtain solid material by precipitation reactions performed within diffusive gradients of concentration and convective flows due to injection of one reactant into the other. We will provide new protocols taking advantage of imposed out-of-equilibrium constraints to synthesize thermodynamically unstable solid polymorphs, manufacture nanoparticles and structured surfaces, composite coatings and multilayered tubes. By defining an innovative procedure to structure and create new solid materials, this project proposes a paradigmatic shift in surface and coating technology to produce innovative materials with targeted relationships between their micro and macrostructures. The novel concept will impact material sciences and provide new routes to synthesize materials for societal and environmental applications.

IP: Université libre de Bruxelles, Bélgica

Socios: Hungría (University of Szeged, Budapest University of Technology and Economics), España (Consejo Superior de Investigaciones Científicas, CSIC)

Concedido ES: 150.000€

Proyecto 15

UltraGraf. Harnessing third-harmonic generation in graphene-coated optics - new devices for ultrafast pulse measurement and frequency upconversion

Ultrafast lasers have many important applications in physics, materials processing, chemistry, biology and medicine. Their pulses are among the shortest events ever produced, with durations reaching the few femtosecond regime (1 fs = 10⁻¹⁵ s). Nevertheless, the lack of adequate temporal measurement and control tools has hampered their migration out of the laboratory and into mainstream applications.

This project directly addresses these challenges by developing and demonstrating a new and universal ultrafast pulse measurement and control device, where the dispersion-scan technique is combined with the exceptionally broad bandwidth and high conversion efficiency of nonlinear thirdharmonic generation (THG) in graphene coatings. This technology is highly performing, easy

to use and applicable to an unprecedentedly wide range of laser systems, which should enable new scientific, industrial and medical applications of ultrafast lasers and contribute to the growth of the ultrafast market.

IP: University of Porto, Portugal

Socios: Portugal (University of Aveiro, Sphere Ultrafast Photonics), España (**Universidad Complutense de Madrid (UCM)**)

Concedido ES: 97.050€

Proyecto 20

POLYMAGIC. Biodegradable PLA composites reinforced with micro and nano Mg particles: optimisation of processing and design, and scale-up of temporary implants

The project proposes the optimisation and scaling-up of biodegradable and bioabsorbable composites for osteosynthesis based on a polylactic acid (PLA) matrix loaded with Mg particles in the nano and micrometric range, and processed by thermoplastic methods. Other innovative objectives are related to their processing by a colloidal suspension route to increase homogeneity and particle-matrix bonding, as well as by additive manufacture and electrospinning. The project also considers the sustainability of the whole life cycle of the proposed materials and processing. Potential benefits are related to better mechanical properties, increased bioactivity and antibacterial resistance, and possibility of tailoring degradability of implants by controlling shape and volume fraction of Mg (nano) filler. These temporary implants would improve life quality of patients, especially paediatric, and would open new business opportunities, guaranteed by the two participating SMEs.

IP: Consejo Superior de Investigaciones Científicas- CSIC, España

Socios: Italia (Università degli Studi di Perugia-UNIPG, M.D.P. MATERIAL, DESIGN & PROCESSING S.R.L., MIRACHROME S.R.L.), Bélgica (University of Mons-UMONS)

Concedido ES: 172.000€

Proyecto 23

GoPHy MiCO. Governing Principles in Hydration of Mixed Conducting Oxides

GoPHy MiCO addresses one of the main challenges in the development of new efficient energy systems based on Proton Ceramic Fuel Cells and Electrolysers, namely the identification of ceramics with mixed protonic and electronic conductivity. These are essential for the oxygen/steam electrodes, but only few and mediocre ones are identified. By systematically studying a set of double perovskites with different cations on distinguishable A-sites, and by systematic substitutions of these and also the B-site cation, trends in structures, oxidation, and hydration behaviour and conductivity will be established. The project outcome will potentially bring significant contributions to the ongoing implementation of hydrogen energy systems. Methodology to be employed comprises Neutron Powder Diffraction, electrochemical methods impedance spectroscopy, thermogravimetry, and ab initio atomistic modelling.

IP: University of Oslo (UiO), Noruega

Socios: Noruega (Institute for Energy Technology (IFE)), España (Consejo Superior de Investigaciones Científicas (CSIC)), Polonia (Gdansk University of Technology (GUT))

Concedido ES: 145.000€

Proyecto 24

HyMatSiRen. Hybrid materials for Si surface passivation and battery applications

Hybridization of organic and inorganic compounds allows to tune functionality of materials. Main focus of the project is synthesis and characterization of new hybrid materials obtained by incorporating inorganic nanomaterials into polymers. Functionality of the material will be tuned for applications in photovoltaics and Li-ion batteries. This is a multidisciplinary project combining expertise of specialists from different fields such as materials science and nanotechnology,

photovoltaic technology, Li-ion batteries, physicists, chemists, and engineers. The consortium consists of experts from an education and basic research-oriented University from Spain, an applied research Institution from Norway, and a small & medium enterprise from Turkey. It will form the platform for further enhancing the ongoing collaboration, provide training of young scientists, exchange of infrastructure, new ideas, competence and impact in applications.

IP: Institute for Energy Technology, Noruega

Socios: España (Universidad Complutense de Madrid (UCM)), Turquía (Enwair Energy Technologies Corp)

Concedido ES: 150.000€

Proyecto 28

PLARASBAT. Planar architecture all solid state batteries

The all-solid-state lithium ion batteries is a long-sought target. They will have a wider operating temperature range and are safer than liquid electrolyte based counterparts. A large area sheet-like all solid state batteries (ASSB) innovative architecture is proposed. The “electrolyte supported” architecture thick-film battery is based on controlled deposition of electrodes onto a solid electrolyte thick film. Impact is expected as the batteries will be lighter, slightly flexible and compatible with large area electronics and flexible electronics devices. ASSBs can be used in wider temperature range, opening their use in harsh environments. The innovative ASSB architecture will provide quality energy storage in applications still no envisaged opening new markets. New knowledge will be produced in solid state electrochemistry and ceramic technology. The societal benefits are many, they do not use pollutant organic electrolytes, use less metals and are safer.

IP: Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC), España

Socios: Lituania (VILNIAUS UNIVERSITETAS), Taiwán (National Cheng Kung University, Dijiya Energy Saving Technology Inc)

Concedido ES: 172.000€

Proyecto 29

PNANO4BONE. Nanovectors engineered for plasma enhanced theranostics in regenerative medicine

Current scaffolds for regenerative medicine are facing several drawbacks, which are the low proliferation of living cells seeded in the implant, the short duration of drug delivery when drugs are embedded in the scaffold and the impossibility to easily follow the regenerative processes once the scaffold is implanted.

The objective of the project is to solve the above mentioned drawbacks by embedding specifically designed nanovectors in the scaffold. The interaction of these nanovectors with tissue-tolerable plasma (ionized gas) will allow promoting the living cell proliferation through the generation of reactive species. The inorganic core of the nanovectors will allow the drug release over weeks/months. The probes loaded in the nanovectors will allow monitoring the regenerative process with non-invasive imaging technologies. If successful in the context of bone regeneration, this approach could be easily adapted to the regeneration of other tissues and lead to lower therapies' costs.

IP: Institute of Science & Technology, Luxemburgo

Socios: Luxemburgo (CELLON SA (CEL)), Bélgica (Université Catholique de Louvain (UCL), España (Universidad Politécnica de Cataluña (UPC)), Polonia (Lublin University of Technology (LUT), Medical University of Lublin (MUL)

Concedido ES: 150.000€

Proyecto 30

RATOCAT. Rational design of highly effective photocatalysts with atomic -level control

Using the sun's energy to generate hydrogen from water is probably the cleanest and most sustainable source of fuel that we can envisage. Unfortunately, catalysts that do this are currently too expensive to be commercially viable. The RATOCAT project aims to develop improved photocatalyst materials, along with the processes for their production. The catalytic performance of cheap TiO₂ and C₃N₄ powders will be improved by tailoring their surface with nanostructured oxides as co-catalysts of highly-controlled composition, nanoarchitecture, size and chemical state. First principles simulations will be used to design the optimum nanostructures, which will then be deposited onto powders with the required precision using atomic layer deposition, again supported by simulation. Lab-scale tests of photocatalytic activity will provide feedback for the optimisation of the material and process, before the most promising materials are tested in the field on both pure water and wastewater.

IP:, Tyndall-UCC, Irlanda

Socios: Países Bajos (Delft University of Technology), España (Instituto de Ciencia de Materiales de Sevilla, Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC), Plataforma Solar de Almería- Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (PSA-CIEMAT)

Concedido ES: 97.000€+97.000€= 194.000€

Proyecto 35

MagicCELLGene. Localized MAGnetic hyperthermia CELL-based GENE therapy for immune modulation

The goal of MagicCELLGene is to develop a novel, universal and highly efficient methodology for transfection triggered by magnetic hyperthermia, with potential clinical applications in cell-based gene therapy. Our innovative approach is to induce a controlled and localized heating of the cellular membrane (hotspots) using magnetic nanoparticles covalently immobilized onto cell membranes via bioorthogonal chemistry, the reversible changes of the cell membrane permeability/fluidity will be used to promote the artificial delivery of nucleic acids into cells. Efforts will be especially focused on hard-to-transfect cells (primary cells), thus clearly addressing an unmet need of the transfection market. Expected results going beyond the state-of-the-art in transfection are: i) the development of a universal transfection tool and ii) its application to systems where standard transfection methods have several bottlenecks using as a model immune system modulation.

IP: Instituto de Ciencia de Materiales de Aragón – Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC), España

Socios: España (Universidad de Zaragoza), Portugal (Associação para a Inovação e Desenvolvimento da FCT (NOVA.ID.FCT)

Concedido ES: 122.000€+96.000€=218.000€

Proyecto 44

ELAM. Ultrafine eutectics by laser additive manufacturing

The proposed project aims at developing new high strength eutectic alloys by laser-based additive layer manufacturing (ALM) using selective laser melting and laser metal deposition based on Ti-TiFe and Fe-Fe₂Ti eutectics. These laser-based ALM methods possess inherently high cooling rates and are, thus, ideal for processing ultrafine eutectics and hierarchically structured near-eutectic alloys including Ti-Fe-Sn-Nb, Ti-Fe-Co, Fe-Ti-Si, Fe-Ti-Zr-B and other eutectic alloys. Although being the subject of research for decades and showing remarkable mechanical properties, none of these alloys is currently relevant for industrial applications since no economically and technically viable processing route exists. This proposal represents the first attempt to produce ultrafine Ti- and Fe-eutectics by ALM, spanning activities along the entire manufacturing chain from fundamental materials development, powder production, ALM process and post-treatment developments to demonstrator testing.

IP: DLR Institute for Materials Research, Alemania

Socios: Alemania (Access e.V., Fraunhofer Gesellschaft, Bosch-Mahle Turbosystems GmbH, P&G Manufacturing GmbH), **España (IMDEA Materials Institute)**, Hungría (Wigner Research Centre for Physics (WIGNER RCP))

Concedido ES: 150.000€

Convocatoria conjunta internacional 2018.

Países participantes (geometría variable)	Austria, Bélgica, Brasil, Bulgaria, República Checa, Estonia, Alemania, Hungría, Italia, Lituania, Letonia, Luxemburgo, Noruega, Polonia, Portugal, Rumanía, Rusia, Eslovaquia, Eslovenia, Sudáfrica, España, Suiza, Taiwán, Turquía
Temáticas	<ol style="list-style-type: none"> 1. Multiscale modeling for materials engineering and processing (M3EP) 2. Innovative surfaces, coatings and interfaces 3. High performance composites 4. Functional materials 5. New strategies for advanced material-based technologies in health applications 6. Materials for additive manufacturing
Presupuesto total	23.000.000€
Concedido ES	864.000€
Proyectos aprobados	27
Proyectos con financiación AEI	6

No.	Acrónimo y título del proyecto	Países participantes
1	TESTIMONIES. Theoretical and Experimental Study of Transition Metal Oxyhydride Nanomaterials for superconductivity and photocatalysis	Noruega, Rumanía, Lituania, Eslovaquia
2	CORR-PROOF. Graphene-based Environmentally-Friendly Corrosion Protective Coating for Aeronautics Industry	Noruega, Turquía
3	FunKeyCat. Functional grading by Key doping in Catalytic electrodes for Proton Ceramic Cells	Noruega, Polonia, España
4	HOTselflub. SELF-LUBRICATING SYSTEMS FOR HIGH TEMPERATURE TRIBO-APPLICATIONS	Estonia, Austria, Polonia
5	HyprSTEP. Development of novel hybrid process based on graphene modified smart textile filters and polymer membranes for advanced wastewater treatment	Alemania, Polonia,
6	INCOMARC. Innovative coating materials for arc resistant electric contacts	Italia, Bélgica
7	ISOS. Multi-functional icephobic, robust, lightweight and transparent coatings for windows and lenses	Noruega, España
8	MARWEL. MAtERials for Wind farm componEnts Life improvement	España, Italia
9	Smart RESCYou. Personal protection through sensor surfaces on smart high performance fibres	Alemania, Austria
10	StressLIC. Addressing the stress-related functional limitations of thin-film Li-ion components for energyintensive applications	Austria, España, Estados Unidos (no financia)
11	TriboHEA. High entropy alloy coatings for tribological applications	España, Rumanía
12	CompoRail. Fibre-reinforced composite road guardrails	Bélgica, Letonia
13	ECOPACKAGING. Vegetal fibres-reinforced PLA antimicrobial composites for packaging applications	Portugal, República Checa,
14	EPIC. European Partnership for Improved Composites	Letonia, Eslovaquia, República Checa

15	2D-SPIN-MEM. Functional 2D materials and heterostructures for hybrid spintronic-memristive devices	España, Rumanía, Bulgaria
16	BioValue. Advanced Membranes for biogas upgrading and high added value compounds recovery	Italia, República Checa
17	CATALEAST. Holistic design of fuel cell electrocatalysts for the least power applications	Rumanía, Hungría, España (sin financiación)
18	En-ActivETICS. Energy Activated External Thermal Insulation Composite System - integration of thermal storage and photovoltaics for energy-efficient buildings.	Eslovaquia, Estonia, Polonia
19	NOEL. Innovative Nanostructured Electrodes for Energy Storage Concepts	España, Eslovenia, Polonia
20	SunToChem. Engineering of perovskite photocatalysts for sunlight-driven hydrogen evolution from water splitting	Eslovenia, Taiwán, Letonia
21	VOC-DETECT. Smart Portable System for VOCs detection	Rumanía, Hungría
22	ZMOMUVS. ZnMgO materials with tunable band gap for solar-blind UV sensors	Letonia, Lituania, Taiwán
23	BIOMAG. Advanced magnetic nanoparticles for detection and quantification of biomarkers in biological fluids	Japón (sin financiación), España, Eslovenia
24	NanoTENDO. Nanoparticle Transfer Through Endothelial Barrier	Letonia, Polonia, España (sin financiación)
25	AluNanoCore. High strength nano reinforced aluminium powder cored wire for arc based ALM	Alemania, Bulgaria
26	AM-Crash. Additive Manufacturing Technologies for Crash loaded structural Components	Alemania, Polonia
27	A-MELIUS. Additive Manufacturing of functional and Effective Light Use-cases	Alemania, España

Convocatoria nacional APCIN 2018

Proyecto 3

FunKeyCat. Functional grading by Key doping in Catalytic electrodes for Proton Ceramic Cells

Functional Grading by Key doping in Catalytic electrodes for Proton Ceramic Cells (FunKeyCat) is an effort to bridge the gap between fundamental science and applied research for a leap towards highly efficient electrochemical cells by understanding the effects of functional and mechanical properties of the constituent materials on the efficiency of the electrochemical cells. Challenges such as cell resistance and catalytic properties of the electrodes will be overcome through studies of how doping of key elements affects ionic and electronic transport in the electrode materials, and how the balancing between these correlates with chemical and thermal expansion. Functional grading will increase mechanical robustness, minimise cell resistance and maximise electrochemical functionality. FunKeyCat will also explore a new concept of using electric potential for exsolution and regeneration of oxide nano catalysts to enhance cell durability and performance.

IP: University of Oslo, Noruega

Socios: Noruega (SINTEF Industry), Polonia (Gdansk University of Technology), España (Agencia Estatal Consejo Superior de Investigaciones Científicas)

Presupuesto total: 1.091.047€

Concedido ES: 155.000€

Proyecto 7

ISOS. Multi-functional icephobic, robust, lightweight and transparent coatings for windows and lenses

Ice on window/lens surfaces cause operational difficulties in optical sensors and windshields. We propose a passive, environmentally friendly method to prevent or delay ice formation without the application of energy while preserving the surface optical properties. This solution overcomes the limits of the active methods currently employed that are costly, energy consuming, environmentally harmful and dangerous for lens/window integrity. Two families of innovative materials (functionalized graphene and selflubricating liquid water layer) will be synthesised, characterised, and tested at lab level for multifunctional coatings (TRL4), with icephobic, robust, lightweight and transparent properties. The proposed approach is flexible, cost-effective and scalable in production, allowing a fast integration at industrial scale. The performances of the coatings for industrial application in the optical sensor market sector will be assessed and validated with the industrial advisory board.

IP: University of Bergen, Noruega

Socios: Noruega (Christian Michelsen Research AS), España (Universidad Autónoma de Madrid)

Presupuesto total: 690.000€

Concedido ES: 85.500€

Proyecto 10

StressLIC. Addressing the stress-related functional limitations of thin-film Li-ion components for energyintensive applications

For electric cars to compete with traditional cars and complete an industrial transition required for global sustainability, we need Li-ion batteries (LIBs) with energy density 500% higher than current technology permits. Such a disruptive innovation is only feasible if we understand how mechanical stress gradients degrade battery performance on the nanoscale, and take remedial action. The StressLIC consortium will characterize and propose remedies for the stress-related limitations of current LIBs, by combining cutting-edge thin film measurement and simulation techniques from several disciplines. StressLIC is committed to improving battery performance in terms of capacity, power, lifetime and safety. The consortium includes three leading EU Labs specialized in nanoscale materials science, an expert in LIBs from Sandia National Lab, and a large battery-analysis EU company.

IP: Universidad Autónoma de Madrid, España

Socios: Austria (Montanuniversität Leoben, Anstalt für Verbrennungskraftmaschinen List),

España (Agencia Estatal Consejo Superior de Investigaciones Científicas), Estados Unidos

(Sandia National Laboratories)

Presupuesto total: 431.616€

Concedido ES: 70.000€+135.000€=205.000€

Proyecto 15

2D-SPIN-MEM. Functional 2D materials and heterostructures for hybrid spintronic-memristive devices

Magnetic memories (MRAM) and memristors are amongst the most promising technologies for emerging nonvolatile memories. MRAM implement concepts developed within spintronics, which uses spin –rather than electrons– to transfer and store information. In this project we will explore hybrid spintronic-memristor devices in graphene-based heterostructures comprising 2D transition metal dichalcogenides (TMDs) and less explored group-IV monochalcogenides (IV-MCs) materials. We will perform the first ever evaluation of the potential of 2D IV-MCs as memristors and implement graphene-based heterostructures with enhanced spin-orbit coupling using both TMDs and IV-MCs. With these heterostructures we aim at controlling graphene's spin properties by changing the memristive setting of the chalcogenides. They will be made and characterized such that new multifunctional 2D systems are generated for applications in

ultradense and ultralow power nonvolatile memories and neuromorphic computer architectures

IP: Catalan Institute of Nanoscience and Nanotechnology, España

Socios: Rumanía (National Institute of Materials Physics), Bulgaria (Institute of Optical Materials and Technologies, Institute of Solid State Physics)

Presupuesto total: 300.000€

Concedido ES: 125.000€

Proyecto 19

NOEL. Innovative Nanostructured Electrodes for Energy Storage Concepts

Energy storage systems will play a fundamental role in reducing fossil fuel consumption and greenhouse gas emissions by providing solutions to store energy produced from renewable sources and to implement electrical vehicles. Graphite is the traditional material used in standard rechargeable batteries or supercapacitors, but presents limitations because of its limited intrinsic capacity, lithium-ion insertion capacity, and specific capacitance. Moreover, graphite, but also lithium and cobalt, all standard materials for supercapacitors and lithium-ion batteries, are limited resources, and Europe is dependent on external supply. To solve these shortcomings, NOEL aims at developing new low cost environmentally friendly layered semiconductor-carbon composites for their use as innovative electrodes for next generation batteries or supercapacitors, looking for improved performance, low price, high material availability, locally produced in Europe, and eco-friendly properties.

IP: Universidad de Zaragoza, España

Socios: Eslovenia (NIC), Polonia (PUT)

Presupuesto total: 488.444€

Concedido ES: 170.000€

Proyecto 23

BIOMAG. Advanced magnetic nanoparticles for detection and quantification of biomarkers in biological fluids

An ever-increasing number of medical applications is adopting nanotechnology to go beyond the current state-of-the-art. BioMag aims to provide a quick, sensitive, reliable and low-cost in vitro diagnostic methodology based on functionalised magnetic nanoparticles (F-MNPs) for detection of biomarkers present in bodily fluids. The project aims to 1) design F-MNPs with recognition ligands that specifically interact with cardiac biomarkers related to myocardial infarction and MNP surface engineering to minimize unspecific interactions with off target biomolecules present in blood samples, 2) monitor changes of AC hysteresis loops of F-MNPs after specific interaction with biomarkers, 3) develop numerical simulations to model the variation of the AC hysteresis loops for quantifying the biomarker amount present in the studied sample. The BioMag consortium gathers excellent and multidisciplinary research teams for approaching material science fundamentals towards market applications.

IP: iMdea Nanociencia, España

Socios: Japón (Kyushu University), España (Universidad de Alcalá), Eslovenia (National Institute of Chemistry)

Presupuesto total: 510.880€

Concedido ES: 145.000€+59.000=204.000€

Convocatoria conjunta internacional 2019

Países participantes	Austria, Bélgica, Brasil, Cánada, Chipre, España, Estonia, Francia, Hungría, Israel, Italia, Letonia, Lituania, Luxemburgo, Polonia, República checa, República Eslovaca, Rumanía, Rusia, Sudáfrica, Suiza, Taiwan, Turquía
Temáticas	<ol style="list-style-type: none"> 1. Modeling for materials engineering and processing 2. Innovative surfaces, coatings and interfaces 3. High performance composites 4. Functional materials 5. New strategies for advanced material-based technologies in health applications 6. Materials for additive manufacturing
Presupuesto total	25.540.000€
Concedido ES	600.000€
Proyectos aprobados	37
Proyectos con financiación AEI	5 (4 proyectos coordinados)

No.	Acrónimo y título del proyecto	Países participantes
1	AnBaCo. Antibacterial Coatings Containing Carbon Nanoparticles Obtained by SolGel Method	Polonia, República checa
2	cladHEA+. Laser cladding as resource efficient manufacturing route for high temperature corrosion and wear resistant coatings based on High Entropy Alloys (HEA)	Alemania, Francia, Rusia
3	ENZ4IFACES. Innovative enzymatic coatings for electrochemical interfaces	Rumania, España, Sudáfrica
4	InterBATT. Key enabling interface engineering and characterization for next generation batteries	Alemania, Luxemburgo
5	IsoWire. Drug eluting coating with ultralow friction interface for urological guide wire to reduce trauma during surgical removal of renal stones	Polonia, Sudáfrica
6	LaMoFlo. High-rate laser surface texturing of 3D injection molds to fabricate functionalized easy-flow polymeric containers	Alemania, Canadá
7	MiDiCoat. Microstructure Design of Innovative Interfaces in CVD Hard Coatings	Alemania, República Checa
8	MiLaCo. New optical Components based on nanostructured dielectric thin films designs for application in MicroLasers	Lituania, Francia
9	OxyGaN. Efficiency enhancement in GaN-based blue to blue-violet LDs by engineered nitrideoxide ohmic contacts	Polonia, Hungría, Israel
10	SensCoat. Smart Nano-bio-coating for Manufacturing of Biosensors for Point of Care Molecular Genetic Diagnosis	Turquía, España, Alemania
11	AMCSS. Additive manufactured composite smart structures with embedded fibre Bragg grating sensors	Polonia, Lituania
12	HEMP4NZEB. Manufacturing technology of building products made of ecological high performance fibre composites with encapsulated PCM for the NZEB application	Letonia, Polonia
13	Hybrid beams. Composite reinforcement in a light stainless steel bus structure	República Checa, Polonia
14	MERF. Matrix for carbon reinforced epoxy laminates with reduced flammability	República Checa, Lituania, Letonia, República Eslovaca
15	NATALINA. Natural fibers reinforced composite: an affordable and sustainable new material/ design/ manufacturing approach	Luxemburgo, Turquía
16	NovCom. Novel high performance diamond based composites	Polonia, Alemania

17	3D-Photocat. Multifunctional 3D photocatalytic systems for environmentally friendly sustainable technologies	España , Brasil, Rumanía
18	CENTAUR. Ceramics with sensing capabilities for high temperature applications	Alemania, Luxemburgo, República Checa
19	C-MOF.cell. Novel materials as electrode and electrolyte components in fuel cell technology	España , Estonia, Francia
20	COSMAG. From the Cosmos to the Lab: Development of the L10-FeNi Phase as a Disruptive Permanent Magnet Alternative	España , Alemania, República Eslovaca
21	GADEIRE. Gas Absorption sensors Development for Environment based on novel mid-InfraRed hollow fibers with Enhanced functional design	Francia, Polonia, Bélgica
22	HYSUCAP. Synthesis and characterization of novel 2D hybrid materials for supercapacitors	Alemania, República Checa, Polonia
23	INNENERMAT. Innovative nanostructured materials and smart textile electrodes for new generation of batteries and supercapacitors	España , Alemania, Italia
24	LISABED. Li-ion BATTERY-SupERCAPACITOR Hybrid Device	República Checa, Eslovaquia, Turquía
25	NANOPOL. Low density NANONANOCELLULAR POLYMERS for thermal insulation in buildings. Basic heat transfer mechanisms and LCA	España, Taiwan, Brasil
26	NewILUMIS. NEW VERSATILE PLATFORM FOR ILLUMINATION AND SENSING	Polonia, Francia, Alemania
27	SALMOS. Sensor Arrays using Luminescent Metal-Organic Frameworks for the Optical Detection of Explosive Vapours and Toxic Substances	España , Chipre, Turquía
28	SmartMatter. Core integration of novel functional, adaptive materials into a smart, highly sensitive analytical system for point of need environmental applications	Rumanía, Italia, Francia
29	TRAVEL. A Novel Transparent Electrodes for VCSELS	Polonia, Francia
30	Eco-OLED. Enabling a Commercially Viable Long Lifespan and High-Efficiency Omni-Friendly OLED Lighting Source with G2 and G3 Emitters	Taiwan, Lituania, Letonia
31	INJECT-BIO. Bioactive injectable hydrogels for soft tissue regeneration after reconstructive maxillofacial surgeries	Letonia, Lituania, Turquía, República Checa, Israel
32	ISIDE. Innovative Strategies for bioactive/antibacterial advanced prostheses	Italia, Alemania, Rumanía, Turquía
33	LIGNP4WOUND. Antibacterial breathable wound dressing based on polymer electrospun nanofibers	República Checa, Luxemburgo
34	fingerIMPLANT. Patient-specific, anti-microbial bioactive finger implants for durable functional reconstruction after amputation	Austria, Polonia
35	MultiMat3. Multi-Material Additive Manufacturing	Alemania, Sudáfrica
36	RIPE4TEC. Reactive Inkjet Printing of Epoxy Thermoset Composites	Austria, Rumanía
37	SEAM-PP. Material and process development for the production of large-sized polypropylene components in the novel highspeed 3D printing process SEAM	Alemania, Suiza

Convocatoria nacional APCIN 2020

Proyecto 17

3D-Photocat. Multifunctional 3D photocatalytic systems for environmentally friendly sustainable technologies

The main goal of the present proposal is the development of highly extended 3D carbonaceous@TiO₂ heterojunctions with improved photocatalytic performance for

environmentally friendly reactions. High-surface area activated carbons modified with graphene (or graphene derivatives) will be used as 3D platforms to grow a thin TiO₂ nanofilm so that the final composite will give rise to an optimal photocatalytic performance based on the Z-scheme heterojunction model. These composites will be designed to take advantage of the excellent photocatalytic performance of TiO₂ and graphene, and the superior conversion of light in the confined nanospace of activated carbon materials. The development of a controlled porous network and a well-defined surface chemistry (including a well-dispersed TiO₂ nanofilm) will provide a bifunctional system able to adsorb and convert simultaneously or in pulsed-mode i) CO₂ into value-added chemicals, and ii) air and water pollutants into harmless compounds.

IP: Universidad de Alicante, España

Socios: Brasil, Rumania

Presupuesto total: 426.908€

Concedido ES: 176.000€

Proyecto 19

C-MOF.cell. Novel materials as electrode and electrolyte components in fuel cell technology

Global concern over climate change related with the emission of hazardous chemical species together with high global demand for energy have led to an increase in the development of technologies related with renewable energy sources. In this scenario, it urges the development of new materials/technologies for the sustainable production and storage of energy, improving their efficiency, durability and environmental compatibility while decreasing their cost. The C-MOF.cell project aims to develop novel functional advanced materials for proton-exchange membrane fuel cells that are efficient, affordable and robust in a broader range of operating conditions than can be achieved with current materials. Specifically: novel non-precious metal catalysts for oxygen reduction reaction will be prepared to replace costly Pt in the cathode, while proton-conductive membranes based on Metal-Organic Frameworks will be developed as highly stable electrolyte. C-MOF.cell has the potential to significantly influence EU's energy system (from availability to energy consumption), potentially decarbonising EU and facing the climate change effects.

IP: IMDEA ENERGY, España

Socios: España, Estonia, Francia

Concedido: FUNDACION IMDEA ENERGIA 100.000 € + UNIVERSIDAD DE LA LAGUNA 80.000 €

Presupuesto Total: 475.610€

Concedido ES:100.000+80.000=180.000€

Proyecto 20

COSMAG. From the Cosmos to the Lab: Development of the L10-FeNi Phase as a Disruptive Permanent Magnet Alternative

COSMAG aims at the development of a next-generation permanent magnet (PM), with no content of critical raw elements, that can be found naturally only in some meteorites: L10-ordered FeNi. Theoretical predictions show its potential to compete with the best PMs used in current technology: rare earth (RE)-based NdDyFeB. The primary objective will be to increase the atomic mobility of Fe and Ni using non-equilibrium methods, thus forming L10-FeNi on industrial time scales. COSMAG will address the problematic that Europe is facing to achieve a sustainable technological development with no bottleneck risk originated from the lack of resources and the monopoly by Asia on REs. The project will count with the joint effort of research institutes (IMDEA, IFW, IPSAS) and industry (IMA, UMBRA). The proposed RE-free PM alternative will impact straightforward on technology development (electromobility, renewable energy technologies...) and patents in Europe, and will propel EU SMEs and strength LEs.

IP: IMDEA NANOCIENCIA, España

Socios: Alemania, Eslovaquia, España

Presupuesto total: 569.000€

Concedido ES: 170.000 €

Proyecto 23

INNENERMAT. Innovative nanostructured materials and smart textile electrodes for new generation of batteries and supercapacitors

The project will be focused on the development of novel active materials for competitive energy storage devices: batteries and supercapacitors (SC) with a focus on the main components: active material, electrolyte and design of the device. It is planned to design structurally and chemically advanced functional carbon materials, smart textiles, metal oxides and hybrid materials to make a substantial advance in performance. Besides, improvements in the electrolytes through developing new polymers and gels will also be considered. Finally, due to the multidisciplinary consortium, it will be also possible to design flexible concepts for storage devices, with special emphasis in textile-based technologies. The participation of the industrial partners will allow to integrate easily all the new developments and to perform a proof-of-concept for different applications, allowing to reach TRL6 for flexible batteries and supercapacitors at the end of the project.

IP: CSIC- Consejo Nacional de Investigación de España, España

Socios: Agencia Estatal de Investigación (España), Federal Ministry of Education and Research (Alemania), POR Calabria 2014-2020(Italia)

Presupuesto total: 1.087.450€

Concedido ES: 176.000 €

Proyecto 27

SALMOS. Sensor Arrays using Luminescent Metal-Organic Frameworks for the Optical Detection of Explosive Vapours and Toxic Substances

The project will be focused on the development of novel active materials for competitive energy storage devices: batteries and supercapacitors (SC) with a focus on the main components: active material, electrolyte and design of the device. It is planned to design structurally and chemically advanced functional carbon materials, smart textiles, metal oxides and hybrid materials to make a substantial advance in performance. Besides, improvements in the electrolytes through developing new polymers and gels will also be considered. Finally, due to the multidisciplinary consortium, it will be also possible to design flexible concepts for storage devices, with special emphasis in textile-based technologies. The participation of the industrial partners will allow to integrate easily all the new developments and to perform a proof-of-concept for different applications, allowing to reach TRL6 for flexible batteries and supercapacitors at the end of the project.

IP: Universidad Pablo de Olavide, España

Socios: Universidad Pablo de Olavide (Spain), University of Cyprus (Cyprus), Balikesir University (Turkey), University of Amsterdam (The Netherlands), INDRA Sistemas S.A. (Spain)

Presupuesto total: 505.000€

Concedido ES: 148.000€

ECSEL - Electronic Components and Systems for European Leadership Joint Undertaking

ECSEL es una asociación entre los sectores público y privado para promover el estado del arte en componentes y sistemas electrónicos. Los componentes y sistemas electrónicos (ECS) son una tecnología habilitadora clave generalizada que afecta a todas las ramas industriales y a casi todos los aspectos de la vida. Un teléfono inteligente, una tarjeta inteligente, una red de energía inteligente, una ciudad inteligente, incluso una gobernanza inteligente; todo lo "inteligente" se basa en la integración de chips semiconductores que ejecutan software integrado. Proporcionan el tejido sobre el que se ejecuta Internet; dan vida a teléfonos portátiles y tabletas; conducen coches y trenes sin conductor, vuelan aviones, drones y satélites. En los tiempos modernos, ninguna economía nacional puede ganar en la competencia global sin dominar esta tecnología, con un impacto sistémico y estratégico incomparable.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales: 11 (2014-1, 2014-2, 2015-1, 2015-2, 2015-1, 2016-2; 2017-1; 2017-2; 2018-1; 2018-2; 2019)

Participación de MINECO en convocatorias conjuntas: 9 (2015-1, 2016-1; 2017-1; 2017-2; 2018-1; 2018-2; 2019)

Convocatoria conjunta ECSEL-2014-1 Research and Innovation Actions (RIA)

Países participantes (geometría variable)	Austria, Bélgica, Bulgaria, República Checa, Dinamarca, Finlandia, Francia, Alemania, Grecia, Hungría, Irlanda, Israel, Italia, Letonia, Países Bajos, Noruega, Polonia, Portugal, Rumanía, Eslovaquia, España, Reino Unido.
Presupuesto total	33.000.000€
Concedido ES	€
Proyectos aprobados	12
Proyectos financiados pro MINECO	3(1 coordinado)

Nº.	Acrónimo y título del proyecto	Países participantes
1	3Ccar: Integrated Components for Complexity Control in Affordable Electrified Cars	Alemania , Austria, Bélgica, República Checa, , España, Finlandia, Francia, Italia, Letonia, Lituania, Países Bajos, Rumanía, Taiwan, Reino Unido.
2	EXIST: Extended Image Sensing Technologies	Bélgica , Países Bajos, Grecia, Finlandia.
3	MANTIS: Cyber Physical System based Proactive Collaborative Maintenance	España , Finlandia, Dinamarca, Bélgica, Países Bajos, Portugal, Italia, Austria, Reino Unido, Hungría, Eslovenia, Alemania, Dinamarca.
4	OSIRIS	Francia , Noruega, Suecia, Eslovaquia
5	RobustSENSE: Robust and Reliable Environment Sensing and Situation Prediction for Advanced Driver Assistance Systems and Automated Driving	Alemania , Austria, España, Italia, Finlandia.

6	SWARMS : Smart and Networking Underwater Robots in Cooperation Meshes	España , Alemania, Noruega, Francia, Portugal, Suecia, Países Bajos, Rumania, Turquía, Italia
7	ADMONT : Advanced Distributed Pilot Line for More-than-Moore Technologies	
8	InForMed : An Integrated Pilot line for Medical Micro-Fabricated Devices	Países Bajos , Bélgica, Finlandia, Francia, Alemania, Gran Bretaña, Irlanda, España, Suecia, Suiza
9	PowerBase : Enhanced substrates and GaN pilot lines enabling compact power applications	Austria , Bélgica, Alemania, Italia, Noruega, Eslovaquia, España, Reino Unido, Países Bajos
10	R2POWER300	
11	SeNaTe : Seven Nanometer Technology	
12	WAYTOGO FAST : Which Architecture Yields Two Other Generations of Fully-depleted Advanced Substrates and Technologies	Francia , España, Alemania, Austria, Israel, Países Bajos, Bélgica, Finlandia, Reino Unido, Grecia

Convocatoria nacional APCIN 2014

Proyecto 1

SWARMS. Smart and Networking UnderWater Robots in Cooperation Meshes.

The SWARMS project aims to solve this problem by extending the use of unmanned underwater vehicles (AUVs, ROVs). This will be achieved by enabling them to collaborate in a cooperative mesh, thus increasing the reliability of operations, by combining their functionalities and doing new applications feasible. SWARMS will increase the autonomy of AUVs and improve the usability of ROVs by introducing new operator assistance functions for intuitive control. This will substantially reduce training times for operators which nowadays take up to five years. In contrast to present day subsea machinery, SWARMS allows seamless integration of new robots from different manufacturers.

IP: Universidad Politécnica de Madrid (UPM), España

Socios: **España (Consorcio para el diseño, la construcción, equipamiento y explotación plataforma oceánica Canarias, ACCIONA Infraestructuras, IXION Industry and Aerospace SL, Fundación TECNALIA Research & Innovation, TTI Norte S.L., HI IBERIA Ingeniería y Proyectos SL), Alemania (Robert Bosch GMBH, Evologics GMBH), Francia (ECA ROBOTICS, Office National d'etudes et de Recherches Aérospatiales, THALES SA), Portugal (Greensphere Unipessoal LDA, Instituto de Telecomunicações, Universidade de Aveiro), Noruega (STIFTELSEN SINTEF, Norges Teknisk-naturvitenskapelige Universitet NTNU, Maritime Robotics AS, INVENTAS AS, WATER LINKED AS), Suecia (Deepvision AB, Maelardalens Högskola), The Netherlands (TNO, Science and Technology B.V.), Rumanía (Teamnet World Professional Services SRL, Autonomous Systems SRL), Turquía (Desistek Robotik Elektronik Yazilim arGe uretim Danismanlik Ithalat ihracat ticaret limited sirketi, Sabanci University), Italia (Whitehead Sistemi Subacquei SPA, Scuola Superiore di Studi Universitari e di Perfezionamento Sant'Anna).**

Concedido ES: 354.600€ +232.080€ =586.680€

Proyecto 2

PowerBase. Enhanced substrates and GaN pilot lines enabling compact power applications

Ensure the availability of Electronic Components and Systems (ECS) for key markets and for addressing societal challenges, aiming at keeping Europe at the forefront of the technology development, bridging the gap between research and exploitation, creating economic and employment growth in the European Union. The project PowerBase aims to contribute to the industrial ambition of value creation in Europe and fully supports this vision by addressing key topics of ECSEL multi annual strategic plan 2014. By positioning PowerBase as innovation action a clear focus on exploitation of the expected result is primary goal.

IP: Infineon Technologies Austria AG (IFAT), Austria

Socios: Austria (IFAT, Plansee SE, Fronius Int. GmbH, Kompetenzzentrum Automobil – und Industrieelektronik GmbH, ams AG, CISC Semiconductor GmbH, Universität Graz, BESI Austria GmbH, Carinthian Tech Research AG), Bélgica (Interuniversitair Micro-Electronica Centrum, Epigan NV), Alemania (Infineon Technologies AG, Osram Opto Semiconductors, SILTRONIC AG, PacTech - Packaging Technologies GmbH, Baumann GmbH, NanoFocus AG, Fraunhofer Gesellschaft zur Förderung der Angewandten Forschung, Max Planck Institut für Eisenforschung GmbH, Infineon Technologies Dresden GmbH, NaMLab GmbH, Freibereger Compound Materials GmbH, Technische Universität Dresden, HAP Handhabungs- Automatisierung- und Präzisionstechnik GmbH Dresden), Italia (Universita degli Studi di Padova, Infineon Technologies Italia Srl), Noruega (Eltek AS, Universiteteti Oslo), Eslovaquia (Slovenska Technicka Univerzita Bratislava, Nano Design SRO), **España (Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC)**, For Optimal Renewable Energy Systems S.L, Ikerlan S. Coop., Greenpower Technologies S.L.), Reino Unido (Quantemol Limited, SPTS Technologies Ltd, Memstar Limited, University of Bristol), Países Bajos (BESI Netherlands BV, Trymax Semiconductor Equipment BV).
Concedido ES: 155.000€

Convocatoria nacional APCIN 2015

Proyecto 1

WAYTOGO FAST. Which Architecture Yields Two Other Generations of Fully-depleted Advanced Substrates and Technologies.

The pilot-line WAYTOGO FAST will leverage Europe's leadership in Fully Depleted Silicon on Insulator technology (FDSOI*) so as to compete through a leading-edge technology offer at the 14nm node and beyond, as well as prepare the future nodes' transistor architecture

IP: Gilles Thomas, STMICROELECTRONICS S.A., Francia

Socios: Francia (STMicroelectronics S.A, CEA, S.O.I.TEC Silicon On insulator Technologies SA, CNRS, Applied Materials France Sarl, Institut Polytechnique de Grenoble, Lam Research SAS, Tokyo Electron Europe Limited), **España (Universidad de Granada)**, Alemania (SILTRONIC AG, Globalfoundries Dresden Module One LLC & Co. KG, Dainippon Screen Deutschland GmbH, HSEB Dresden GmbH, BRUKER AXS GMBH, FUJITSU semiconductor Europe GMBH, ALCATEL-LUCENT Deutschland AG, Fraunhofer-Gesellschaft zur Foerderung der Angewandten Forschung E.V., SONY Deutschland GMBH, MUNEDA GmbH, HQ-Dielectrics GmbH), Austria (LAM Research AG, EV GROUP E. THALLNER GMBH, GLOBAL TCAD SOLUTIONS GMBH), Israel (KLA-TENCOR Corporation, Nova Measuring Instruments Ltd.), Países Bajos (FEI Electron Optics BV, PRODRIVE BV), Bélgica (Universite Catholique de Louvain), Finlandia (PICOSUN OY), Reino Unido (Gold Standard Simulations Ltd), Grecia (Integrated Systems Development S.A.)

Concedido ES: 120.000€

Proyecto 2

INFORMED. A pilot line for micro-fabricated medical devices enabling optimal use of the technologies and competencies available in Europe.

Resumen: In the InForMed project an integrated pilot line for medical devices will be established, covering the complete innovation chain from technology concept to system qualification. It will include micro-fabrication, assembly and even the fabrication of smart catheters. Uniquely, the integrated pilot line is hosted by a large industrial end-user, and is specifically targeted and equipped to bridge the gap in the landscape of micro-fabrication of medical devices between concept creation and full-scale production. 39 Partners from 10 countries participate in the project to form manufacturing networks and an eco-system where new medical devices can be seeded and nurtured to grow into new business opportunities for

Europe, in a time when there is a paradigm shift from large expensive diagnostic equipment towards small, disposable, minimal invasive and un-obtrusive diagnostic and therapeutic instruments and tools. The Pilot line will be demonstrated by six demonstrator products which cover traditional, emerging, and entirely new market segments, in the domains of "Hospital and Heuristic Care as well as "Home Care and Well-being," and that demonstrate the trend towards "Smart Health" solutions

IP: Sieger Swaving, Philips Electronics Nederland, Países Bajos

Socios: Países Bajos, Bélgica, Finlandia, Francia, Alemania, Gran Bretaña, Irlanda, **España (Universidad de Zaragoza)**, Suecia, Suiza

Concedido ES: 122.000€

Convocatoria conjunta H2020-ECSEL-2015-1-RIA- Research and Innovation Actions

Proyectos aprobados: 8

Proyectos aprobados con participación española: 2 (un proyecto coordinado)

No.	Acrónimo y título del proyecto	Países participantes
1	3DAM 3D Advanced Metrology and materials for advanced devices	Países Bajos
2	AMASS Architecture-driven, Multi-concern and Seamless Assurance and Certification of Cyber-Physical Systems	España , República Checa, Austria, Alemania, Países Bajos, Italia, Suecia, Reino Unido
3	ASTONISH Advancing Smart Optical Imaging and Sensing for Health	Países Bajos , Italia, Finlandia, España, Bélgica, República Checa
4	DELPHI4LED From Measurements to Standardized Multi-Domain Compact Models of LEDs	Países Bajos
5	DENSE aDverse wEather eNvironmental Sensing systEm	Alemania
6	PRIME Ultra-Low PoweR technologies and MEmory architectures for IoT	Bélgica
7	REFERENCE Rf Engineered substrates to FostER fEm performaNCE	Francia
8	SafeCOP Safe Cooperating Cyber-Physical Systems using Wireless Communication	Suecia

Convocatoria conjunta H2020-ECSEL-2015-2-IA-two-stage - Innovation Actions (IA)

Proyectos aprobados: 5

Proyectos aprobados con participación española: 3

No.	Acrónimo y título del proyecto	Países participantes
1	ENABLE-S3 European Initiative to Enable Validation for Highly Automated Safe and Secure Systems	Alemania , Bélgica, Países Bajos, Dinamarca, Reino Unido, España, Francia, Austria, Finlandia, Irlanda, República Checa
2	EnSO Energy for Smart Objects	Francia , Países Bajos, Dinamarca, España , Bélgica, Alemania, República Checa, Suiza
3	IoSense Flexible FE/BE Sensor Pilot Line for the Internet of Everything	Alemania , Países Bajos, España, Austria, Bélgica, Eslovaquia
4	Semi40Power Semiconductor and Electronics Manufacturing 4.0	Austria

Convocatoria nacional APCIN 2015

Proyecto 1

IOSENSE. Flexible FE, BE Sensor Pilot Line for the Internet of Everything.

Aim of IoSense is to boost the European competitiveness of ECS industries, by establishing three fully connected semiconductor Pilot Lines in Europe: two 200mm frontend (Dresden and Regensburg) and one Backend (Regensburg) pilot lines will be facilitated to enable the production of innovative sensor system components. Focus will be on the availability of top innovative, competitive sensors and sensor systems “Made in Europe” for applications in Smart Production, Society, Mobility and Health.

IP: Norbert Thyssen, Infineon Technologies Dresden GMBH, Alemania

Socios: Alemania (Infineon Technologies Dresden GMBH, Bernitz Electronics GmbH, Dr. Födisch Umweltmesstechnik AG, Fraunhofer Gesellschaft zur Forderung der Angewandten Forschung EV, IMA Materialforschung Und Anwendungstechnik GMBH, Technische Universitaet Dresden, XENON Automatisierungstechnik GmbH), Países Bajos (Advanced Packaging Center BV, Boschman Technologies BV, Philips Lighting B.V., Technische Universiteit Delft), **España (Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC)**, Centre Tecnologic de Telecomunicacions de Catalunya, Fundación Tecnalia Research & Innovation, Integrasys SA, IQADRAT Informatica SL, Ixion Industry and Aerospace SL, Thales Alenia Space Espana, SA), Austria (Austrian Institute of Technology GmbH, AMS AG, ANDRITZ AG, CTR Carinthian Tech Research AG, Forschung Burgenland GmbH, Infineon Technologies Austria AG, Materials Center Leoben Forschung GmbH, Technische Universitaet Graz, Universitaet Klagenfurt, Kompetenzzentrum - Das Virtuelle Fahrzeug, Forschungsgesellschaft mbH), Bélgica (Interuniversitair Micro-Electronicacentrum Imec VZW), Eslovaquia (Powertec SRO, Slovenska Technicka Univerzita V Bratislave).

Concedido ES: 148.000€+175.000€=323.000€

Convocatoria nacional APCIN 2015-2

Proyecto 2

ENABLE-S3. European Initiative to Enable Validation for Highly Automated Safe and Secure Systems

ENABLE-S3 will pave the way for accelerated application of highly automated and autonomous systems in the mobility domains automotive, aerospace, rail and maritime as well as in the health care domain. Virtual testing, verification and coverage-oriented test selection methods will enable validation with reasonable efforts. The resulting validation framework will ensure Europeans Industry competitiveness in the global race of automated systems with an expected market potential of 60B€ in 2025. Project results will be used to propose standardized validation procedures for highly automated systems (ACPS).

IP: Michael Paulweber, AVL List GmbH, Alemania

Socios: Alemania, Bélgica, Países Bajos, Dinamarca, Reino Unido, España, Francia, Austria, Finlandia, Irlanda, República Checa

Concedido ES: 137.000 € + 137.000 € = 274.000€

Proyecto 3

ASTONISH. ADVANCING SMART OPTICAL IMAGING AND SENSING FOR HEALTH

The ageing population and related increase in chronic diseases put considerable pressure on both the healthcare system and the society, resulting in an unsustainable rise of healthcare costs. As a result there is an urgent need to improve efficiency of care and reduce hospitalisation time in order to control cost and increase quality of life. Addressing this need, medical applications need to become less invasive and improve disease detection, diagnosis and treatment using advanced imaging and sensing techniques. ASTONISH will deliver breakthrough imaging and sensing technologies for monitoring, diagnosis and treatment applications by developing smart optical imaging technology that extends the use of minimally invasive diagnosis and treatment and allows for unobtrusive health monitoring.

IP: Robert Hofsink, Philips Healthcare, Países Bajos

Socios: Países Bajos (Eindhoven University of Technology, Philips Research, Quest Medical Imaging, Anteryon, Kempenhaeghe, NKI, LUMC), Italia (STMicroelectronics, University Chieti Pescara, University of Palermo, CNR-IMM), Finlandia (VTT, Revenio, Okmetic), **España (Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC), GTEC, NorayBio, Tecnalia, Ibermática, Universidad del País Vasco)**, Bélgica (IMEC), República Checa (Brno University, IMA)
Concedido ES: 128.000 €+ 128.000 € =256.000€

Proyecto 4

ENSO. Energy for Smart Objects

The goal of EnSO is to develop and consolidate a unique European ecosystem in the field of autonomous micro energy sources (AMES) supporting Electronic European industry to develop innovative products. EnSO multi-KET objectives are: to demonstrate the competitiveness of EnSO energy solutions of the targeted Smart Society, Smart Health, and Smart Energy key applications; to disseminate EnSO energy solutions to foster the take-up of emerging markets; to develop high reliability assembly technologies of shapeable micro batteries, energy harvester and power management building blocks; to Develop and demonstrate high density, low profile, shapeable, long life time, rechargeable micro battery product family; to develop customizable smart recharge and energy harvesting enabling technologies for Autonomous Micr Energy Source “AMES”; and to demonstrate EnSO Pilot Line capability and investigate and assess the upscale of AMES manufacturing for competitive very high volume production.

IP: Franck Dosseul, Stmicroelectronics (Tours) SAS, Francia

Socios: Francia, Países Bajos, Dinamarca, **España (Agencia Estatal Consejo Superior de Investigaciones Biológicas (CSIC)**, Bélgica, Alemania, República Checa, Suiza
Concedido ES: 146.000€

Proyecto 5

AMASS. Architecture-driven, Multi-concern and Seamless Assurance and Certification of Cyber-Physical Systems

Embedded systems have significantly increased in technical complexity towards open, interconnected systems. This has exacerbated the problem of ensuring dependability in the presence of human, environmental and technological risks. The rise of complex Cyber-Physical Systems (CPS) has led to many initiatives to promote reuse and automation of laborintensive activities. Two large-scale projects are OPENCOSS and SafeCer, which dealt with assurance and certification of software-intensive critical systems using incremental and model-based approaches. OPENCOSS defined a Common Certification Language (CCL), unifying concepts from different industries to build a harmonized approach to reduce time and cost overheads, via facilitating the reuse of certification assets. SafeCer developed safety-oriented process lines, a component model, contract-based verification techniques, and process/ product-based model-driven safety certification for compositional development and certification of CPSs. AMASS will create and consolidate a de-facto European-wide assurance and certification open tool platform, ecosystem and self-sustainable community span-ning the largest CPS vertical markets. We will start by combining and evolving the OPENCOSS and SafeCer technological solutions

towards end-user validated tools, and will enhance and perform further research into new areas not covered yet.

IP: Huáscar Espinoza, Tecnalia, España

Socios: **España (Universidad Carlos III)**, República Checa, Austria, Alemania, Países Bajos, Italia, Suecia, Reino Unido

Concedido ES: 142.000€

Convocatoria conjunta 2016

No.	Acronimo y título del proyecto	Países participantes
1	EuroPAT-MASIP	
2	MICROPRINCE	
3	Productive4.0	Dinamarca, Alemania, Francia, Austria, Hungría, Bélgica, España, Polonia, Suecia, Italia, Finlandia, Portugal, Grecia, Noruega, República Checa, Irlanda, Luxemburgo, Turquía, Países Bajos
4	R3-PowerUP	Italia, Alemania, Bélgica, Austria, República Checa, Finlandia, Polonia, Rumanía, España, Irlanda, Francia
5	SCOTT . Secure Connected Trustable Things	Austria, España, Finlandia, Irlanda, Suecia, Alemania, Polonia, Portugal, Países Bajos, Bélgica, Noruega
6	TAKEMI5	
7	AutoDrive . Highly and fully automated driving for safer, efficient, affordable and user-friendly future mobility.	
8	TARANTO	
9	SILENSE	
10	WInSiC4AP	
11	I-MECH	
12	CONNECT . Innovative smart components, modules and appliances for a truly connected, efficient and secure smart grid.	Alemania, Eslovaquia, Países Bajos, España, Italia
13	AQUAS	
14	MegaMaRt2 . An scalable model-based framework for continuous development and runtime validation of complex systems	República Checa, España, Francia, Italia, Finlandia, Suecia

Convocatoria APCIN 2017

Proyecto 3

PRODUCTIVE 4.0.

Productive4.0 is an ambitious holistic project addressing all domains of the Digital Industry, thus comprising the complete range of Industry 4.0. The consortium consists of over 100 partners and specialists which range amongst the best in Europe. The project is based on an efficient interaction between the different work packages. The inputs of all partners with their specific roles will be clustered. Results will be delivered according to a rules descriptions and roadmaps. Over a period of three years and two innovation cycles the different activities of the entire project will be synchronized by eight milestones. A final review will round up the whole project. The Productive4.0 innovation project will open the gate to the potentials of Digital Industry. Means of electronics and ICT across the entire value chain will be the key to enhanced

production efficiency and significant gains. They will make production more predictable and flexible, change business models, and be the basis for more qualified employment. The digital transformation will be indispensable for maintaining a leadership position of the industries in Europe.

IP: Knut Hufeld INFINEON TECHNOLOGIES AG, Alemania

Socios: Dinamarca, Alemania, Francia, Austria, Hungría, Bélgica, Polonia, Suecia, Italia, Finlandia, Portugal, Grecia, Noruega, República Checa, Irlanda, Luxemburgo, Turquía, Países Bajos, **España (Asociación de Empresas Tecnológicas Innovalia, Bosonit SL, Engine Power Components Group Europe SL, Ideko S. Coop. (IK4-Ideko), MONDRAGON ASSEMBLY, S. Coop., Mondragon Sistemas De Informacion Sociedad Cooperativa, Mondragon Goi Eskola Politeknikoa Jose Maria Arizmendiarieta S. Coop., Savvy Data Systems SL, Trimek S.A., ULMA Embedded Solutions, S. Coop., DANOBAT)**

Concedido ES: 175.000 €

Proyecto 4

R3- POWERUP.

R3-POWERUP will establish the first 300mm Pilot Line in Europe for Smart Power and discrete power devices featuring 90nm lithography for high-density logic, analogue and power devices and embedded Non Volatile Memories for the realization of complex Systems-on-Chip. As such, it will fill the existing gap in the availability of 300mm Pilot Lines in Europe, which covers only Logic CMOS and discrete power devices.

IP: Roberto Zafalon, STMICROELECTRONICS S.R.L, Italia

Socios: Italia (Politecnico di Torino, Consorzio Nazionale per la Nanoelettronica, Università di Pisa, Università di Pavia, Consiglio Nazionale delle Ricerche), Alemania (Robert Bosch GMBH, KLA-Tencor MIE GmbH, DISCO HI-TEC EUROPE GMBH, SILTRONIC AG, AP&S International GMBH, Ancosys GmbH, Atotech Deutschland GmbH), Bélgica (ICOS VISION SYSTEMS NV), Países Bajos (ASM Europe BV, Advanced Packaging Center BV), Austria (Besi Austria GmbH, EV GROUP E. THALLNER GMBH), Eslovaquia (Slovenska Technicka Univerzita v Bratislave, Nanodesign SRO), Finlandia (PICOSUN OY), República Checa (IMA S.R.O., VYSOKE Ucení Technické V BRNE), Polonia (Instytut Technologii Elektronowej, Automatix Spolka Z Ograniczona Odpowiedzialnoscia), Rumanía (Universitatea Politehnica din Bucuresti), **España (Greenpower Technologies, Universidad de Sevilla)**, Irlanda (Applied Materials), Israel (Nova Measuring Instruments LTD), Francia (SOITEC SA, Lam Research SAS, Laser Systems & Solutions of Europe)

Concedido ES: 175.000€

Proyecto 5

SCOTT. Secure Connected Trustable Things

SCOTT will significantly impact the European Union to achieve the full potential of the IoT. It will establish the EU as a centre of leading, trusted, user (citizen) friendly, secure, and reliable IoT ecosystems enabled by a strong industry with a strong reputation and an informed society to enable products and services based on IoT compliant to European values. The project's consortium will intensely cooperate with different working groups of AIOTI, the Alliance for the Internet of Things Innovation, as well as numerous national cluster associations. It aims to facilitate the worldwide uptake of "European Technology" and infrastructure with the goal to earn an international reputation for secure, smart, and privacy-aware wireless solutions. Additionally, it will strengthen Europe's IoT industry by demonstrating wireless solutions which allow third parties – in particular start-up companies – to develop IoT applications faster in an open innovation based approach to increase societal benefits.

IP: Michael Karner, VIRTUAL VEHICLE Research Center, Austria

Socios: Austria, Bélgica, Brasil, Finlandia, Alemania, Irlanda, Países Bajos, Noruega, Polonia, **España (Acciona Infraestructuras S. A., IK4-Tekniker, Indra Sistemas SA, IntegraSys, Instituto**

Tecnológico de Informática, JIG Internet Consulting, Mondragon Goi Eskola Politeknikoa JMA S. Coop., Tecnia Research and Innovation, Universidad Politécnica de Madrid (UPM), Suecia
Concedido ES: 175.000€+175.000€=350.000€

Proyecto 7

AUTODRIVE. Highly and fully automated driving for safer, efficient, affordable and user-friendly future mobility.

AutoDrive will provide fail-aware, fail-safe, and fail-operational integrated electronic components, Electrical/Electronic (E/E) architectures as well as (deeply) embedded software systems for highly and fully automated driving to make future mobility safer, more efficient, affordable, and end-user acceptable. Advancing towards fail-operational systems will require increased reliability and availability of components, new redundancy schemes as well as architectures, and methodologies to appropriately manage and balance complexity, cost, robustness, and flexibility. The AutoDrive project will advance the current level of safety and reliability by considerably driving forward fail-operational technologies and by making use of safety and security concepts from the aviation domain. Consequently, AutoDrive will significantly contribute to the grand societal challenge of increasing vehicle and road safety.

Concedido ES: 174.900 €

Proyecto 12

CONNECT. Innovative smart components, modules and appliances for a truly connected, efficient and secure smart grid

CONNECT aims to research, design, develop and showcase novel solutions for efficient devices and components of the future smart grid, in order to reduce the peak power demand by at least a factor of two. The solutions will include techniques for the reduction of power fluctuations of the grid over time and for reduction of power consumption and losses.

CONNECT works on smart grid solutions for buildings, cooperation of buildings and local micro-grids at the low voltage supply level (yellow) up to the connection point to medium voltage distribution level (orange) including communication infrastructure

IP: Holger Schmidt, Infineon Technologies AG, Alemania

Socios: Alemania (NXP Semiconductors Germany GmbH, Friedrich Alexander Universität Erlangen, Rheinisch-Westfaelische Technische Hochschule Aachen, Devolo AG, Mixed Mode GmbH); Eslovaquia (Slovenska Technicka Univerzita v Bratislave, R-DAS SRO), Países Bajos (Enexis BV, Technische Universiteit Eindhoven, HELIOX BV, GreenFlux Assets BV), **España (Asociacion Acondicionamiento Terrasense, Centro Tecnológico de Telecomunicaciones de Cataluña, Iquadrat Informatica SL)**, Italia (STMicroelectronics SRL, ENEL SPA, Consorzio Nazionale Interuniversitario per la Nanoelettronica, University of Bologna, University of Ferrara, University of Padova, University of Pisa, Politecnico de Bari)

Concedido ES: 175.000€

Proyecto 14

MegaM@Rt. An scalable model-based framework for continuous development and runtime validation of complex systems

MegaM@Rt will create a framework incorporating methods and tools for continuous development and validation. It will leverage the advantages in scalable model-based methods to provide benefits in significantly improved productivity, quality and predictability of large and complex industrial systems. Significantly increased productivity and quality of system development and shorten time-to-market for complex systems; Reinforced European scientific and technological leadership in the design of complex systems; and Improved competitiveness of European companies by reducing design and maintenance costs as well as the time-to-market.

IP: Gunnar Widforss, MÄLARDALEN UNIVERSITY, Suecia

Socios: República Checa (Brno University of Technology, CAMEA, spol. s r.o.), **España (Atos Spain S.A, Universidad de Cantabria, Universitat Oberta de Catalunya, IKERLAN S. Coop., Fent Innovative Software Solutions)**, Francia (Softteam Thales, ClearSy System Engineering, ARMINES, Université de Pau et des Pays de l'Adour, Smartesting Solutions & Services), Italia (Tekne Industry, Università degli Studi dell'Aquila, Intecs Solutions SpA, Ro Technology srl), Finlandia (Åbo Akademi University, AinaCom Oy, Space Systems Finland Ltd., Nokia Networks, VTT Technical Research Centre of Finland, Conformiq Software Oy), Suecia (SICS Swedish ICT Västerås AB, Volvo Construction Equipment AB, Bombardier Transportation Sweden AB)
 Concedido ES: 117.906€ + 162.900 € = 280.806€

Convocatoria conjunta 2017-1

Países participantes	Austria, Bélgica, Alemania, Finlandia, Francia, Hungría, Irlanda, Israel, Italia, Letonia, Noruega, Países Bajos, Polonia, Rumanía, Eslovaquia, España, República Checa, Suecia, Turquía
Temáticas	Innovation Actions (IA)
Presupuesto total	92.5 M€ (UE)
Concedido ES	656.000€
Proyectos aprobados	6
Proyectos con ES	3

No.	Acrónimo y título del proyecto	Países participantes
1	iDev40. Integrated Development 4.0	Austria , Alemania, Bélgica, Italia, España, Rumanía
2	WAKeMeUP. Wafers for Automotive and other Key applications using Memories, embedded in Ulsi Processors	Francia , Alemania, República Checa, España, Turquía
3	OCEAN12. Opportunity to Carry European Autonomous drivINg further with FDSOI technology up to 12nm node	Francia , Alemania, Austria, Portugal, Israel, España, Polonia
4	TAPES3. Technology Advances for Pilotline of Enhanced Semiconductors for 3nm	Países Bajos , Bélgica, Israel, Alemania, Francia, Bélgica, Austria, Reino Unido, Suiza
5	REACTION. first and euRopEAn siC eigTh Inches piLot liNe	Italia , Suiza, Alemania, Bélgica, Suecia, Austria, Rumanía, Eslovaquia, Francia, Reino Unido, Polonia, España, Israel, Irlanda
6	POSITION-II. A pilot line for the next generation of smart catheters and implants	Países Bajos, Francia, Finlandia, Alemania, Suiza, Irlanda, Suecia, Portugal, España, Bélgica, Hungría, Italia

Convocatoria nacional APCIN 2018

Proyecto 2

WAKeMeUP. Wafers for Automotive and other Key applications using Memories, embedded in Ulsi Processors

WAKeMeUP will set-up a pilot line for advanced microcontrollers with embedded non-volatile memory, and design and manufacturing for the prototyping of many innovative applications. Driven by the requirements of demanding end applications, especially for decreasing the power consumption, the project will target the industrialisation of the embedded Phase Change Memory (ePCM) technology built on top of the FDSOI 28nm logic process pilot line. WAKeMeUP will build on the already defined microcontrollers with 40nm embedded flash technology in

order to establish a solid manufacturing platform. Additional developments include the integration of memory, power management, connectivity, strong security on the same chip. To generate high value added semiconductor circuits in Europe using a breakthrough leading edge technology, the project will deploy all necessary activities to bring this new technology to an early industrial maturity stage. These activities include a number of further enhancements, including extended reliability and temperature range (up to 165°C), high security demands, high flexibility, etc., as well as prototyping demonstrators in the different application areas - Smart Mobility and Smart Society

IP: Dominique GOUBIER, STMicroelectronics Crolles2 SAS, Francia

Socios: Francia (GEMALTO, CEA-LETI, ST-ROU, ST-GRE, ST-LEM, Pfeiffer, CNRS-LTM, ST-SA), Alemania (CONTI, FhG-IPMS, TUDarm, XFAB, MLX), República Checa (UTIA, IMA), Turquía (TUBITAK), **España (Universitat Autònoma de Barcelona)**

Presupuesto total: 96.7M€

Concedido ES: 75.000€

Proyecto 3

REACTION. first and euROPEAn SiC eigTh Inches piLOt line

REACTION will push through the first worldwide 200mm Silicon Carbide (SiC) Pilot Line Facility for Power technology. This will enable the European industry to set the world reference of innovative and competitive solutions for critical societal challenges, like Energy saving and CO2 Reduction as well as Sustainable Environment through electric mobility and industrial power efficiency. Establishing the first 200mm SiC Pilot Line in the world and developing the most innovative and cost competitive technology, this project will address mass-market applications like smart energy and smart mobility, and industrial. It will allow to meet the more and more increasing demand of requirements in terms of quality and cost constraint for next decade generation's power electronics. The Project strength is the complete Pilot Line value chain implementation, integrating and optimizing partnership in the fields of SiC equipment developers, SiC process technologists, RTOs, and end users partners till the final applications context. This will allow to develop a full 8" SiC line ecosystem enhancing the competitiveness of EU- Industries down to the value chain in a market context where other countries today, such as the USA or Japan, are just starting to play on 6" SiC market.

IP: Angelo Alberto Messina, Stmicroelectronics SRL, Italia

Socios: Italia (Consorzio Nazionale Interuniversitario per la Nanoelettronica, L.P.E. SPA, Universita Degli Studi Di Palermo, Consiglio Nazionale Delle Ricerche), Suiza (Ecatec AG), Alemania (HQ-Dielectrics GmbH, Disco HI-TEC EUROPE GMBH, II-VI Deutschland GMBH, Centrotherm International AG, Applied Materials GmbH), Bélgica (JSR MICRO NV), Suecia (Mittuniversitetet, Elforest AB), Austria (EV Group E. Thallner GMBH), Eslovaquia (Nano Design SRO, Slovenska Technicka Univerzita V Bratislave), Francia (Lam Research SAS), Reino Unido (Italeaf UK Limited United), Polonia (Instytut Technologii Elektronowej, DACPOL SP. Z O.O.), **España (For Optimal Renewable Energy Systems SL, Universidad De Zaragoza, IKERLAN SCL)**, Israel (Applied Materials Israel LTD), Irlanda (Applied Materials Ireland Limited), Rumanía (Universitatea Politehnica Din Bucuresti)

Presupuesto total: 46.5M€

Concedido ES: 154.000€

Proyecto 6

POSITION-II. A pilot line for the next generation of smart catheters and implants

The objective of POSITION-II is to bring innovation in the development and production of smart catheters by the introduction of open technology platforms for miniaturization, AD conversion at the tip, ultra-sound MEMS devices and encapsulation. Open technology platforms will

generate the production volume that will enable sustainable innovation. The availability of open technology platforms will result in new instruments that have a better performance, new sensing and imaging capabilities, while the scale of volume will result in lower manufacturing costs. The production of the “brains” of these smart catheters will take place in Europe, with many European partners contributing essential technologies. The POSITION-II project will consolidate Europe’s premier position as manufacturer of cath lab infrastructure since these new smart catheters will be seamlessly integrated in the cath lab hardware and software platforms. By combining the different sensing and imaging data a more intuitive cath lab experience will be achieved. Looking forward, POSITION-II prepares the European electronics industry for the next revolution in healthcare, bioelectronics implants. Bioelectronics implants are expected to replace a considerable fraction of traditional medicine by direct stimulation of nerves. The miniaturization and soft encapsulation platforms developed in POSITION-II will be the ideal technology frame work for the manufacturing of these bioelectronics implants. The technology platforms developed in POSITION-II are demonstrated by five challenging product demonstrators covering FRR, IVUS, ICE, EP and cell therapy as well as a bioelectronics implant to treat cluster headache.

IP: Ronald Dekker, Philips Electronics Netherlands BV, Países Bajos

Socios: Países Bajos (Philips Medical Systems Nederland BV, Technische Universiteit Delft, Salvia Bioelectronics B.V., Technische Universiteit Eindhoven, Reden B.V., Catena Holding BV), Francia (Commissariat a l’Energie Atomique et aux Energies Alternatives, Vermon SA, Philips France, Murata Integrated Passive Solutions), Finlandia (Okmetic OYJ, Teknologian tutkimuskeskus VTT OY, Afore OY, Aalto-Korkeakoulusaatio), Alemania (Fraunhofer Gesellschaft Zur Foerderung der Angewandten Forschung E.V., Osypka AG, Finetech GmbH & Co. KG, Amic Angewandte Micro-Messtechnik GMBH, Institut Fuer Mikroelektronik Stuttgart, Multi Channel Systems MCS GMBH, Johnson Matthey Piezo Products GmbH, Catena Germany GmbH, 3D-Micromac AG, CORTEC GMBH), Suiza (Dyconex AG), Irlanda (University College Cork - National University of Ireland, Analog Devices International, Brivant Limited, Creganna Unlimited Company), Suecia (Silex Microsystems AB), Portugal (Instituto de Telecomunicacoes, PDM E Fc Projecto Desenvolvimento Manutencao Formacao e Consultadorialda, Inesc ID - Instituto de Engenharia de Sistemas e Computadores, Investigacao e Desenvolvimento em Lisboa), **España (Brio Apps Alphasip S.L., Centro de Investigación Biomédica en Red, Cikautxo S Coop, Fundación Centro de Cirugía de Mínima Invasión Jesus Usón, Universidad de Zaragoza, Universidad Complutense de Madrid (UCM)**, Bélgica (Interuniversitair Micro-Electronica Centrum), Hungría (Magyar Tudományos Akademia Energiatudományi Kutatóközpont, Pazmany Peter Katolikus Egyetem), Italia (Universita Degli Studi Roma Tre, Fondazione Bruno Kessler)

Presupuesto total: 41.3M€

Concedido ES: 119.000€ + 79.000€ + 111.000€ + 118.000€= 427.000€

Convocatoria conjunta 2017-2

Países participantes	Austria, Bélgica, Alemania, Finlandia, Francia, Hungría, Irlanda, Israel, Italia, Letonia, Noruega, Países Bajos, Polonia, Rumanía, Eslovaquia, España, República Checa, Suecia, Turquía
Temáticas	Research and Innovation Actions (RIA)
Presupuesto total	67.5 M€ (UE)
Concedido ES	842.000€
Proyectos aprobados	6
Proyectos con ES	5 (1 coordinado)

No.	Acrónimo y título del proyecto	Países participantes
1	HiPERFORM. High performant Wide Band Gap Power Electronics for Reliable, energy eFFicient drivetrains and Optimization thRough Multi-physics simulation	Austria, España, Bélgica, Alemania, Eslovaquia, Italia, Países Bajos, Eslovenia
2	5G_GaN2. Advanced RF Transceivers for 5G base stations based on GaN Technology.	Francia, Alemania, Eslovaquia, Países Bajos, Suecia, Italia, Luxemburgo, Irlanda
3	FITOPTIVIS. From the cloud to the edge - smart IntegraTion and OPTimization Technologies for highly efficient Image and Video processing Systems	Países Bajos, República Checa, Finlandia, España, Italia
4	SECRETAS. Cyber Security for Cross Domain Reliable Dependable Automated Systems	Países Bajos, Austria, Bélgica, República Checa, Alemania, Finlandia, Francia, Hungría, Italia, Polonia, Portugal, Suecia, Reino Unido, Túnez
5	AFarCloud. Aggregate Farming in the Cloud	España, Alemania, Bélgica, Austria, Portugal, Noruega, Suecia, Finlandia, República Checa, Polonia, Letonia, Israel
6	PRYSTINE. Programmable Systems for Intelligence in Automobiles	Alemania, Italia, Países Bajos, Austria, España, Turquía, Israel, Finlandia, Rumanía, Lituania, Bélgica, Letonia, Suecia

Convocatoria nacional APCIN 2018

Proyecto 1

HiPERFORM. High performant Wide Band Gap Power Electronics for Reliable, energy eFFicient drivetrains and Optimization thRough Multi-physics simulation

The project objective of the project HiPERFORM is based on the investigation of industrial applicability of high-performance semiconductors with wide-band gap materials in the field of Smart Mobility. For this purpose, a holistic approach is selected that includes the entire supply chain – from the manufacturer of semiconductors as well as power modules through suppliers of development methods and tools to the system manufacturer and ultimately the vehicle manufacturer. The integration of academic partners with a high level of competence in these domains completes this approach. On the other hand, specific requirements for power electronics are addressed in specific application areas, which include both power inverters in the vehicle, electrical charging modules inside and outside the vehicle, as well as the associated development and test systems. The high performance spectrum of wide-band gap semiconductors and the resulting potential for improvement and savings within the concrete applications of the electrified power train contribute to a substantial saving of CO2 in transport and thus support the achievement of the set climate targets in Europe. The jointly planned objectives and research activities will further strengthen European research and industry partners in the field of electronic components and systems. Besides Semiconductor manufacturing capabilities, the project requires also high capabilities in Cyber Physical Systems and Design Technologies and supports the domain Smart Mobility and Smart Energy as well.

IP: Christoph Abart, AVL List GmbH, Austria

Socios: Austria (Infineon Technologiesaustria AG, Kompetenzzentrum – Das Virtuelle Fahrzeug, Forschungsgesellschaft mbH, FH Joanneum Gesellschaft MBH, Technische Universitaet Wien), ES, Bélgica (Vrije Universiteit Brussel, Interuniversitair Micro-Electronica Centrum, On Semiconductor Belgium BVBA, Siemens Industry Software NV, powerdale), Alemania (AVL Software And Functions GMBH, Infineon Technologies AG, Fraunhofer Gesellschaft Zur Foerderung Der Angewandten Forschung E.V., Scia Systems GmbH, CREAVAC GmbH, Sindlhauser Materials GmbH, SET Power Systems GmbH), **España (Fundación Tecnia Research**

& Innovation, MODEMSYS S.L., IBERMATICA SA, ENCOPIM S.L., Universidade da Coruña), SK, Italia (Ideas & Motion SRL, JAC Italy Design Center SRL, Centro Ricerche Fiat Scpa, Politecnico Di Torino), Países Bajos (Heliox, Nederlandse Organisatie Voor Toegepast Natuurwetenschappelijk Onderzoek, Technische Universiteit Eindhoven), Eslovenia (Elaphe Pogonske Tehnologije Doo), Eslovaquia (Nano Design SRO, Slovenska Technicka Univerzita V Bratislave)

Presupuesto total: 41.2M€

Concedido ES: 20.000€ + 97.000€= 117.000€

Proyecto 3

FITOPTIVIS. From the cloud to the edge - smart IntegraTion and OPTimization Technologies for highly efficient Image and Video processing Systems

The objective of FitOptiVis is to develop an integral approach for smart integration of image- and video-processing pipelines for CPS covering a reference architecture, supported by low-power, high-performance, smart devices, and by methods and tools for combined design-time and runtime multi-objective optimisation within system and environment constraints. Low latency Image processing is often crucial for autonomy, and performing the right interaction of the CPS with its environment. The most important CPS in the project have sensors and processing at distributed places. For many reasons (parts of) CPS has to operate on low energy, whereas the complete system needs results with low latency. The focus of the project is on multi-objective optimisation for performance and energy use. However, other qualities, like reliability, security etc. also play a role in the optimisation.

IP: Frank Van der Linden, Philips Electronics Netherlands BV, Países Bajos

Socios: Países Bajos (Futura Composites BV, Technische Universiteit Delft, Technische Universiteit Eindhoven), República Checa (Camea, spol. s r.o., Univerzita Karlova, Rex Controls s.r.o., Vysoke Uceni Technicke v Brne, Zapadoceska Univerzita V PLZNI, Ustav Teorie Informace a Automatizace AV CR VVI), Finlandia (Hurja Solutions OY, Nokia Technologies OY, TTY-SAATIO, Turun Yliopisto, Visidon Oy); **España (HI Iberia Ingeniería y Proyectos SL, Instituto Tecnológico de Informática, R G B Medical Devices SA, Seven Solutions SL, Schneider Electric España SA, Thales Alenia Space España, SA, Universidad de Cantabria, Universidad de Granada)**, Italia (Abinsula SRL, Aitek Societa' per Azioni, Societa Acquadotti Tirreni SPA, Bittree SRL, Isarail S.P.A., Università degli Studi di Cagliari, Università degli Studi di Sassari, Università degli Studi dell'aquila)

Presupuesto total: 22.5M€

Concedido ES: 126.000€ + 126.000€= 252.000€

Proyecto 4

SECREDAS. Cyber Security for Cross Domain Reliable Dependable Automated Systems

The high-level goal of SECREDAS is to develop software for validating architecting methodologies, reference architectures, components and suitable integration, as well as verification approaches for automated systems in different domains. These will combine high security and privacy protection while preserving functional-safety and operational performance. SECREDAS will take a first important step to developing and enhancing trustworthiness, particularly for the future European transportation and medical industries. This will help to make connected and automated vehicles a reality, and ensure that European Original Equipment Manufactures (OEM) remain competitive and can maintain their world leading position. In addition, SECREDAS addresses cross-domain cybersecurity and safety related technologies in the areas of automated systems in the medical, railway & aerospace sectors, as well as support cross-domain actions.

IP: Patrick Pype, NXP Semiconductors Netherlands BV, Países Bajos

Socios: Austria (Kompetenzzentrum - Das Virtuelle Fahrzeug, Forschungsgesellschaft mbH, AVL LIST GMBH, CISC Semiconductor GMBH, AIT Austrian Institute of Technology GMBH, Thales Austria GMBH, SBA Research Gemeinnutzige GMBH, secinto GmbH); Bélgica (Interuniversitair Micro-Electronica Centrum, Transport & Mobility Leuven NV); República Checa (Vysoke Ucení Technické v Brně, Institut Mikroelektronických Aplikací S.R.O.); Alemania (NXP Semiconductors Germany GMBH, AVL Software and Functions GMBH, Roche PVT GmbH, senetics healthcare group GmbH & Co. KG, Commsolid GmbH, IVM Institut für Vernetzte Mobilität GGMBH, Fraunhofer Gesellschaft zur Förderung der Angewandten Forschung E.V., Giesecke+Devrient Mobile Security GMBH, ZF Friedrichshafen AG, Technische Universität Kaiserslautern, Merantix GmbH); España (**Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC), FICOSA ADAS, S.L., Advanced Automotive Antennas S.L, INDRA Sistemas SA, Tecnologías Servicios Telemáticas y Sistemas S.A., Fundación Tecnalia Research & Innovation**); Finlandia (Oulun Yliopisto, Nokia Solutions and Networks OY, Solita Oy, Haltian Ltd.); Francia (Commissariat à l'Énergie Atomique et aux Énergies Alternatives, Gemalto SA, invia, Oberthur Technologies SA, Internet of Trust, Prove&Run S.A.S., YoGoKo, iN2Car, PSA ID, Institut Français des Sciences et Technologies des Transports, de l'aménagement et des Réseaux, Canon Research Centre France); Hungría (COMMSIGNIA KFT, Budapesti Muszaki és Gazdaságtudományi Egyetem); Italia (Ideas & Motion SRL, Magneti Marelli S.P.A., Università degli Studi di Modena e Reggio Emilia, Evidence SRL); Países Bajos (Fastree3D B.V., Gemeente Helmond, Philips Electronics Nederland B.V., Ubiq Access B.V., Stichting Imec Nederland, Stichting Katholieke Universiteit, Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek TNO, Technische Universiteit Eindhoven); Polonia (Politechnika Gdanska); Portugal (Instituto de Telecomunicações, PDM e FC Projecto Desenvolvimento Manutenção Formação e Consultadoria); Rumanía (Universitatea Politehnică din București); Suecia (RISE Research Institutes of Sweden AB, RISE SICS AB, China-Euro Vehicle Technology Aktieförderung, Technology Nexus Secured Business Solutions AB); Túnez (Ecole Nationale d'ingénieurs de Tunis, Ridha Bouallegue), Reino Unido (Nexperia UK LTD)

Presupuesto total: 51.5 M€

Concedido ES: 105.000€

Proyecto 5

AFarCloud. Aggregate Farming in the Cloud

Farming is facing many economic challenges in terms of productivity and cost-effectiveness, as well as an increasing labour shortage partly due to depopulation of rural areas. Furthermore, reliable detection, accurate identification and proper quantification of pathogens and other factors affecting both plant and animal health, are critical to be kept under control in order to reduce economic expenditures, trade disruptions and even human health risks. AFarCloud will provide a distributed platform for autonomous farming that will allow the integration and cooperation of agriculture Cyber Physical Systems in real-time in order to increase efficiency, productivity, animal health, food quality and reduce farm labour costs. This platform will be integrated with farm management software and will support monitoring and decision-making solutions based on big data and real time data mining techniques. The AFarCloud project also aims to make farming robots accessible to more users by enabling farming vehicles to work in a cooperative mesh, thus opening up new applications and ensuring re-usability, as heterogeneous standard vehicles can combine their capabilities in order to lift farmer revenue and reduce labour costs. The achievements from AFarCloud will be demonstrated in 3 holistic demonstrators (Finland, Spain and Italy), including cropping and livestock management scenarios and 8 local demonstrators (Latvia, Sweden, Spain and Czech Republic) in order to test specific functionalities and validate project results in relevant environments located in different European regions. AFarCloud outcomes will strengthen partners' market position boosting their innovation capacity and addressing industrial needs both at EU and international levels. The consortium represents the whole ICT-based farming solutions' value chain, including all key

actors needed for the development, demonstration and future market uptake of the precision farming framework targeted in the project.

IP: José-Fernán Martínez-Ortega, Universidad Politécnica de Madrid (UPM), España

Socios: España (Acciona Construcción SA, Fundación Tecnalia Research & Innovation, Tecnologías Servicios telemáticos y Sistemas S.A., Encore Lab SL, Rovimatica SL, Bosonit SL, Management, Construction and Trade, Innovative Solutions International SL, HI Iberia Ingeniería y Proyectos SL, Carrera d'en Bas S.L.); Alemania (Nuromedia GMBH, Germandrones GMBH, Logic Way GmbH, Technische Universitaet Dresden, Universitat Des Saarlandes); Bélgica (Katholieke Universiteit Leuven, NXP Semiconductors Belgium NV, Intrasoft International SA); Austria (AIT Austrian Institute of Technology GMBH, Ttcontrol GMBH, Technische Universitaet WIEN, AMS AG, AVL Commercial Driveline & Tractor Engineering GMBH, AVL LIST GMBH); Portugal (Instituto de Telecomunicacoes, PDM e FC Projecto Desenvolvimento Manutencao Formacao e Consultadorialda); Noruega (Stiftelsen Sintef, Maritime Robotics AS); Suecia (Maelardalens Hoegskola, Imagemob AB, SICS East Swedish ICT AB, Rise Acreo AB, Spacemetric AB, Qamcom Research and Technology AB, SEnseair AB); Finlandia (Teknologian tutkimuskeskus VTT Oy, Centria Ammattikorkeakoulu OY, Agricultural Data Processing Centre Ltd, PehuTec Oy, PROBOT OY), República Checa (Institut Mikroelektronických Aplikací S.R.O., Zapadoceska Univerzita v Plzni, Vyzkumny Ustav Zivocisne Vyroby V.V.I. Uhrineves, Univerzita Karlova, Lesprojekt Sluzby SRO); Polonia (Politechnika Gdanska, Betersolutions SA); Italia (Consiglio Nazionale delle Ricerche, Universita degli Studi di Parma, Universita degli Studi del Sannio, Universita degli Studi Dell'aquila, KES Knowledge ENvironment Security SRL, RO Technology SRL, Laboratori Archa SRL, E.S.T.E. S.r.l., Stmicroelectronics SRL); Letonia (Latvijas Universitates Matematikas un Informatikas Instituts); Grecia (Harokopio University, Exodus Anonymos Etaireia Pliroforikis)

Presupuesto total: 16.6M€

Concedido ES: 214.000€

Proyecto 6

PRYSTINE. Programmable Systems for Intelligence in Automobiles

The ambition of PRYSTINE is to strengthen and to extend traditional core competencies of the European industry, research and universities in smart mobility and in particular the electronic component and systems and cyber-physical systems domains. PRYSTINE's target is to realize Failoperational Urban Surround perceptiON (FUSION) which is based on robust Radar and LiDAR sensor fusion and control functions in order to enable safe automated driving in urban and rural environments. PRYSTINE will deliver (a) fail-operational sensor-fusion framework on component level, (b) dependable embedded E/E architectures, and (c) safety compliant integration of Artificial Intelligence (AI) approaches for object recognition, scene understanding, and decision making within automotive applications. The resulting reference FUSION hardware/software architectures and reliable components for autonomous systems will be validated in 22 industrial demonstrators.

IP: Herbert Roedig, Infineon Technologies Austria AG, Austria

Socios: Austria (CISC Semiconductor GMBH, Technische Universitaet Graz, Kompetenzzentrum - Das Virtuelle Fahrzeug, Forschungsgesellschaft mbH, AVL LIST GMBH, Dice Danube Integrated Circuit Engineering GMBH & CO KG, TTTech Computertechnik AG); Bélgica (Interuniversitair Micro-Electronica Centrum, Tenneco Automotive Europe BVBA); Finlandia (Mattersoft OY, NOKIA Solutions And Networks OY, TTY-SAATIO, Turun Yliopisto, Vionice Oy, TTS Kehitys Oy, Murata Electronics OY, Okmetic OY Finland, Teknologian tutkimuskeskus VTT Oy); Alemania (videantis GmbH, Friedrich-Alexander-Universitaet Erlangen Nuernberg, Robert Bosch GmbH, EPOS embedded core & power systems GmbH & Co. KG, TTTech Germany GmbH, Ostbayerische Technische Hochschule Amberg-Weiden, Bayerische Motoren Werke Aktiengesellschaft); Grecia (Harokopio University); Israel (Autocar Media Group Ltd., STARHOME); Italia (Aitek Societa' per

Azioni, Ideas & Motion SRL, Maserati S.P.A., Politecnico di Torino, RE:LAB S.R.L., Universita Degli Studi Di Modena E Reggio Emilia, Centro Ricerche FIAT SCPA); Letonia (Elektronikas Un Datorzinatnu Instituts); Lituania (UAB Metis Baltic); Países Bajos (Anywi Technology Bv, DAT.Mobility BV, NXP Semiconductors Netherlands BV, Nederlandse Organisatie Voor Toegepast Natuurwetenschappelijk Onderzoek TNO, Technische Universiteit Delft, Technische Universiteit Eindhoven, Innoluce BV, Noord-Brabant Provincie – MobilityMoveZ); Rumanía (NXP Semiconductors Romania SRL, Universitatea Politehnica din Bucuresti); **España (Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC), FICOSA ADAS, S.L., Idiada Automotive Technology SA, Instituto Tecnológico de Informática, Rovimática SL, Fundación Tecnalia Research & Innovation, IRIZAR S COOP)**; Suecia (Kunliga Tekniska Hoegskolan, Scania CV AB); Turquía (Ford Otomotiv Sanayi Anonim Sirketi, Avl Arastirma Ve Muhendislik Sanayi Ve Ticaret Limited Sirketi, Habitus Research)

Presupuesto total: 50M€

Concedido ES: 154.000€

Convocatoria conjunta 2018-1

Países participantes	Austria, Bélgica, Alemania, Finlandia, Francia, Hungría, Irlanda, Israel, Italia, Letonia, Noruega, Países Bajos, Polonia, Rumanía, Eslovaquia, España, República Checa, Suecia, Turquía
Temáticas	Innovation Actions (IA)
Presupuesto total	586 M€ (UE)
Concedido ES	857.000€
Proyectos aprobados	7
Proyectos con ES	3

No.	Acronimo y título del proyecto	Países participantes
1	APPLAUSE . Advanced packaging for photonics, optics and electronics for low cost manufacturing in Europe	Bélgica , Alemania, Países Bajos, Finlandia, Noruega, Austria, Suiza, Francia, Hungría, Israel, Letonia
2	Arrowhead Tools . Arrowhead Tools for Engineering of Digitalisation Solutions	Suecia , Austria, España, Turquía, Polonia, Italia, Alemania, República Checa, Noruega, Países Bajos, Bélgica, Letonia, Rumanía, Francia, Hungría, Portugal, Suiza, Finlandia
3	MADEin4 . Metrology Advances for Digitized ECS industry 4.0	Israel , Francia, Alemania, Austria, Italia, Suecia, Países Bajos, Bélgica, Hungría, Rumanía
4	PIN3S . Pilot Integration of 3nm Semiconductor technology	Países Bajos , Bélgica, Israel, Alemania, Francia, Rumanía,
5	Power2Power . The next-generation silicon-based power solutions in mobility, industry and grid for sustainable decarbonisation in the next decade.	Alemania , Austria, Suiza, España, Finlandia, Hungría, Eslovaquia, Países Bajos
6	VIZTA . VIZTA sounds for Vision, Identification, with Z-sensing Technologies and key Applications	Francia , Suecia, Grecia, España, Reino Unido, Alemania, Luxemburgo, Letonia, Hungría
7	CPS4EU . Cyber Physical Systems for Europe	Francia , España, Alemania, Hungría, Italia,

Convocatoria nacional APCIN 2018

Proyecto 2

Arrowhead Tools. European investment for Digitalisation and Automation Leadership

The Arrowhead Tools project aims for digitalisation and automation solutions for the European industry, which will close the gaps that hinder the IT/OT integration by introducing new technologies in an open source platform for the design and run-time engineering of IoT and System of Systems. The project will provide engineering processes, integration platform, tools and tool chains for the cost-efficient development of digitalisation, connectivity and automation system solutions in various fields of application.

IP: Lulea Tekniska Universitet, Suecia

Socios: Austria ((AEE - Institut fur Nachhaltige Technologien, Infineon Technologies Austria AG, Kai Kompetenzzentrum Automobil - Und Industrieelektronik GMBH, Kompetenzzentrum Das Virtuelle Fahrzeug Forschungsgesellschaft MBH, Forschung Burgenland GMBH, CISC Semiconductor GMBH, AIT Austrian Institute Of Technology GMBH), **España (Acciona Construccion SA, Dotgis Corporation SL, FAGOR ARRASATE S COOP, FAGOR Automation S COOP, IKERLAN S. COOP, Mondragon Goi Eskola Politeknikoa Jose Maria Arizmendiarieta S COOP, Mondragon Sistemas De Informacion Sociedad Cooperativa, Knowledge Centric Solutions SL, Universidad Carlos III de Madrid, ULMA Embedded Solutions S Coop, Mondragon Corporacion Cooperativa Scoop);** Turquía (ARCELIK A.S.), Polonia (DAC Spolka Akcyjna, Politechnika Gdanska); Italia (Consorzio Nazionale Interuniversitario per la Nanoelettronica, Eurotech SPA, Politecnico di Torino, Santer Reply SPA, Stmicroelectronics SRL); Suecia (Bnearit AB, Boliden Mineral AB, Equa Simulation AB, Lindbacks Bygg AB, Lundqvist Travaru AB, Podcomp AB, Volvo Lastvagnar AB); Alemania (Bosch Software Innovations GMBH, Eclipse Foundation Europe GMBH, Expleo Germany GMBH, Hochschule fuer Technik und Wirtschaft Dresden, Infineon Technologies AG, Infineon Technologies Dresden GMBH& CO KG, Technische Universitaet Dresden, Technische Universitaet Kaiserslautern, Institut Fuer Automation Und Kommunikation E.V. Magdeburg, Institute Fur Engineering Desing Of Mechatronic Systems Und Mplm EV, Universitat Zu Lubeck, Systema Systementwicklung Dipl Inf.Manfred Austen GMBH, Semantis Information Builders GMBH, Robert Bosch GMBH); República Checa (Ustav Teorie Informace A Automatizace AV CR VVI, CAMEA, spol. s r.o., Ceske Vysoke Uceni Technicke V Praze, Vysoke Uceni Technicke V Brne); Noruega (Hogskolen I Ostfold, Jotne Epm Technology AS, Norges Teknisk-Naturvitenskapelige Universitet NTNU, SAP Norway AS, Tellu IOT AS); Países Bajos (ASML NetherlandS B.V., ICT Automatisering Nederland BV, Philips Medical Systems Nederland BV, Technische Universiteit Eindhoven, Technolution BV); Bélgica (3E, Sirris Het Collectief Centrum Van De Technologische Industrie); Rumanía (Beia Consult International SRL, Ropardo SRL); Finlandia (ABB OY, CSC-Tieteen Tietotekniikan Keskus OY, Teknologian tutkimuskeskus VTT Oy, Wapice OY); Francia (Commissariat a l Energie Atomique et aux Energies Alternatives, Magillem Design Services SAS, Stmicroelectronics Grenoble 2 SAS, Technext); Hungría (Aitia International Informatikai Zartkoruen Mukodo RT, Budapesti Muszaki Es Gazdasagtudományi Egyetem, Evopro Innovation KFT, Incquery Labs Kutatas-Fejlesztési KFT); Portugal (Universidade Nova de Lisboa); Letonia (Elektronikas un Datorzinatnu Instituts); Suiza (Equa Solutions AG)

Presupuesto total: €

Concedido ES: 80.000€ + 135.000€ = 215.000€

Proyecto 5

Power2Power. Providing next-generation silicon-based power solutions in transport and machinery for significant decarbonisation in the next decade

The EU-funded project Power2Power gathers 43 partners from eight countries to develop silicon-based power semiconductors with increased power density and energy efficiency. These technologies will push the performance of a large number of applications, with a focus on industry, mobility, grid and renewable energy. Together, they will make a major contribution towards reducing carbon-dioxide emissions despite the world's ever-increasing energy needs. Power2Power partners along the value chain (wafer-, semiconductor-, package-, system- and application-manufacturers) will establish pan-European pilot lines with advanced industry 4.0

aspects to develop innovative power electronics that are fit for the future. Here, the focus is on silicon, which outcompetes upcoming new materials because of its high reliability and excellent performance-price ratio. Power2Power will strengthen the predominant position of silicon-based power semiconductors on the worldwide market in the next decade.

IP: Infineon Technologies Dresden GmbH & Co. KG, Alemania

Socios: Alemania (AVL Software und Functions GmbH (AVL SFR), Elektrische AAT GmbH Chemnitz (EAAT), Fraunhofer Gesellschaft zur Foerderung der angewandten Forschung e.V., Hesse GmbH (HESSE), Hochschule Zittau-Görlitz (HSZG), Infineon Technologies AG (IFAG), MI2-factory GmbH (mi2), SGS Institut Fresenius GmbH (SGS), Siltronic AG (SIL), Technische Universitaet Chemnitz (TUC), Technische Universitaet Dresden (TUDD), Technische Universitaet Ilmenau (TUIL), Universitaet Bremen (UniHB), Paderborn University (UPB), Universitaet Rostock, X-FAB Dresden GmbH & Co. KG (XFAB-DD), X-FAB Semiconductor Foundries GmbH (XFAB-EF); Austria (CTR Carinthian Tech Research AG (CTR), Infineon Technologies Austria AG (IFAT), Kompetenzzentrum – Das virtuelle Fahrzeug Forschungsgesellschaft mbH (VIF), Materials Center Leoben Forschung GmbH (MCL); Suiza (BRUSA Elektronik AG (BRUSA), Eidgenössische Technische Hochschule Zürich (ETHZ); **España (Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC), Fagor Automation S. Coop. (FAGOR), Ingeteam Power Technology, S.A. (IPT), Tecnologías, Servicios Telemáticos y Sistemas, S.A. (TST), Universidad de Oviedo (UNIOVI), Universidad Politécnica de Madrid (UPM)**; Finlandia (Aalto University (AAU), ABB Oy Drives (ABB), Kemppe Oy (KEMPE), Powernet Oy (POWERNET); Hungría (Infineon Technologies Cegléd Kft. (IFCE); Eslovaquia (POWERTEC SRO (PTEC), Slovak University of Technology in Bratislava (STUBA); Países Bajos (Advanced Packaging Center BV (APC), Alfen BV (ALFEN), Boschman Technologies BV (BTE), IWO Project BV (IWO), JIACO Instruments BV (JIACO), Delft University of Technology (TUD)

Presupuesto total: €

Concedido ES: 168.000€ + 164.000€ + 155.000€ = 487.000€

Proyecto 6

VIZTA. Vision, Identification, with Z-sensing Technologies and key Applications

3D imaging has become important in industrial and consumer applications, allowing more accurate inspection of components at manufacturing sites and greater image depth for media, respectively. The EU-funded VIZTA project is developing advanced new optical sensors and laser sources for short- and long-range 3D imaging. Innovations include, amongst others, advanced time-of-flight solutions leveraging single-photon avalanche diodes, cost-effective near-infrared and RGB on-chip filters, complex RGB pixels for multimodal imaging, advanced Optical Phase Array and laser sources for LiDAR systems. Bringing together industry and academia, VIZTA will develop six demonstrators that will find applications in diverse fields including the automotive, security, smart buildings, mobile robotics for smart cities, and industry 4.0.

IP: STMicroelectronics Crolles, Francia

Socios: Francia (Stmicroelectronics Grenoble 2 SAS, Commissariat a l Energie Atomique et aux Energies Alternatives, III-V LAB, Idemia Identity & Security France, Stmicroelectronics SA, Lumibird, Applied Materials France, Keopsys Industries), Suecia (Veoneer Sweden AB), Grecia (ISd Lyseis Olokriromenon Systimatnononymos Etaireia), España (Beamagine S.L, **Universitat Politècnica de Catalunya**, Fundacio Eurecat, Ficomirrors SA, Alter Technology TUV NORD SA, BCB Informática y Control S.L.), Reino Unido (Stmicroelectronics (Research & Development), Alemania (Ibeo Automotive Systems GMBH, Deutsches Forschungszentrum fur Kunstliche Intelligenz GMBH), Luxemburgo (IEE International Electronics & Engineering SA), Letonia (Elektronikas un Datorzinatnu Instituts), Hungría (Semilab Felvezeto Fizikai Laboratorium Reszvenytarsasag)

Presupuesto total: €

Concedido ES: 155.000€

Convocatoria conjunta 2018-2

Países participantes	Austria, Bélgica, Alemania, Finlandia, Francia, Hungría, Irlanda, Israel, Italia, Letonia, Noruega, Países Bajos, Polonia, Rumanía, Eslovaquia, España, República Checa, Suecia, Turquía
Temáticas	Research and Innovation Actions (RIA)
Presupuesto total	212M€
Concedido ES	455.000€
Proyectos aprobados	6
Proyectos con ES	2

No.	Acrónimo y título del proyecto	Países participantes
1	UltimateGaN. Research for GaN technologies, devices, packages and applications to address the challenges of the future GaN roadmap	Austria , Bélgica, Alemania, Italia, Noruega, Eslovaquia, Suiza, España, Suecia
2	NewControl. Integrated, Fail-Operational, Cognitive Perception, Planning and Control Systems for Highly Automated Vehicles	Alemania , Austria, Países Bajos, Francia, Finlandia, Italia, Bélgica, República Checa, España, Turquía, Chipre, Lituania
3	TEMPO. Technology and hardware for neuromorphic computing	Bélgica , Francia, Alemania, Países Bajos, Suiza
4	AI4DI. Artificial Intelligence for Digitizing Industry	Alemania , Austria, República Checa, Italia, Noruega, Letonia, Taiwán, Bélgica, Lituania, Francia, Noruega, Grecia, Finlandia,
5	HELIAUS. tHERmaL vision AUgmented awareneS	Francia , Alemania, Irlanda, Italia
6	COMP4DRONES. Framework of key enabling technologies for safe and autonomous drones' applications	España , Austria, Bélgica, República Checa, Francia, Italia, Letonia, Países Bajos

Convocatoria nacional APCIN 2018

Proyecto 2

NewControl. Integrated, Fail-Operational, Cognitive Perception, Planning and Control Systems for Highly Automated Vehicles

The emergence of the highly automated vehicle market requires advanced solutions that guarantee increased levels of awareness, understanding and command. The EU-funded NewControl project will develop virtual platforms that provide highly automated operations for automated vehicles based primarily on safety. The project will combine Lidar, Radar and sensor technologies to design an integrated fail-safe operational platform. This virtual platform will provide effective control of propulsion systems. It will elaborate and validate the findings of the project to prove cost reductions, power efficiency, trustworthiness and improvement of safety for eventual mass commercialisation. NewControl will increase the market share of safe automation systems and support the EU's objective for zero road accidents by 2050.

IP: Infineon Technologies AG, Alemania

Socios: Alemania (Bayerische Motoren Werke Aktiengesellschaft, Fraunhofer Gesellschaft Zur Foerderung Der Angewandten Forschung E.V., Nxp Semiconductors Germany GMBH, Technische Universitaet Muenchen, Albert-Ludwigs-Universitaet Freiburg, Aviontek GMBH, Fortiss GMBH), Austria (Infineon Technologies Austria AG, Avl List GMBH, Kompetenzzentrum Das Virtuelle Fahrzeug Forschungsgesellschaft MBH, Tttech Auto AG), Países Bajos (Technische Universiteit Delft, Technische Universiteit Eindhoven, Smart Photonics BV, NXP Semiconductors Netherlands BV, Innoluce BV, Amber Nederland BV), Francia (Thales SA, PSA ID), Finlandia (Valossa Labs OY, Tampereen Korkeakoulusaatio SR, Teknologian tutkimuskeskus VTT Oy, Aalto Korkeakoulusaatio SR, Okmetic OY, Murata Electronics OY, Unikie OY), Italia (Ideas & Motion

SRL, Magneti Marelli S.P.A., Universita di Pisa, Universita degli Studi di Modena e Reggio Emilia, Danisi Engineering SRL, 4S-Sistemi Sicuri E Sostenibili SRL), Bélgica (Xenomatrix, Vrije Universiteit Brussel, Bifast), República Checa (Vysoke Uceni Technicke V Brne, Institut Mikroelektronickych Aplikaci S.R.O.), España (Idneo Technologies SAU, Knowledge Centric Solutions SL, Universidad Carlos III de Madrid, Agencia Estatal Consejo Superior de Investigaciones Cientificas), Turquía (Ford Otomotiv Sanayi Anonim Sirketi, Habitus Arastirma ve Danismanlik Limited Sirketi), Chipre (Iotam Internet of Things Applications and Multi Layer Development LTD), Lituania (UAB Teraglobus)

Presupuesto total: €

Concedido ES: 150.000€+150.000€ = 300.000€

Proyecto 6

COMP4DRONES. Framework of key enabling technologies for safe and autonomous drones' applications

The use of drones today is expanding as it reduces costs and offers environmental benefits. However, existing technologies could make drones' usage harmful for humans, vehicles and properties. SESAR JU, in charge of EU research in air traffic management, suggested that further investments and motivations are needed for the safe use of drones. The ECSEL JU-funded project COMP4DRONES will work on safe software and hardware drone solutions aligned with SESAR objectives. Coordinated by Indra, COMP4DRONES brings together 49 partners from 8 countries aiming to build an ecosystem that will support the systemization and safety of drone platforms, reliable communications, cost-efficient and safe design of drones. COMP4DRONES will deploy applications in five domains: transport, construction, surveillance and inspection, logistics and agriculture.

IP: Indra Sistemas SA, España

Socios: España (Acciona Construcción SA, Acorde Technologies SA, Hemav Technology SL, HI Iberia Ingeniería y Proyectos SL, Ikerlan S. COOP, **Universidad de Cantabria**), Austria (AIT Austrian Institute of Technology GMBH, Forschung Burgenland GMBH, Moravitz Martin, Infineon Technologies Austria AG, Skyability GESMBH), Bélgica (Interuniversitair Micro-Electronica Centrum, Airobot), República Checa (Vysoke Uceni Technicke V Brne, Zapadoceska Univerzita V Plzni, Smartmotion S.R.O.), Francia (Soben, Ecole Nationale de l'Aviation Civile, Siemens Industry Software SAS, Eurogiciel, Ecole Nationale Supérieure de Mécanique et d'aérotechnique, Commissariat à l'Énergie Atomique et aux Énergies Alternatives, Atechsys Engineering, Sherpa Engineering SA, Total S.A., Altran Technologies), Italia (Abinsula SRL, Universita degli studi di Modena e Reggio Emilia, Universita degli studi del Sannio, Universita degli studi di Sassari, Universita degli studi dell'aquila, Tekne SRL, Topview SRL, Aitek SPA, Ud' Janet SRL, Aitronik SRL, RO technology SRL, Modis Consulting SRL), Letonia (Elektronikas un Datorzinatnu Instituts, Latvijas Universitates Matematikas un Informatikas Instituts, Latvijas Mobilais Telefons SIA), Países Bajos (Anywi Technology BV, Stichting Imec Nederland, Thales Nederland BV, Technische Universiteit Eindhoven, Technische Universiteit Delft, Demcon Unmanned Systems BV, Almende BV)

Presupuesto total: €

Concedido ES: 155.000€

Convocatoria conjunta 2019

Países participantes	Alemania, Austria, Bélgica, Bulgaria, Chipre, Dinamarca, Eslovaquia, Eslovenia, España, Estados Unidos, Finlandia, Francia, Grecia, Hungría, Irlanda, Italia, Israel, Letonia, Lituania, Noruega, Países Bajos, Polonia, Portugal, República Checa, Rumanía, Suecia, Suiza, Turquía
Temáticas	<ol style="list-style-type: none"> 1. Transport & Smart Mobility 2. Health and Well-Being 3. Energy 4. Digital Industry 5. Digital Life 6. Systems and Components: Architecture, Design and Integration 7. Connectivity and Interoperability 8. Safety, Security and Reliability 9. Computing and Storage 10. Process Technology, Equipment, Materials and Manufacturing 11. Long term vision
Presupuesto total	173.800.000 €
Concedido ES	1.000.000€
Proyectos aprobados	13
Proyectos con ES	7

No.	Acrónimo y título del proyecto	Países participantes
1	ADACORSA. Airborne data collection on resilient system architectures	Alemania, Noruega, Austria, Francia, Suiza, Chipre, Grecia, Lituania, Portugal, Turquía, Italia, Finlandia,
2	ArchitectECA2030. Trustable architectures with acceptable residual risk for the electric, connected and automated cars	Alemania, Noruega, República Checa, Austria, Países Bajos, Lituania, Estados Unidos, Francia
3	BEYOND5. Building the fully European supply chain on RFSOI, enabling New RF Domains for Sensing, Communication, 5G and beyond	Francia, Alemania, Suecia, Turquía, Bélgica, Polonia, Israel, Noruega, Rumania
4	BRAINE. Big data processing and Artificial Intelligence at the Network Edge	Italia, Polonia, Dinamarca, Países Bajos, Israel, Irlanda, Hungría, Alemania, Francia, Eslovaquia, Italia, Bulgaria, Suiza, Finlandia, República Checa
5	CHARM. Challenging environments tolerant Smart systems for IoT and AI	Finlandia, Austria, Bélgica, Suiza, República Checa, Alemania, Letonia, Países Bajos, Polonia
6	FRACTAL. A Cognitive Fractal and Secure EDGE based on an unique Open-Safe-Reliable-Low Power Hardware Platform Node	España, Italia, Austria, Francia, Alemania, Suiza, Finlandia
7	INSECTT. Intelligent Secure Trustable Things	Austria, España, Italia, Suecia, Francia, Portugal, Turquía,

		Irlanda, Polonia, Eslovenia, Países Bajos, Finlandia
8	IREL 4.0 INTELLIGENT RELIABILITY 4.0	Austria , Alemania, Eslovaquia, Suecia, Finlandia, Bélgica, Italia, Países Bajos, Turquía, Eslovenia, Portugal, Grecia, Francia, España
9	IT2. IC Technology for the 2nm Node	Bélgica, Israel, Alemania, Países Bajos, Francia, Austria, Hungría, Estados Unidos, Rumanía
10	MOORE4MEDICAL. Accelerating Innovation in Microfabricated Medical Devices	Países Bajos , Italia, España, Finlandia, Bélgica, Alemania, Austria, Suiza, Portugal, Hungría, Rumanía
11	NEXT PERCEPTION. Next generation smart perception sensors and distributed intelligence for proactive human monitoring in health, wellbeing, and automotive systems	Finlandia , España, Italia, Alemania, República Checa, Bélgica, Países Bajos
12	PROGRESSUS. Highly efficient and trustworthy components and systems for the next generation energy supply infrastructure	Alemania , Países Bajos, España, Italia, Eslovaquia
13	VALU3S. Verification and Validation of Automated Systems' Safety and Security	Suecia , Italia, España, Portugal, Turquía, Alemania, Austria, Irlanda, Francia

Convocatoria nacional APCIN 2020

Proyecto 6

FRACTAL. A Cognitive Fractal and Secure EDGE based on an unique Open-Safe-Reliable-Low Power Hardware Platform Node

The objective of this research activity is to create a reliable computing node that will create a Cognitive Edge under industry standards. This computing node will be the building block of scalable Internet of Things (from Low Computing to High Computing Edge Nodes). The cognitive skill will be given by an internal and external architecture that allows to forecast its internal performance and the state of the surrounding world. Hence, this node will have the capability of learning how to improve its performance against the uncertainty of the environment.

As a result of the integration of these cognitive systems into a fractal network, there will be another intrinsic crucial advantage, emergency and adaptability, new functions will flourish through the created space of possibilities of our cognitive Systems. This complex network will transfer all those cognitive advantages to the Edge, a computing paradigm that lay down between the physical world and the cloud.

IP: IKERLAN SOCIEDAD COOPERATIVA, España

Socios: España, Italia, Austria, Francia, Alemania, Suiza, Finlandia

Presupuesto total: 17.380.905 €

Concedido: BARCELONA SUPERCOMPUTING CENTER 155.000 € + UNIVERSITAT POLITÈCNICA DE VALÈNCIA 128.920 €

Concedido ES

Proyecto 7

INSECTT. Intelligent Secure Trustable Things

Artificial Intelligence of Things (AIoT) is the natural evolution for both Artificial Intelligence (AI) and Internet of Things (IoT) because they are mutually beneficial. AI increases the value of the IoT through machine learning by transforming the data into useful information, while the IoT increases the value of AI through connectivity and data exchange. Therefore, InSecTT – Intelligent Secure Trustable Things, a pan-European effort with 50 key partners from 12 countries (EU and Turkey), will provide intelligent, secure and trustworthy systems for industrial applications to provide comprehensive cost-efficient solutions of intelligent, end-to-end secure, trustworthy connectivity and interoperability to bring the Internet of Things and Artificial Intelligence together. InSecTT aims at creating trust in AI-based intelligent systems and solutions as a major part of the AIoT, i.e. moving AI to the edge and making AI and ML based systems trustable, explainable and not just a black box.

InSecTT will foster cooperation between big industrial players from various domains, a number of highly innovative SMEs distributed all over Europa and cutting-edge research organisations and university. The project features a big variety of industry-driven use cases embedded into various application domains, i.e. smart infrastructure, building, manufacturing, automotive, aeronautics, railway, urban public transport, maritime as well as health. The demonstration of InSecTT solutions in well-known real-world environments like trains, ports, airports and the health sector will generate huge impact on both high and broad level, going from citizens up to European stakeholders. It will establish the EU as a center of intelligent, secure and trustworthy systems for industrial applications enabled by a strong industry with a strong reputation and an informed society, in order to enable products and services based on AI compliant to European values and “Made in Europe”.

IP: Kompetenzzentrum - Das Virtuelle Fahrzeug, Forschungsgesellschaft mbH, Austria

Socios: Austria, España, Italia, Suecia, Francia, Portugal, Turquía, Irlanda, Polonia, Eslovenia, Países Bajos, Finlandia

Presupuesto total: 11.500.000 €

Concedido ES: 150.000 €

Proyecto 8

IREL 4.0. INTELLIGENT RELIABILITY 4.0

Intelligent Reliability 4.0 (iRel40) has the ultimate goal of improving reliability for electronic components and systems by reducing failure rates along the entire value chain. Trend for system integration, especially for heterogeneous integration, is miniaturization. Thus, reliability becomes an increasing challenge on device and system level and faces exceptional requirements for future complex applications. Applications require customer acceptance and satisfaction at acceptable cost. Reliability must be guaranteed when using systems in new and critical environments.

In iRel40, 79 partners from 14 countries collaborate in 6 technical work packages along the value chain. WP1 focuses on specifications and requirements. WP2 and WP3 focus on modelling, simulation, materials and interfaces based on test vehicles. WP4 applies the test vehicle knowledge to industrial pilots related to production. WP5 applies the knowledge to testing. WP6 focuses on application use cases applying the industrial pilots. We assess and validate the iRel40 results.

Reliable electronic components and systems are developed faster and new processes are transferred to production with higher speed. Crucial insight gained by Physics of Failure and AI methods will push overall quality levels and reliability.

iRel40 results will strengthen production along the value chain and support sustainable success of Electronic Components and Systems investment in Europe. By collaboration between academy, industry and knowledge institutes on this challenging topic of reliability, the project secures more than 25.000 jobs in the 25 participating production and testing sites in Europe. The project supports new applications and reliable chips push applications in energy efficiency,

e-mobility, autonomous driving and IoT. This unique project brings, for the first time ever, world-leading reliability experts and European manufacturing expertise together to generate a sustainable pan-European reliability community.

IP: INFINEON TECHNOLOGIES AUSTRIA AG, Austria

Socios: Austria, Alemania, Eslovaquia, Suecia, Finlandia, Bélgica, Italia, Países Bajos, Turquía, Eslovenia, Portugal, Grecia, Francia, España

Presupuesto total: 25.000.000 €

Concedido ES: INSTITUTO DE MICROELECTRONICA DE BARCELONA 165.000 € + UNIVERSIDAD DE CASTILLA-LA MANCHA 136.000 € + UNIVERSIDAD CARLOS III DE MADRID 90.000 €

Proyecto 10

MOORE4MEDICAL. Accelerating Innovation in Microfabricated Medical Devices

Compared to the pace of innovation in electronic consumer products, the pace of innovation for medical devices is lagging behind. It is the overarching objective of Moore4Medical to accelerate innovation in electronic medical devices.

Moore4Medical emerging medical applications that offer significant new opportunities for the ECS industry including: active implantable devices (bioelectronic medicines), organ-on-chip, drug adherence monitoring, smart ultrasound, radiation free interventions and continuous monitoring. The new technologies will help fighting the increasing cost of healthcare by: reducing the need for hospitalization, helping the development of personalized therapies, and realizing intelligent point-of-care diagnostic tools.

Moore4Medical will bring together 68 specialists from 12 countries who will develop open technology platforms for these emerging fields to help them bridge “the Valley of Death” in shorter time and at lower cost. Open technology platforms used by multiple users for multiple applications with the prospect of medium to high volume markets are an attractive proposition for the European ECS industry. The combination of typical MedTech applications with an ECS style platform approach will enhance the competitiveness for the emerging medical domains addressed in Moore4Medical. With value and IP moving from the technology level towards applications and solutions, defragmentation and open technology platforms will be key in acquiring and maintaining a premier position for Europe in the forefront of affordable healthcare.

IP: PHILIPS ELECTRONICS NEDERLAND B.V., Países Bajos.

Socios: Países Bajos, Italia, España, Finlandia, Bélgica, Alemania, Austria, Suiza, Portugal, Hungría, Rumanía

Presupuesto total: 17.000.000 €

Concedido ES: HOSPITAL UNIVERSITARIO MIGUEL SERVET 81.000 € + UNIVERSIDAD DEL PAÍS VASCO EUSKAL HERRIKO UNIBERTSITATEA 163.000 € + UNIVERSIDAD DE ZARAGOZA 80.500 €

Concedido ES

Proyecto 11

NEXT PERCEPTION. Next generation smart perception sensors and distributed intelligence for proactive human monitoring in health, wellbeing, and automotive systems

We put our lives increasingly in the hands of smart complex systems making decisions that directly affect our health and wellbeing. This is very evident in healthcare - where systems watch over your health - as well as in traffic – where autonomous driving solutions are gradually taking over control of the car. The accuracy and timeliness of the decisions depend on the systems’ ability to build a good understanding of both you and your environment, which relies on observations and the ability to reason on them.

This project will bring perception sensing technologies like Radar, LiDAR and Time of Flight cameras to the next level, enhancing their features to allow for more accurate detection of human behaviour and physiological parameters. Besides more accurate automotive solutions ensuring driver vigilance and pedestrian and cyclist safety, this innovation will open up new

opportunities in health and wellbeing to monitor elderly people at home or unobtrusively assess health state.

To facilitate building the complex smart sensing systems envisioned and ensure their secure and reliable operation, the new Distributed Intelligence paradigm will be embraced, enhanced and supported by tools. It leverages the advantages of Edge and Cloud computing, building on the distributed computational resources increasingly available in sensors and edge components to distribute also the intelligence.

The goal of this project is to develop next generation smart perception sensors and enhance the distributed intelligence paradigm to build versatile, secure, reliable, and proactive human monitoring solutions for the health, wellbeing, and automotive domains. The project brings together major industrial players and research partners to address top challenges in health, wellbeing, and automotive domains through three use cases: integral vitality monitoring for elderly and exercise, driver monitoring, and providing safety and comfort for vulnerable road users at intersections.

IP: Teknologian tutkimuskeskus VTT Oy, Finlandia.

Socios: Finlandia, España, Italia, Alemania, República Checa, Bélgica, Países Bajos

Presupuesto total: 30.649.577 €

Concedido ES: INSTITUT DE RECERCA BIOMEDICA DE LLEIDA, FUNDACIO PRIVADA DR. PIFARRE 80.276 € + AGENCIA ESTATAL CONSEJO SUPERIOR DE INVESTIGACIONES CIENTIFICAS (CSIC) 161.000 € + UNIVERSIDAD DE VIGO 152.000 €

Proyecto 12

PROGRESSUS. Highly efficient and trustworthy components and systems for the next generation energy supply infrastructure

Progressus supports the European climate targets for 2030 by proposing a next generation smart grid, demonstrated by the application example “smart charging infrastructure” that integrates seamlessly into the already existing concepts of smartgrid architectures keeping additional investments minimal. The expected high-power requirements for ultra fast charging stations lead to special challenges for designing and establishing an intelligent charge-infrastructure. As emission free traffic concepts are a nascent economic topic also the efficient use of charging infrastructure is still in its infancy. Thus, novel sensor types, hardware security modules, inexpensive high bandwidth technologies and block-chain technology as part of an independent, extendable charging energy-management and customer platform are researched for a charging-station energy-microgrid. Research of new efficient high-power voltage converters, which support bidirectional power flow and provide a new type of highly economical charging stations with connected storage and metering platform to locally monitor the grid state complements the activities. The stations are intended to exploit the grid infrastructure via broadband power-line as communication medium, removing the need for costly civil engineering activities and supplying information to the energy management solutions for utilization optimization. Smart-Contracts via block-chain offer a distributed framework for the proposed energy management and services platform. Furthermore hardware security hardens the concept against direct physical attacks such as infiltration of the network by gaining access to the encryption key material even when a charging station is compromised. Progressus solutions are estimated to enable a carbon dioxide saving of 800.000 tons per year for only Germany, will secure the competitiveness of European industry and research by extending the system know how and will thus safeguard employment and production in Europe.

IP: INFINEON TECHNOLOGIES AG, Alemania.

Socios: Alemania, Países Bajos, España, Italia, Eslovaquia

Presupuesto total: 19.000.000 €

Concedido ES: 150.000 €

Concedido ESProyecto13

VALU3S . Verification and Validation of Automated Systems' Safety and Security

Manufacturers of automated systems and the manufacturers of the components used in these systems have been allocating an enormous amount of time and effort in the past years developing and conducting research on automated systems. The effort spent has resulted in the availability of prototypes demonstrating new capabilities as well as the introduction of such systems to the market within different domains. Manufacturers of these systems need to make sure that the systems function in the intended way and according to specifications which is not a trivial task as system complexity rises dramatically the more integrated and interconnected these systems become with the addition of automated functionality and features to them.

With rising complexity, unknown emerging properties of the system may come to the Surface making it necessary to conduct thorough verification and validation (V&V) of these systems. VALU3S aims to design, implement and evaluate state-of-the-art V&V methods and tools in order to reduce the time and cost needed to verify and validate automated systems with respect to safety, cybersecurity and privacy (SCP) requirements. This will ensure that European manufacturers of automated systems remain competitive and that they remain world leaders. To this end, a multi-domain framework is designed and evaluated with the aim to create a clear structure around the components and elements needed to conduct V&V process through identification and classification of evaluation methods, tools, environments and concepts that are needed to verify and validate automated systems with respect to SCP requirements.

The implemented V&V methods as well as improved process workflows and tools will also be evaluated in the project using a comprehensive set of demonstrators built from 13 use cases with specific SCP requirements from 6 domains of automotive, industrial robotics, agriculture, Aerospace, railway and health.

IP: RISE RESEARCH INSTITUTES OF SWEDEN AB, Suecia.

Socios: Suecia, Italia, España, Portugal, Turquía, Alemania, Austria, Irlanda, Francia

Presupuesto total: 8.000.000 €

Concedido ES: 120.000 €

QUANT-ERA - ERA-NET Cofund in Quantum Technologies

QuantERA es una red de 31 organizaciones de 26 países, coordinada por el Centro Nacional de Ciencias de Polonia, que apoya proyectos de investigación internacionales en el campo de las tecnologías cuánticas (QT). QuantERA responde a la creciente necesidad de esfuerzos de colaboración y un esquema de financiación común dentro de la investigación de QT, que debido a su naturaleza altamente interdisciplinaria no se puede limitar a una institución o estado individual. Gracias a la coordinación de los programas nacionales y regionales de financiación de la investigación, QuantERA evita el problema de la fragmentación de los esfuerzos nacionales, fomenta las colaboraciones transnacionales y aprovecha la ventaja competitiva de Europa. Unirse a la convocatoria de propuestas para grupos de investigación internacionales que operan en los países socios de QuantERA se convertirá en el primer paso para una mayor integración. El lanzamiento de la convocatoria de propuestas se complementará con una serie de actividades adicionales destinadas a estimular la cooperación dentro de la comunidad de investigación, crear y mantener vínculos entre el mundo académico y la industria, crear un conjunto de herramientas sobre investigación responsable e innovación en QT, intercambiar las mejores prácticas e involucrar en un diálogo con los responsables políticos sobre el diseño de futuros instrumentos de financiación. En conjunto, ayudará a tomar medidas adicionales en el camino para desbloquear el potencial industrial ampliamente reconocido de QT en respuesta a las necesidades actuales de la sociedad y en beneficio del público en general.

Socios: Coordinador: Polonia (National Science Centre (NCN), Austria (Austrian Research Promotion Agency (FFG), Austrian Science Fund (FWF), Bélgica (National Fund for Scientific Research (FNRS), Research Foundation Flanders (FWO), Bulgaria (National Science Fund of Bulgaria (BNSF), República Checa (Ministry of Education Youth and Sports (MEYS-MSMT), Dinamarca (Innovation Fund Denmark (Innofond), Finlandia (Academy of Finland (AKA), Francia (National Research Agency (ANR), Alemania (Federal Ministry of Education and Research (BMBF), VDI Technologiezentrum GmbH (VDI TZ), Grecia (General Secretariat for Research and Technology (GSRT), Hungría (National Research, Development and Innovation Office (NKFIH), Irlanda (Science Foundation Ireland (SFI), Israel (MATIMOP Israeli Industry Centre for R&D (OLD) (MATIMOP), Ministry of Science, Technology and Space), Italia (Italian National Research Council (CNR), Ministry of Education, University and Research (MIUR), Letonia (State Education Development Agency (VIAA), Países Bajos (Foundation for Fundamental Research on Matter (FOM), Noruega (Research Council of Norway (RCN), Polonia (National Centre for Research and Development (NCBiR), Portugal (Foundation for Science and Technology (FCT), Rumanía (Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI), Eslovaquia (Slovak Academy of Science (SAS/SAV), Eslovenia ((Ministry of Education, Science, Culture and Sport (MESCS/MIZS), **España (Agencia Estatal de Investigación (AEI)**, Suecia (Swedish Research Council (VR/SRC), Suiza (Swiss National Science Foundation (SNSF/SNF), Turquía (The Scientific and Technological Research Council of Turkey (TUBITAK), Reino Unido (Engineering and Physical Sciences Research Council (EPSRC), The Technology Strategy Board (TSB).

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjunta internacionales: 2 (2017, 2019)

Participación de AEI en convocatorias conjuntas: 2 (2017, 2019-2)

Convocatoria conjunta internacional 2017

Países participantes	Austria, Bélgica, Bulgaria, República Checa, Dinamarca, Finlandia, Francia, Alemania, Grecia, Hungría, Irlanda, Israel, Italia, Letonia, Países Bajos, Noruega, Polonia, Portugal, Rumanía
Temáticas	Quantum Information and Communication Sciences & Technologies 1. Quantum communication 2. Quantum simulation 3. Quantum computation 4. Quantum information sciences 5. Quantum metrology sensing and imaging 6. Novel ideas and applications in quantum science and technologies
Presupuesto total	34.000.000€
Concedido ES	795.708€
Proyectos aprobados	26
Proyectos con financiación AEI	6

No.	Acrónimo y título del proyecto	Países participantes
1	CEBBEC. Controlling EPR and Bell correlations in atomic Bose-Einstein condensates	Francia, Alemania, Austria, España, Italia
2	CUSPIDOR. CMOS Compatible Single Photon Sources based on SiGe Quantum Dots	Austria, Irlanda, Italia, República Checa
3	ERyQSenS. Entangled Rydberg matter for quantum sensing and simulations	Suecia, Alemania, Bulgaria, Francia, Reino Unido
4	HYPHER-U-P-S. Hyper-entanglement from ultra-bright photon pair sources	Suecia, Alemania, Austria, Dinamarca, República Checa
5	HiPhoP. High dimensional quantum Photonic Platform	Francia, Austria, Italia, Reino Unido, Eslovaquia
6	InterPol. Polariton lattices: a solid-state platform for quantum simulations of correlated and topological states	Reino Unido, Alemania, Francia, Israel, Polonia
7	MICROSENS. Microwave quantum sensing with diamond color centers	Francia, Alemania, Austria
8	NAQUAS. Non-equilibrium dynamics in Atomic systems for QUAntum Simulation	Francia, Alemania, Italia, Polonia, Reino Unido, Suiza
9	NanoSpin. Spin-based nanolytics – Turning today’s quantum technology research frontier into tomorrow’s diagnostic devices	Alemania, Bélgica, Hungría, Países Bajos, República Checa
10	ORQUID. ORganic QUantum Integrated Devices	Italia, Alemania, España, Francia, Países Bajos, Polonia, Reino Unido
11	Q-Clocks. Cavity-Enhanced Quantum Optical Clocks	Italia, Dinamarca, España, Francia, Polonia
12	QCDA. Quantum Code Design and Architectures	Reino Unido, Alemania, Francia, Países Bajos
13	QTFLAG. Quantum Technologies For Lattice Gauge theories	Alemania, Austria, Bélgica, Italia, Polonia

14	QUANTOX. QUANTum Technologies with 2D-Oxides	Italia, España, Francia, Israel, Países Bajos, Suecia
15	Q_Magine. Scalable Electrically Readout Diamond Spin Qubit Technology for Single Molecule Quantum Imagers	Bélgica, Alemania, Austria, Hungría
16	QuaSeRT. Optomechanical quantum sensors at room temperature	Italia, Alemania, Austria, Francia, Noruega, Países Bajos
17	QuantAlgo. Quantum algorithms and applications	Bélgica, Dinamarca, Francia, Letonia, Países Bajos, Reino Unido
18	QuomplexX. Quantum Information Processing with Complex Media	Austria, Italia, Países Bajos
19	RouTe. Towards Room Temperature Quantum Technologies	Francia, Alemania, España, Finlandia, Polonia, Suiza
20	SQUARE. Silicon Photonics for Quantum Fibre Networks	Dinamarca, Francia, Italia, Reino Unido, Turquía
21	SUMO. Scaling Up quantum computation with MOlecular spins	España, Alemania, Austria, Italia, Reino Unido
22	Si QuBus. Long-range quantum bus for electron spin qubits in silicon	Alemania, Francia, Países Bajos, Polonia
23	SuperTop. Topologically protected states in double nanowire superconductor hybrids	Hungría, Dinamarca, Francia, Italia, Países Bajos, Suiza
24	TAIOL. Trapped Atom Interferometers in Optical Lattices	Francia, Alemania, Italia, Polonia
25	TheBlinQC. Theory Blind Quantum Control	Reino Unido, Alemania, Austria, Polonia, Portugal, República Checa
26	Topoquant. 2D hybrid materials as a platform for topological quantum computing	Suiza, Alemania, Dinamarca, Suecia

Convocatoria nacional APCIN 2018

Proyecto 1

CEBBEC. Controlling EPR and Bell correlations in atomic Bose- Einstein condensates

Our purpose is both to gain a deeper understanding of quantum information in many body systems as well as to develop practical approaches for manipulating and exploiting it. The main targets are (i) to take advantage of this type of quantum correlation, (ii) to implement device-independent entanglement witnesses, (iii) to explore fundamental aspects of quantum mechanics, and (iv) to realize proof-of-principle implementations of quantum information and quantum measurement protocols with atomic many-body systems. Atomic interactions in BEC's constitute a non-linearity highly analogous to four-wave mixing or parametric down-conversion in optics, and hence can create strong entanglement. Two separate lines of research have been pursued in the past, on the one hand, one can use the spin degrees of freedom of an atom to produce atom pairs whose spins are entangled, and on the other hand one can entangle the motional degrees of freedom in a spirit close to that of the original EPR proposal. In the CEBBEC project, these two lines of research will be brought together in both the technological sense (using one kind of entanglement to make another) and conceptual one (for example studying complex situations in which both spin and motion are entangled) giving rise to new possibilities for applications and new theoretical challenges. The participating partners have developed sophisticated detection technologies, which allow us to make new types of measurements. We intend to respond to the great need for theoretical work to understand and exploit them. Finally, we will address practical applications and explore their metrological validity.

IP: Insitut d'Optique Laboratoire Charles Fabry, Francia

Socios: Alemania (Institut für Quantenoptik, Universität Hannover), Austria (Technische Universität Wien), **España (Universidad del País Vasco)**, Italia (Consiglio Nazionale delle Ricerche)

Presupuesto total: 1.326.878€

Concedido ES: 105.000€

Proyecto 10

ORQUID. ORganic QUantum Integrated Devices

ORQUID will explore the exciting new possibility of using single organic molecules as the interface between these three quanta so that they can work together as required. First, single molecules will interact with light in waveguides and cavities to generate and detect single photons, providing immediate impact in quantum photonics. Second, single molecules will detect single moving charges in nano-electronic circuits to provide quantum coherent information exchange between these charges and the external world. Third, molecules embedded in nanomechanical devices and two-dimensional materials will measure nanoscale forces and displacements, which are key to developing mechanical quantum systems and understanding nanomachinery. By developing these three interfaces on a common platform, we will create a versatile hybrid system. By allowing the user to draw simultaneously on the most sensitive quantum aspects of light, charge and sound, we anticipate that this hybrid will be a major advance in the technology of quantum devices.

IP: Consiglio Nazionale delle Ricerche, Italia

Socios: Alemania (Westfaelische Wilhelms-Universitaet Muenster), **España (Instituto de Ciencias Fotónicas)**, Francia (Centre National de la Recherche Scientifique), Países Bajos (Universiteit Leiden), Polonia (Institute of Physics, Polish Academy of Science), Reino Unido (Imperial College of Science Technology and Medicine)

Presupuesto total: 1.675.446€

Concedido ES: 140.000€

Proyecto 11

Q-Clocks. Cavity-Enhanced Quantum Optical Clocks

Q-Clocks seeks to establish a new frontier in the quantum measurement of time by joining state-of-the-art optical lattice clocks and the quantized electromagnetic field provided by an optical cavity. The goal of the project is to apply advanced quantum techniques to state-of-the-art optical lattice clocks, demonstrating enhanced sensitivity while preserving long coherence times and the highest accuracy. A three-fold atom-cavity system approach will be employed: the dispersive quantum non-demolition (QND) system in the weak coupling regime, the QND system in the strong collective coupling regime, and the quantum enhancement of narrow-linewidth laser light generation towards a continuous active optical frequency standard. Cross-fertilization of such approaches will be granted by parallel theoretical investigations on the available and brand-new quantum protocols, providing cavity-assisted readout phase amplification, adaptive entanglement and squeezed state preparation protocols. Novel ideas on quantum state engineering of the clock states inside the optical lattice will be exploited to test possible quantum information and communication applications. By pushing the performance of optical atomic clocks toward the Heisenberg limit, Q-Clocks is expected to substantially enhance all utilizations of high precision atomic clocks, including tests of fundamental physics (test of the theory of relativity, physics beyond the standard model, variation of fundamental constants, search for dark matter) and applied physics (relativistic geophysics, chrono geodetic leveling, precision geodesy and timetagging in coherent high speed optical communication). Finally, active optical atomic clocks would have a potential to join large scale laser interferometers in gravitational waves detection.

IP: Istituto Nazionale di Ricerca Metrologica, Italia

Socios: Italia (Istituto Nazionale di Ottica CNR), Dinamarca (Kobenhavns Universitet), **España (Instituto de Ciencias Fotónicas)**, Francia (CNRS/SYRTE), Polonia (Nicolaus Copernicus University in Torun)

Presupuesto total: 1.332.071€

Concedido ES: 147.705€

Proyecto 14

QUANTOX. QUANTum Technologies with 2D-Oxides

We propose two-dimensional oxides (2D-oxides) as an innovative technological platform for the realization of topological quantum systems. Our idea is to exploit the unique combination of unconventional Rashba spin-orbit coupling (SOC), 2D-magnetism, superconductivity (SC) and high-mobility in the 2D electron gas (2DEG) at the interface between oxide insulators, as for instance LaAlO₃ (LAO) and SrTiO₃ (STO). The basic element of this technology is a quasi-one dimensional nano-channel, whose properties can be locally tuned using electric field effect to create both topological and non-topological superconducting sections, and metallic or even insulating tunnelling barriers. This platform has all the characteristics for the practical realization of theory-based proposals for topological quantum computation, and important fundamental and technological advantages. 2D-oxides technology allows a top-down approach for nanodevices realization fully scalable to complex systems including a large number of qubits. All the ingredients necessary for creating, manipulating and braiding MZMs can be realized using the same material and incorporated in the device layout in a seamless way. Moreover, the strong sensitivity of oxide-2DEGs to the orbital splitting and occupation of the non-degenerate 3d_{xy} and 3d_{xz}, yz bands, allows the development of conceptual new methods for the realization of a topological quantum electronics controlled by the orbital degrees of freedom. Our project is aimed at establishing oxide 2DEGs as a viable platform for the realization of topological quantum computers, thus launching a new technological approach to the realization of "fault tolerant" quantum computation technology.

IP: CNR-SPIN, Italia

Socios: **España (Universidad Complutense de Madrid (UCM))**, Francia (Unité mixte de physique CNRS/Thalès, ESPCI Paris), Israel (Bar Ilan University by Birad R&D Co. Ltd., IL), Países Bajos (Delft University of Technology), Suecia (halmers University of Technology)

Presupuesto total: 1.126.409€

Concedido ES: 130.000€

Proyecto 19

RouTe. Towards Room Temperature Quantum Technologies

The goal of RouTe is to lay the foundations for a quantum technology that can operate at room temperature, thus taking a first major leap towards exploiting fundamental quantum phenomena in light-matter interaction for real-world applications. The enabling physical systems are organic materials that display quantum properties even at room temperature when coupled resonantly to cavity modes or plasmonic structures. Our objectives include the realization of: i) Room temperature quantum simulator setups for many-body lattice models and topological states of matter with polaritons, ii) Strongly coupled light-matter interfaces with applications to quantum communication and robust quantum information storage at room temperature, and iii) Enhanced material properties and chemical reactivity by making use of strong coupling of organic materials to photonic or phononic modes prepared in their vacuum state.

IP: University of Strasbourg & CNRS, Francia

Socios: Alemania (Max-Planck Institute), **España (Universidad Autónoma de Madrid (UAM))**, Finlandia (Aalto University), Polonia (Polish Academy of Sciences), Suiza (BM Research – Zurich Laboratory)

Presupuesto total: 1.692.417€; Concedido ES: 100.500€

Proyecto 21

SUMO. Scaling Up quantum computation with MOlecular spins

SUMO aims to set the basis of a new architecture for quantum computation and simulation, in which information is encoded in molecular spin qubits that are read-out and communicate by coupling to a superconducting resonator. This technology has a high potential for robust scalability, based on the microscopic and reproducible nature of the molecules and on the possibilities they offer for embodying multiple qubits, which provide an extra dimension to increase computational resources and to implement noise-resilient logical qubits. The proposal focuses on two specific targets, which are crucial milestones for the realization of such magnetic quantum processor. The first is the implementation of active quantum error correction in magnetic molecules. The second is the attainment of strong coupling between individual molecular spins and single microwave photons. It involves cooperation between diverse disciplines and between experimental and theoretical methods and benefits from the European leadership in molecular magnetism. Coordination and supramolecular chemistry will be combined to design and synthesize molecules hosting multiple (3 to 9) spin qubits.

IP: Fernando Luis, CSIC/Instituto de Ciencia de Materiales de Aragón, España

Socios: **España (Universitat de Barcelona, Universitat de Valencia)**, Alemania (Universität Stuttgart), Austria (Wolfgang Pauli Institut/ Atominstitut, TU Wien), Italia (Consorzio Interuniversitario Nazionale per la Scienza e Tecnologia dei Materiali), Reino Unido (University of Manchester, University of Oxford)

Presupuesto total: 1.114.545€

Concedido ES: 20.000€ + 140.503€ + 12.000€ = 172.503€

Convocatoria conjunta internacional 2019

Países participantes	Austria, Bélgica, Bulgaria, República Checa, Dinamarca, Estonia, Finlandia, Francia, Alemania, Grecia, Hungría, Irlanda, Israel, Italia, Letonia, Lituania, Países Bajos, Polonia, Portugal, Rumanía
Temáticas	Quantum Information and Communication Sciences & Technologies 1. Quantum communication 2. Quantum simulation 3. Quantum computation 4. Quantum information sciences 5. Quantum metrology sensing and imaging 6. Novel ideas and applications in quantum science and technologies
Presupuesto total	45.000.000€
Concedido ES	597.300€
Proyectos aprobados	12
Proyectos con MINECO/AEI	5

No.	Acrónimo y título del proyecto	Países participantes
1	ApresSF . Application-ready superresolution in space and frequency	Polonia , Francia, Alemania, España, República Checa
2	C'MON-QSENS! . Continuously Monitored Quantum Sensors: Smart Tools and Applications	España , Polonia, Dinamarca Reino Unido, Israel y Suecia.
3	eDICT . Experimentally-oriented Device Independent CrypTography	Suiza , Polonia, Hungría, República Checa y Austria
4	MAQS . Magnetic-Atom Quantum Simulator	Francia , Austria, Italia, España, Polonia Alemania

5	PACE-IN. Photon-Atom Cooperative Effects at Interfaces	Francia, Austria, Grecia, Israel, Italia y República Checa
6	Qu3D. Quantum 3D Imaging at high speed and high resolution	Italia, Grecia, Suiza, República Checa.
7	QuantHEP. Quantum Computing Solutions for High-Energy Physics	Portugal, Italia y Letonia
8	QuCoS. Quantum Computation with Schrödinger cat states	Francia, Alemania, Rumanía e Israel
9	QuiCHE. Quantum information and communication with high-dimensional encoding	Italia, Alemania, Reino Unido, Francia, Polonia
10	SECRET. SECuRe quantum communication based on Energy-Time/time-bin entanglement	Suecia, Italia y España
11	ShoQC. Short-range optical Quantum Connections	Alemania, Italia, Dinamarca, Bélgica, Francia, República Checa
12	SiUCs. Superinductor-based Quantum Technologies with Ultrastrong Couplings	España, Alemania, Francia, Italia y Eslovaquia

Convocatoria nacional APCIN 2019-2

Proyecto 1

ApresSF. Application-ready superresolution in space and frequency

The wave-particle duality of light introduces two fundamental problems to imaging: the diffraction limit and photon shot noise. With quantum information theory one can tackle both of them with a single holistic formalism: model the light as a quantum object, consider any quantum measurement, and pick the one that gives the best statistics. While Helstrom pioneered the theory and first applied it to incoherent imaging back in the 1970s, it was not until recently that the approach offered genuine surprises on the age-old topic by predicting a new class of superior imaging methods.

For the resolution of two sub-Rayleigh sources, such as stars or microscopic fluorophores, novel methods have very recently been theoretically and experimentally shown to outperform direct imaging, reaching the true quantum limits. Further efforts to generalize the theory for arbitrary sources suggest that, despite the existence of harsh quantum limits, the quantum-inspired methods can still offer significant improvements over direct imaging, potentially rendering more applications in astronomy, as well as in fluorescence microscopy. Such protocols for quantum-enhanced parameter estimation can also be applied to measure time or frequency with very high accuracy.

Given the know-how of the partners, in the proposed project we plan to design, systematically study and implement engineered coherent measurements in order to push the metrological resolution in space, time and frequency to its limits, at the same time making it available for technological and industrial applications.

IP: University of Gdańsk, Polonia

Socios: University of Paderborn (Alemania), Palacky University (República Checa), Universidad Complutense (España), Sorbonne Université (Francia) y Cailabs (Francia).

Presupuesto total: 925.505€

Concedido ES: 119.900€

Proyecto 2

C'MON-QSENS!. Continuously Monitored Quantum Sensors: Smart Tools and Applications

Acquiring and interpreting data about physical processes is vital for science and technology. C'MON-QSENS!'s targeted breakthrough is to develop tools to interpret data acquired from quantum sensors. Indeed, quantum-enhanced ultra-precise sensors are among the most disruptive quantum technologies with near-term applications in several disciplines, but with a limited reach so far.

Most efforts are devoted to the measurement of static properties by singleshot or repeated measurement schemes, while many real-world applications are concerned with dynamical signals. Extracting information from time-series of data needs sensors operating in the continuously monitored regime, and here is where the interdisciplinary approach of C'MON-QSENS! emerges. We aim to develop continuously monitored hot atomic ensembles and optomechanical devices, and we pursue their application in a collaboration with leading experimentalists and theory researchers in quantum information theory, statistical inference and classical signal processing. We will create a unique synergy to close the interdisciplinary gap, so modern methods of (classical) signal processing and data inference can be incorporated within the context of quantum metrology.

IP: Universitat Autònoma de Barcelona, España

Socios: University of Warsaw (Polonia), Aarhus University (Dinamarca), Weizmann Institute of Science (Israel), Chalmers University of Technology – (Suecia) y University of Nottingham (Reino Unido).

Presupuesto total: 1.200.359€

Concedido ES: 138.000€

Proyecto 4

MAQS. Magnetic-Atom Quantum Simulator

We propose to realize a novel quantum simulator made of magnetic atoms in periodic potentials, which will enable the investigation of quantum-many body problems associated with long-range dipole-dipole interactions.

Our proposal is based on a series of key new developments. We will develop new tools to increase the strength of dipole-dipole interactions (shorter-period UV lattices, magneto-association of magnetic atoms into molecules with a stronger magnetic moment), and to control and measure their interaction at the nano-scale (using super-resolution techniques and narrow spectroscopic lines). We will develop new probes to certify the presence of quantum correlations, which are expected to be particularly strong in these many-body long-range interacting systems. We will either probe correlations in real space (microscope, double-well lattices), in momentum space (Doppler spectroscopy), or in the spin sector. These probes will be developed in a joint theory-experiment endeavor, to find the best ways to define and quantify entanglement.

IP: CNRS, Francia

Socios: ENS of Lyon (Francia), Institut für Quantenoptik und Quanten-information (Austria), Universität Stuttgart (Alemania), Istituto Nazionale di Ottica (Italia), Institute of Photonic Sciences (España) y Instytut Fizyki Polskiej Akademii Nauk (Polonia).

Presupuesto total: 1.203.780€

Concedido ES: 120.000€

Proyecto 10

SECRET. SECuRe quantum communication based on Energy-Time/time-bin entanglement

Quantum communications (QC) is one of the main areas of the broader field of Quantum Technologies. The most well-known application of QC is in communication security, where huge progress has been observed since the first demonstrations of quantum key distribution (QKD). Another important application of QC is as the support backbone for future networks of quantum computers, the so-called Quantum Internet.

Entanglement is a crucial resource in both applications. It allows a higher level of security in QKD, as well as being a requirement in many Quantum Internet communication protocols. Therefore it is very important to ensure that entanglement can be certified, and a very popular way to do it is through a Bell inequality violation.

A particularly important type of photonic entanglement is called energy-time (ET). It has been very popular over the last 25 years or so, since it is very robust against disturbances that affect other types of entanglement over optical fibers. The downside has been that most experimental implementations employ the famous “Franson’s configuration”, which has an inherent flaw called the post-selection loophole that invalidates a Bell inequality violation, unless extra assumptions are present. All members of this consortium have been responsible for proposing and carrying out the first, and so far only performed, QC experiments based on ET (and its pulsed version called time-bin) entanglement that do not present the post-selection flaw, and thus can be used to perform experiments based on “genuine” ET/time-bin entanglement.

IP: Linköping University, Suecia.

Socios: INFN (Italia) y Universidad de Sevilla (España)

Presupuesto total: 340.000€

Concedido ES: 85.000€

Proyecto 12

SiUCs. Superinductor-based Quantum Technologies with Ultrastrong Couplings

Superconducting quantum circuits form one of the most promising solid state platforms for quantum computing. This success builds on the naturally large interaction between light, represented by microwave signals, and matter, embodied by superconducting qubits.

Microwave photons are used at every stage of quantum information protocols: qubit manipulation, qubit readout and qubit-qubit coupling. To describe this rich and ubiquitous light-matter interaction, the community has relied so far on the conceptual tools inherited from quantum optics. However, atoms and photons interact weakly, perfectly justifying the use of the rotating wave approximation (RWA), which states that non-resonant processes can be safely neglected. The situation with superconducting circuits is quite different since qubits can literally be wired to transmission lines carrying microwave photons. And limitations of the RWA have already been pointed out for qubit readout or driven-dissipative protocols.

SiUCs will follow a radically new approach: we will harness the potentiality of very large light-matter coupling -often referred to as ultra-strong coupling- instead of fighting it. In order to address this challenging approach in a controlled way, we will develop an architecture based on superinductors. Resonators and transmission lines built from such components display impedances close to the quantum of resistance ($RQ \sim 6.5 \text{ k}\Omega$) at gigahertz frequencies, with very low losses, allowing a boost in light-matter interaction. SiUCS will more specifically focus on improving the efficiency of qubit operations involving light-matter interactions. In addition, superinductors will be used to engineer a missing device of the superconducting quantum circuit toolbox: the microwave single photon detector. Finally, unique many-body physics associated to ultrastrong couplings will be investigated thanks to purposely designed quantum simulators.

IP: Barcelona Supercomputing Center, España

Socios: Institute of Technology (Alemania), Regensburg University (Alemania), Slovak Academy of Science, (Esovaquía), CNRS (Francia) y CNR (Italia)

Presupuesto total: 1.285.917€

Concedido ES: 134.400€

Borrador V5



Iniciativas Geográficas



CYTED - Programa Iberoamericano de Ciencia y Tecnología para el Desarrollo

CYTED es el Programa Iberoamericano de Ciencia y Tecnología para el Desarrollo, creado por los gobiernos de los países iberoamericanos para promover la cooperación en temas de ciencia, tecnología e innovación para el desarrollo armónico de Iberoamérica.

Cyted logra sus objetivos a través de diferentes instrumentos de financiación que movilizan empresarios, investigadores y expertos iberoamericanos y les permiten capacitarse y generar proyectos conjuntos de investigación, desarrollo e innovación. Es así que los países que integran el Programa CYTED logran mantenerse actualizados en los más recientes avances y desarrollos científico tecnológicos.

Desde su creación en 1984 han participado en el Programa más de 28.000 empresarios, investigadores y expertos iberoamericanos en áreas prioritarias del conocimiento.

Los resultados del Programa incluyen la generación de proyectos de I+D estratégicos donde participan empresas y expertos que desde la plataforma de cooperación de CYTED acceden a importantes fondos internacionales.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número de convocatorias conjuntas: 4(2016; 2017; 2018; 2019)

Participación de MINECO-AEI en convocatorias conjuntas: 4(2016; 2017; 2018; 2019)

Convocatoria conjunta 2016: Convocatoria de “Proyectos en temas estratégicos”

Países participantes	Tema 1: Alimentos Funcionales: Argentina, España, Guatemala, México, Nicaragua y Perú Tema 2: Cambio Climático y desarrollo socio-económico marino-costero: Argentina, Cuba, España, Guatemala, México, Nicaragua, Perú y Portugal
Temáticas	1) Alimentos funcionales. 2) Cambio climático y desarrollo socioeconómico marino-costero.
Concedido ES	223.820 €
Proyectos aprobados	2
Proyectos con MINECO/AEI	2 (2 coordinados)

Convocatoria APCIN 2017

Proyecto 1

PROINFANT. Alimentos vegetales con funcionalidad probiótica para poblaciones infantiles desnutridas

El concepto de “Alimento Funcional” surge en países desarrollados en los que los consumidores demandan alimentos que, además de sus cualidades nutricionales, promuevan un mejor estado de salud y bienestar y/o reduzcan el riesgo de padecer enfermedades. En el ámbito de actuación sobre poblaciones que sufren carencias nutricionales crónicas, como ciertos colectivos infantiles de estratos sociales desfavorecidos, el desarrollo de un alimento funcional permitirá, por un lado, paliar la falta de nutrientes si la materia prima autóctona seleccionada es rica en macro- y micro-nutrientes, y por otro, mejorar el estado de salud al incluir ingredientes funcionales que

supongan un beneficio para la misma. En este contexto pretendemos, como objetivo general, desarrollar alimentos vegetales de funcionalidad probiótica para paliar carencias nutricionales crónicas y problemas de salud en poblaciones infantiles iberoamericanas desfavorecidas.

IP: Patricia Ruas Madiedo, Instituto de Productos Lácteos de Asturias (IPLA-CSIC), España

Socios: Argentina (INTA-FAMAILLA, IBR-CONICET, CERELA-CONICET, INQUINOVA - CONICET), Colombia (UDEA), España (UCM, UV), Guatemala (INCAP), Italia (UNIFG, UCSC), México (CIAD, ITV, ITESM), Nicaragua (UNAN) y Perú (UCSS)

Concedido ES: 40.000€+85.000€= 125.000€

Proyecto 2

PROTOCOL. Protección de frentes urbanos costeros frente al calentamiento global

Con este proyecto se pretende desarrollar una metodología de cálculo y establecer unas recomendaciones técnicas para el diseño de las protecciones costeras en frentes urbanos basándose en la cuantificación (1) de los agentes y acciones considerando sus diferentes escalas de afección y los escenarios previstos de ascenso del nivel del mar, (2) del riesgo en el frente urbano y (3) del rebase en función de las tipologías de protección y los escenarios previstos.

IP: Miguel Ortega Sánchez, Universidad de Granada, España

Socios: Chile (PUCV, UCM, UNAB, UPLA, UV), México (UNAM), Portugal (LNEC), Uruguay (Universidad de la República)

Concedido ES: 98.820€

Convocatoria conjunta 2017

Países participantes	
Temáticas	Investigación en diabetes y obesidad en Iberoamérica: desarrollo de tecnologías para prevención, diagnóstico y tratamiento. Línea; Utilización de residuos de biomasa en la producción de combustibles de transporte
Presupuesto total	
Concedido ES	223.820 €
Proyectos aprobados	
Proyectos con MINECO/AEI	2 (2 coordinados)

Convocatoria APCIN 2018

Proyecto 1

IBEROBDIA. Obesidad y Diabetes: Factores de Riesgo y Nuevos Biomarcadores Patogénicos y Predictivos.

IP: Alberto Cepeda Saez, Universidade de Santiago de Compostela, España

Socios: Argentina (CENEXA, CIDCA), Chile (UV, UCHILE), Colombia (UNAL), España (Universidade da Coruña), México (Centro de Atención al Diabético, UAEH).

Concedido ES: 88.000€ +12.000€= 100.000€

Proyecto 2

BIOMETRANS. Producción de Biometano para Combustible de Transporte a partir de Residuos de Biomasa

El proyecto BIOMETRANS busca fomentar la valorización de los residuos de biomasa seca y húmeda que se generan en la Región Iberoamericana, mediante la producción de biometano, y



fomentar su empleo como biocombustible de transporte. El objetivo general es valorizar los residuos de biomasa residual mediante la producción de biocombustibles de transporte, evaluando y haciendo disponible este recurso renovable, aplicando tecnologías y procesos innovadores de producción de biocombustibles que están próximos a su comercialización.

IP: María Dolores Hidalgo Barrio, Cartif, España

Socios: Colombia (UDES), México (CIATEJ), Perú (UCSM), Uruguay (IPTP), Guatemala (INGENIO LA UNION, S.A.)

Concedido ES: 99.175€

Convocatoria conjunta 2018

Países participantes	
Temáticas	
Presupuesto total	
Concedido ES	187.600 €
Proyectos aprobados	
Proyectos con MINECO/AEI	2 (1 coordinados)

Convocatoria APCIN 2019

Proyecto 1

PLADEMI. Plataforma de Desarrollo de Microrredes como Solución Base para Enclaves Estratégicos

En virtud de disponer de una estrategia base para formular soluciones energéticas sostenibles en Enclaves Estratégicos (EE) de Iberoamérica, se presenta una plataforma para diseño, implementación y validación de soluciones tipo microrred que atiendan las necesidades de estos enclaves con característica de suministro energético seguro, eficiente y resiliente. Para alcanzar este producto global se formula una metodología que incluye un proceso de identificación enclaves según criterios de localización, riesgo, vocación productiva y condición de suministro. Ya identificados los EE, se formula un proceso para su diseño y valorización, lo que a su vez es insumo para la implementación de dos pilotos en los que se aportará en el desarrollo de dispositivos de control local, sistema de monitoreo y control y un sistema de gestión de energía que indique las decisiones a tomar en busca del suministro energético de las características propuestas. Dichos pilotos se probarán y validarán bajo diferentes condiciones de operación asociadas a los EE ya identificados. Todo el proceso se acompaña de un seguimiento sobre el cual se elaborará una guía de buenas prácticas para el planeamiento, diseño e implementación de este tipo de soluciones.

IP: Guillermo Jiménez Estévez, Universidad de Chile, Chile

Socios: España (CARTIF)

Concedido ES: 90.600€

Proyecto 2

MICROPROD-SOLAR. Microrredes para el Autoabastecimiento Solar de Entornos Productivos Aislados

Este proyecto tiene como objetivo desarrollar un conjunto de instrumentos de análisis y toma de decisiones que justifiquen y favorezcan la implantación de microrredes energéticas distribuidas para el autoabastecimiento de enclaves productivos aislados en Iberoamérica. El tipo de suministro a considerar incluirá tanto el de electricidad como el de calor de proceso y frío industrial, en ambos casos de origen solar, sin perjuicio de otras aportaciones renovables en

aquellos casos que el recurso disponible lo permita. Este objetivo se desarrollará a través de una intensificación inicial en las siguientes actividades productivas, seleccionadas en base a la experiencia y capacidades de los miembros de consorcio (CIESOL, CSET, Inventive Power y SOLATOM) y a su pertinencia por su localización geográfica y potencial de desarrollo en los países a los estos miembros pertenecen (España, Chile y México): 1) el autoabastecimiento energético de pequeñas industrias o comunidades dedicadas a la elaboración del vino y destilados, 2) granjas pecuarias dedicadas al tratamiento y conservación de la leche y sus derivados y 3) industrias conserveras cultivos tradicionales (espárrago, frijol,...).

IP: Manuel Pérez García, Universidad de Almería, España

Socios: España (SOLATOM), México (INVENTIVE POWER), Chile (CSET)

Concedido ES: 97.000€

Convocatoria conjunta 2019

Países participantes	España, Colombia, México, Perú, Chile
Temáticas	Técnicas avanzadas para el tratamiento del agua: vida y sostenibilidad Enfermedades cardiovasculares
Presupuesto total	520.000
Concedido ES	100.000 €
Proyectos aprobados	3
Proyectos con MINECO/AEI	1 (1 proyecto coordinado)

No.	Acronimo y título del proyecto	Países participantes
1	TALGENTOX. Análisis y gestión de los riesgos asociados a la presencia de cianotoxinas en aguas y desarrollo de tecnologías limpias para su eliminación: hacia una mejora de la salud pública	España, Colombia, México, Perú, Chile
2	P919PTE0038. Utilización de un modelo innovador basado en comunidad, para el manejo y el seguimiento por personal de salud no médicos (PSNM), para mejorar la conciencia, el tratamiento y el control de la Hipertensión Arterial (HTA)	Chile, Perú, España, Paraguay, República Dominicana
3	P919PTE0021. Aislamiento y obtención de análogos de metabolitos activos para el escalamiento de un prototipo farmacológico con efectos cardiovasculares	España, Paraguay

Convocatoria nacional PCI 2020-1

Proyecto 1

TALGENTOX. Análisis y gestión de los riesgos asociados a la presencia de cianotoxinas en aguas y desarrollo de tecnologías limpias para su eliminación: hacia una mejora de la salud pública.

Los procesos de eutrofización y cambio climático están provocando la aparición y proliferación masiva de cianobacterias y, por consiguiente, de cianotoxinas en las aguas de casi todos los ecosistemas y climas de la Tierra, por lo que se ha convertido en un problema de relevancia global. Ante esta situación, el proyecto TalGenTox plantea el desarrollo de un sistema sostenible de gestión del riesgo a la exposición de cianotoxinas contenidas en el agua incluyendo, a su vez, la propuesta de tratamientos eficientes, respetuosos con el medio ambiente y económicos para eliminar dichos compuestos del recurso hídrico considerado. La consecución de este objetivo garantizaría una mejora en la calidad del agua y, por tanto de la salud pública, favoreciendo el



crecimiento sostenible de la población. En este contexto, el proyecto propone la estandarización de una metodología que permita determinar inicialmente y predecir en una etapa de desarrollo del proyecto más avanzada, la presencia de cianotoxinas en una amplia variedad de enclaves acuáticos. Asimismo, se aborda la selección, desarrollo y optimización de la tecnología (basada en procesos de oxidación avanzada) para garantizar la completa eliminación de cianobacterias y cianotoxinas en los diferentes escenarios evaluados.

IP: Universidad Autónoma de Madrid, España

Socios: España, Colombia, México, Perú, Chile

Concedido: 100.000€

Concedido ES: 229.600€

Borrador V5



Convocatoria de Proyectos conjuntos España - Japón

El Ministerio de Economía, Industria y Competitividad, a través de la **Agencia Estatal de Investigación (AEI)**, participa en la convocatoria 2018 de proyectos conjuntos de investigación sobre nanomedicina, en el marco del Memorando de cooperación entre la Agencia de Investigación Médica de Japón (AMED) y la Secretaría de Estado de Investigación, Desarrollo e Innovación del Ministerio de Economía, Industria y Competitividad.

La convocatoria está dirigida a jóvenes investigadores y contempla las siguientes líneas de investigación:

- a. Diagnóstico;
- b. Nuevos tratamientos, compuestos y sistemas de liberación dirigida.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número de convocatorias conjuntas: 1(2018, 2020-2)

Convocatoria conjunta 2018

Países participantes	España, Japón
Temáticas	Nanomedicine
Presupuesto total	867.723€
Concedido ES	389.000 €
Proyectos aprobados	3
Proyectos con MINECO/AEI	3

No.	Acrónimo y título del proyecto	Países participantes
1	AMYLIGHT. Development of phototherapeutic strategies for amyloid-related diseases enabled by a nanoscale view of amyloid photodamage	Japón, España
2	COnCorD. Drug delivery targeting Brain CPT1: a novel nanomedicine-based approach to fight obesity and cancer	Japón, España
3	Nano-ReBrain. Nano-scaffolding for neuronal migration and regeneration	Japón, España

Convocatoria nacional APCIN 2018

Proyecto 1

AMYLIGHT. Development of phototherapeutic strategies for amyloid-related diseases enabled by a nanoscale view of amyloid photodamage

IP:

Socios: Japón (University of Tokyo), España (IMDEA Nanociencia)

Presupuesto total: 309.028€

Concedido ES: 146.500€

Proyecto 2

COnCorD. Drug delivery targeting Brain CPT1: a novel nanomedicine-based approach to fight obesity and cancer

**IP:**

Socios: Japón (Innovation Centre of Nanomedicine (iCONM)), España (Universidad Internacional de Cataluña)

Presupuesto total: 308.434€

Concedido ES: 147.500€

Proyecto 3

Nano-ReBrain. Nano-scaffolding for neuronal migration and regeneration**IP:**

Socios: Japón (Nagoya City University), España (Network Center for Biomedical Research in Neurodegenerative Diseases (CIBERNED))

Presupuesto total: 256.028€

Concedido ES: 95.000€

Convocatoria conjunta 2020-2

Países participantes	España, Japón, Polonia, Turquía, Francia, Noruega, Alemania, República Checa, Hungría, Lituania, Eslovaquia.
Temáticas	EIG-CONCERT JAPAN A focus on a specific scientific or technological domain e.g. nanotechnology, chemistry, etc. A focus on a specific policy issue area (e.g. Water, climate change, etc.) A focus on a particular region (e.g. Mediterranean, Balkan etc.)
Presupuesto total	
Concedido ES	630.000 €
Proyectos aprobados	5
Proyectos con MINECO/AEI	5

No.	Acronimo y título del proyecto	Países participantes
1	DISSIMILAR. Detection of fake news on social media platforms	España, Japón, Polonia
2	ORACLE. Organically resilient and secure wireless networks for next generation iot technologies to serve future connected societies	Alemania, Japón, España, Turquía
3	DARUMA. Deep learning anticipated urban mobility peaks	Alemania, Japón, España, Hungría
4	FAVPQC. Formal analysis and verification of post-quantum cryptographic protocols	España, Japón, Francia, Turquía
5	3VRUT. Assessment of transformations in vitality, vulnerability and versatility of rural towns	Alemania, Japón, Polonia, España

Convocatoria nacional APCIN 2020-2

Proyecto 1

DISSIMILAR. Detection of fake news on social media platforms. Los medios digitales han cambiado el modelo clásico de los medios de comunicación, que considera el emisor de un mensaje y un receptor pasivo, a un modelo en que los usuarios de los medios digitales son capaces de apropiarse de los contenidos, recrearlos y hacerlos circular. En este contexto, las redes sociales en línea son un circuito adecuado para la distribución de noticias falsas y la difusión de desinformación. En particular, las herramientas de edición de fotos y videos y los avances recientes en inteligencia artificial permiten a los no profesionales editar fácilmente documentos multimedia y crear falsificaciones profundas. Para evitar la propagación de la



desinformación, algunas redes sociales en línea implementan métodos para filtrar el contenido falso. Aunque este puede ser un método eficaz, su enfoque centralizado otorga un enorme poder al administrador de estos servicios. Alineado con los objetivos de desarrollo sostenible (ODS) de las Naciones Unidas, más concretamente con los objetivos 9 (Industria, innovación e infraestructura) y 16 (Paz, justicia e instituciones sólidas), este proyecto está dirigido a proporcionar a los creadores de contenidos herramientas para marcar sus creaciones y hacer que cualquier modificación sea fácilmente detectable. Además, este proyecto ofrecerá a los usuarios de redes sociales en línea herramientas basadas en el procesamiento de señales de última generación y métodos de aprendizaje automático para detectar contenido falso. La combinación de las herramientas de detección y marcas de agua permitirá a los usuarios discernir entre contenidos multimedia originales y falsos sin la necesidad de evaluación y control de ningún servicio centralizado. Además, este proyecto se desarrollara utilizando un enfoque de diseño centrado en el usuario. Para construir las herramientas más efectivas y tener en cuenta la dimensión cultural y la diversidad de usuarios finales, este proyecto llevara a cabo un estudio integral de la experiencia del usuario.

IP: Fundació per a la Universitat Oberta de Catalunya. España

Socios: Japón, Polonia

Presupuesto total:

Concedido ES: 120.000€

Proyecto 2

ORACLE. Organically resilient and secure wireless networks for next generation IOT

technologies to serve future connected societies. La internet de las cosas de nueva generación (ng-iot), impulsada por la flexibilidad, la amplia gama de velocidades de datos, la heterogeneidad, latencia ultra baja, inteligencia y capacidades de usuario masivas ofrecidas por las redes 5g y 6g, será el principal motor del crecimiento económico y del desarrollo humano en las próximas décadas. Un impacto importante de 5g/6g y ng-iot, entre otros, es que estas tecnologías permitirán al usuario emplear sensores y dispositivos móviles de forma más eficaz y eficiente, de acuerdo con sus necesidades y con las características del entorno de operación. Mientras que hoy en día se accede a la mayoría de los servicios conectados desde una aplicación o sitio web con un teléfono inteligente, con la ng-iot estos servicios serán proporcionados por una multitud de dispositivos integrados en el propio ambiente. Sin embargo, en tal escenario, la seguridad -y en particular, la seguridad ligera, integrada, inteligente y ubicua- se convierte en una necesidad absoluta, sin la cual la ng-iot es inviable ya que la información sensible de los usuarios, como datos personales, relacionados con la salud y financieros, quedaría expuesta. En un entorno como en el descrito, el acceso seguro a la información requiere una autenticación continua de los usuarios y la proliferación de servicios hace que la autenticación basada en contraseñas degrade la experiencia del usuario y provoque malas praxis en la generación y custodia de las mismas. A lo anterior se puede añadir el hecho de que con la ng-iot, los usuarios interactuaran diariamente con innumerables dispositivos, muchos de los cuales se comportaran de manera autónoma, y el potencial riesgo en términos de vulnerabilidades de información privada y sensible es claro.

IP: Jacobs University Bremen. Alemania

Socios: Japón, España (CSIC), Turquía

Presupuesto total:

Concedido ES: 120.000€

Proyecto 3

DARUMA. Deep learning anticipated urban mobility peaks. Este proyecto describe la propuesta científico - técnica del equipo español dentro del proyecto colaborativo DARUMA (deep learning anticipated urban mobility peaks), en el marco del grupo de interés EIG Concert-Japan.



La propuesta general del proyecto tiene como referencia la crisis del covid-19 y los profundos cambios que ha provocado en nuestra forma de vida y en los patrones de movilidad urbana. Algunos de estos cambios han sido repentinos, mientras otros se están produciendo durante un periodo más amplio de adaptación a la nueva situación. Los factores desencadenantes del cambio se pueden calificar como "hard" y "soft". Con la noción de "hard" nos referimos a las regulaciones y actuaciones tomadas por las diversas autoridades tanto a nivel local, como regional o nacional. "soft" se refieren a los cambios Como consecuencia de la información que se difunde dentro de la propia sociedad, incluyendo las tendencias de las redes sociales y otras informaciones (falsas o verdaderas) que se difunde rápidamente. El objetivo de este proyecto es relacionar la aparición de tales tendencias con patrones de movilidad.

IP: Technical University of Munich. Alemania

Socios: Japón, España (Universidad Complutense de Madrid) y Hungría

Presupuesto total: 309.028€

Concedido ES: 120.000€

Proyecto 4

FAVPQC. Formal analysis and verification of post-quantum cryptographic protocols

En este proyecto, desarrollamos protocolos criptográficos post-cuánticos y los analizamos formalmente usando un software, llamado Maude-NPA (http://maude.cs.illinois.edu/w/index.php/maude_tools:_maude-mpa). Maude-NPA es una herramienta gratuita de análisis de protocolos de seguridad criptográficos que tiene en cuenta las propiedades algebraicas del criptosistema. A veces, las propiedades algebraicas pueden descubrir debilidades de los criptosistemas y, en otros casos, son parte de los supuestos de seguridad del protocolo. Maude-mpa tiene una base teórica en la lógica de reescritura, la unificación de ecuaciones y el estrechamiento. Se puede usar para razonar sobre una amplia gama de propiedades criptográficas, incluida la cancelación del cifrado y el descifrado, exponenciación Diffie-Hellman, emparejamientos bilineales o o-exclusivo y algunas aproximaciones del cifrado homomórfico. El proyecto tiene como objetivo el análisis formal de protocolos criptograficos post-cuanticos centrandose en los basados en reticulos y en codigo. Por lo que sabemos, no existe una herramienta de analisis formal conocida para estos protocolos. Además, se sabe que el analisis formal de los criptosistemas post-cuanticos no se ha estudiado en profundidad.

IP: Polytechnic University of Valencia. España

Socios: Japón, Francia, Turquía

Concedido ES: 150.000€

Proyecto 5

3VRUT. Assessment of transformations in vitality, vulnerability and versatility of rural towns

Las regiones rurales, tanto de Europa como de Japón, están bajo presión por crisis globales emergentes, como pandemias globales, migración relacionada con refugiados, despoblación rural relacionada con la economía, y cambio climático relacionado con el medio ambiente. Las comunidades de las regiones rurales necesitan con urgencia estrategias para mejorar su resiliencia. Sin embargo, dichas estrategias aparecen dispersas y, a menudo, se basan solo en síntomas e indicadores tangibles y visibles, por lo que se descuidan muchos aspectos intangibles pero cruciales.

El propósito de 3VRUT es desarrollar una metodología para evaluar, cuantificar y clasificar los riesgos y amenazas que existen en la relación entre el ciberespacio y el espacio físico en entornos rurales del mundo desarrollado. Para ello, es fundamental comprender las 3 V (vitalidad, vulnerabilidad y versatilidad) de las sociedades rurales. Su evaluación se realizará mediante una combinación de enfoques para estudiar las tendencias de la población, el envejecimiento, el transporte y los desplazamientos, la agricultura y la disponibilidad de alimentos, la morfología



urbana y la transición del paisaje, la electricidad, el agua y la conectividad digital en dos pueblos rurales por país en Japón, Alemania, Polonia y España. El objetivo directo del estudio es combinar tecnologías de teledetección con tecnologías de aprendizaje automático e inteligencia artificial (IA) para detectar y predecir cambios en el comportamiento socioeconómico y las oportunidades del entorno rural.

IP: Technical University of Munich.Alemania

Socios: Japón, Polonia, España (Universitat Politecnica De Catalunya)

Presupuesto total:

Concedido ES: 120.000€

Borrador V5

PRIMA - Partnership for Research and Innovation in the Mediterranean Area

La propuesta del Partenariado para la Investigación e Innovación en el Área del Mediterráneo (PRIMA) tiene como objetivo desarrollar soluciones innovadoras para mejorar la eficiencia y la sostenibilidad de las producciones alimentarias y la calidad / disponibilidad del agua, con el fin de apoyar el bienestar inclusivo y el desarrollo socioeconómico en la zona mediterránea y contribuir a los objetivos de adaptación al cambio climático de la UE. Los Estados miembros que participan en la propuesta de programa conjunto son Croacia, Chipre, Francia, Grecia, Italia, Malta, Portugal, Eslovenia y España. Los participantes de terceros países son: Argelia, Egipto, Jordania, Líbano, Marruecos, Túnez y Turquía.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas: 5 (2018-1; 2018-2; 2018-3; 2018-4; 2019)

Participación de MINECO-AEI en convocatorias conjuntas: 1 (2018-4, 2019)

Convocatoria conjunta internacional 2018

Países participantes	Argelia, Croacia, Chipre, Egipto, Francia, Alemania, Grecia, Israel, Italia, Jordania, Líbano, Luxemburgo, Malta, Portugal, Eslovenia, España, Túnez, Turquía
Temáticas:	1.1 Water resources availability and quality within catments and aquifers 1.2 Sustainable, integrated water management 1.3 Irrigation technologies and practices 2.1 Adaptation of agriculture to climate change 2.2 Preventing and controlling emergence of animal and plant pests and diseases 2.3 Developing farming systems able to generate income, to create employment and to contribute to a balanced territorial development 3.1 Valorising food products from traditional Mediterranean diet 3.2 Food safety in local food chains 3.3 Implications of dietary shifts and sustainable diets for the Med populations and food industry
Presupuesto total	34.435.000 €
Presupuesto ES	2.164.700€
Proyectos aprobados	27
Proyectos con financiación AEI	12 (1 coordinado)

No.	Acrónimo y título del proyecto	Países participantes
1	CONSIRS. A novel Condensation Supported Greenhouse Irrigation System	Alemania, Argelia, Egipto, Túnez
2	MEDWATERICE. Towards a sustainable water use in Mediterranean rice-based agro-ecosystems	Italia, Egipto, España, Israel, Portugal, Turquía
3	PRECIMED. Precision Irrigation Management to Improve Water Use Efficiency in the Mediterranean Region	España, Argelia, Grecia, Túnez
4	INWAT. Quality and management of intermittent rivers and associated groundwaters in the Mediterranean basins (INWAT)	España, Argelia, Alemania, Francia, Italia, Jordania, Túnez, Turquía

5	Sustain-COAST. Sustainable coastal groundwater management and pollution reduction through innovative governance in a changing climate	Grecia, Alemania, Francia, Francia, Italia, Túnez, Turquía
6	SWATCH. Strategies for increasing the WATER use efficiency of semi-arid Mediterranean watersheds and agrosilvopastoral systems under climate CHange	Italia, Argelia, Chipre, Egipto, España, Francia, Túnez
7	ALTOS. Managing water resources within Mediterranean agrosystems by accounting for spatial structures and connectivities	Francia, España, Italia, Líbano, Marruecos, Túnez
8	KARMA. Karst Aquifer Resources availability and quality in the Mediterranean Area	Alemania, España, Francia, Italia, Líbano, Túnez
9	MEDSAL. Salinization of critical groundwater reserves in coastal Mediterranean areas: Identification, Risk Assessment and Sustainable Management with the use of integrated modelling and smart ICT tools	Grecia, Argelia, Alemania, Chipre, Italia, Túnez, Turquía
10	ADAPT-HERD. Management strategies to improve herd resilience and efficiency by harnessing the adaptive capacities of small ruminants	Francia, Egipto, España, Túnez
11	FREECLIMB. Fruit crops adaptation to climate change in the mediterranean basin	Italia, Argelia, Egipto, España, Francia, Grecia, Marruecos, Túnez, Turquía
12	GENDIBAR. Utilization of local genetic diversity to understand and exploit barley adaptation to harsh environments and for pre-breeding	Italia, Argelia, Alemania, Egipto, España, Túnez, Turquía
13	IMPRESA. IMProving RESilience to Abiotic stresses in durum wheat: enhancing knowledge by genetic, physiological and "omics" approaches and increasing Mediterranean germplasm biodiversity by crop wild relatives-based introgressiomics	Italia, Argelia, Túnez, Turquía
14	VEG-ADAPT. Adapting mediterranean vegetable crops to climate change-induced multiple stress	Italia, Alemania, España, Francia, Grecia, Jordania, Marruecos, Turquía
15	SIMTAP. Self-sufficient Integrated Multi-Trophic AquaPonic systems for improving food production sustainability and brackish water use and recycling	Italia, Alemania, Francia, Malta, Turquía
16	Blue-Med. A novel integrated and sustainable approach to monitor and control Bluetongue in the Mediterranean region	Italia, Egipto, Francia, Túnez
17	GeMed. Prevention and control of new and invasive geminiviruses infecting vegetables in the Mediterranean	Francia, Italia, Jordania, Marruecos, Túnez
18	INTOMED. Innovative tools to combat crop pests in the Mediterranean	Grecia, España, Francia, Marruecos, Portugal, Túnez
19	LAGMED. Improvement of preventive actions to emerging LAGoviruses in the MEDiterranean basin: development and optimisation of methodologies for pathogen detection and control	Portugal, Argelia, España, Francia, Italia, Túnez
20	Med-Berry. Developing new strategies to protect strawberry crop in Mediterranean countries	Italia, España, Francia, Marruecos, Turquía
21	ZeroParasitic. Innovative sustainable solutions for broomrapes: prevention and integrated pest management approaches to overcome parasitism in Mediterranean cropping systems	Grecia, Alemania, Egipto, España, Jordania, Malta, Marruecos, Túnez

22	ArtiSaneFood. Innovative Bio-interventions and Risk Modelling Approaches for Ensuring Microbial Safety and Quality of Mediterranean Artisanal Fermented Foods	Portugal, Argelia, España, Estados Unidos, Francia, Grecia, Italia, Marruecos, Túnez
23	MILKQUA. Milk quality all along the dairy chain for a sustainable MILK	Francia, España, Italia, Portugal, Túnez
24	MED4YOUTH. Mediterranean Enriched Diet for tackling Youth Obesity	España, Israel, Italia, Jordania, Portugal
25	BOOMERANG. Healthier bio-fortified Mediterranean grains	España, Argelia, Alemania, Egipto, Italia, Túnez, Turquía
26	SAFFROMFOOD. Valorisation of saffron and its floral by-products as sustainable innovative sources for the development of high added-value food products	España, Argelia, Alemania, Francia, Italia, Portugal
27	VEGGIE-MED-CHEESES. Valorisation of thistle-curdled CHEESES in MEDiterranean marginal areas	Italia, España, Grecia, Túnez

Convocatoria nacional: APCIN 2019

Proyecto 2

MEDWATERICE. Towards a sustainable water use in Mediterranean rice-based agroecosystems

The project aims at exploring sustainability of innovative irrigation options, in order to reduce rice water consumption and environmental impacts, and to extend rice cultivation outside of traditional paddy areas to meet the escalating demand. The MEDWATERICE consortium includes universities, research centres and private companies operating in the Mediterranean area (IT, ES, PT, EG, TR, IL). Case studies will be conducted in pilot farms of the countries involved in the project. Alternative irrigation methods to be tested will be tailored to local conditions using a participatory action research approach through the establishment of Stake-Holder Panels (SHPs) in each country, which will include regional authorities, water managers, farmers' associations and consultants, and private companies of the rice production chain. For each irrigation solution, innovative technologies and the most appropriate rice varieties and agronomic practices will be adopted to minimize impacts on yield quantity and quality. Data collected at the farm level will be extrapolated to the irrigation district level to support water management decisions and policies. Indicators for quantitative assessment of environmental, economic and social sustainability of the irrigation options will be defined

IP: Università degli Studi di Milano, Italia

Socios: Italia (Ente Nazionale Risi, Università Cattolica del Sacro Cuore), Egipto (Agricultural Research Center), España (**Universitat de Girona, Agencia Estatal Consejo Superior de Investigaciones Científicas, Tepro Consultores Agrícolas S.L.**), Israel (Netafim), Portugal (Instituto Politécnico de Coimbra, Universidade de Coimbra), Turquía (Black Sea Agricultural Research Institute)

Presupuesto total: 1.441.218€

Concedido ES: 105.000€+105.000€=210.000€

Proyecto 3

PRECIMED. Precision Irrigation Management to Improve Water Use Efficiency in the Mediterranean Region

Implement a data-driven irrigation management system in order to improve efficiency in the use of water in the Mediterranean area, integrating knowledge on fertilizers and irrigation systems with Technologies of Information and Communication (ICTs). Such a system will easily accessible and usable by end consumers through interfaces such as mobile phones, tablets or

computers. The Project will be able to collect one large amount of data, which will be processed and analyzed by the system; after that, it will provide feedback on what the needs of the crops are and recommendations to farmers with regards to vouchers irrigation and fertilization practices. The application of this irrigation technology will improve the lives of farmers in the Mediterranean and will also save water and fertilizers in a region with major water stress and contamination problems of the soil.

IP: Agencia Estatal Consejo Superior de Investigaciones Científicas, España

Socios: España (Odin Solutions), Argelia (National Institute of Agronomic Research of Algeria), Grecia (University of Thessaly), Túnez (University of Sfax)

Presupuesto total: 810.780€

Concedido ES: 230.000€

Proyecto 7

ALTOS. Managing water resources within Mediterranean agrosystems by accounting for spatial structures and connectivities

The ALTOS project aims to improve water management models for rainfed and irrigated agriculture, by considering the modulation of spatial structures and connectivities induced by hydro-agricultural infrastructures and practices (e.g., modulating regional land use to drive upstream / downstream water repartition). Four study sites are considered for integrated analysis in Morocco, Lebanon and Tunisia; and two study sites are considered for methodological developments in Spain and Italy. WP1 deals with monitoring and modelling tools for characterizing spatial structures. It includes the use of innovative sensors for structure observations, and of innovative methods for data processing. WP2 addresses innovative monitoring tools for characterizing processes induced by spatial structures (.e.g, water flows). It includes several protocols relying on complementary measurements. WP3 addresses innovative modelling for simulating individual (e.g., evapotranspiration) and combined (e.g., hydrological cycle) processes. It includes multi-objectives/multi-criteria calibration procedures relying on distributed/nested measurements. WP4 simulates matter fluxes and storages for possible structure modulations, to next conduct an integrated analysis with end-users on the basis of participative seminars. It also cross-analyses irrigated and rainfed agrosystems, by addressing vulnerabilities and adaptation margins. WP5 deals with (1) the sharing of data and methods within the ALTOS consortium, and (2) the results dissemination and exploitation. For this latter item, we rely on long-term collaborations with several stakeholders (farmer associations, resource managers, engineering offices). Expected outcomes are related to SDG #2 (sustainable agriculture), #6 (water supply services), and #12 (responsible consumption and production). ALTOS contributes to PRIMA outcome indicators, including (1) newly modelling routines, (2) new irrigation technologies, and (3) innovative farming system.

IP: Laboratoire d'Étude des Interactions Sol Agrosystème Hydrosystème (LISAH), Francia

Socios: Francia (Centre d'études spatiales de la biosphère), España (Institut de Recerca i Tecnologia Agroalimentàries), Italia (Università di Cagliari), Líbano (National Council for Scientific Research, Lebanese Agricultural Research Institute), Marruecos (Unverisité Caddi Ayyad), Túnez (Institut National Agronomique de Tunisie Rim Institut National de Recherche en Génie Rural, Eaux et Forêts Ecole Supérieure des Communications de Tunis Centre des Recherches et des Technologies des Eaux)

Presupuesto total: 1.114.235€

Concedido ES: 170.000€

Proyecto 8

KARMA. Karst Aquifer Resources availability and quality in the Mediterranean Area

The overarching objective of the proposed KARMA project is to achieve substantial progress in the hydrogeological understanding and sustainable management of karst groundwater resources in the Mediterranean area in terms of water availability and quality. KARMA will

contribute to the development and adoption of innovative and sustainable solutions for water management and, consequently, to the implementation of the UN SDG. Possible socio-economic benefits include creation of new jobs (in the field of water resources management), increased competitiveness of companies (sensor development, data processing for monitoring, early-warning systems), as well as social and environmental impacts (water availability and quality for humans and ecosystems). At catchment scale, five karst systems in Spain, France, Italy, Lebanon and Tunisia will serve as field observatories.

IP: Karlsruhe Institute of Technology, Alemania

Socios: Alemania (Bundesanstalt für Geowissenschaften und Rohstoffe), España (Universidad de Málaga), Francia (University of Montpellier), Italia (Università di Roma “La Sapienza”), Líbano (American University of Beirut), Túnez (Ecole National d’Ingénieurs de Tunis)

Presupuesto total: 1.457.224€

Concedido ES: 165.000€

Proyecto 10

ADAPT-HERD. Management strategies to improve herd resilience and efficiency by harnessing the adaptive capacities of small ruminants

The objective of the ADAPT-HERD project is to develop simulation tools capable of evaluating the consequences of management strategies at the herd level, under contrasting and varying environments (Egypt, France, Spain and Tunisia). Our approach considers that biological adaptive capacities of small ruminants can be fully integrated within management strategies to improve R and E by: i) using reproduction practices that provide the best match between herd demand and feed supply; ii) managing groups of animals based on their adaptive capacities (targeting interventions) and iii) managing herd demography to adapt animal numbers to future feed resources. The project will implement data acquisition at animal level (fine-grained experiments on adaptive capacities and phenotyping of local breeds) and at production system level (herd management, feed resource, climate and market conditions). Data will be combined and used in computer simulations to explore different climate change scenarios and management strategies and evaluate their effects on herd R and E. Interfacing modelling tools will be a key aspect of the project, fostering knowledge exchange and collaboration, especially with ongoing projects focusing on genetic selection and breeding solutions to improve R&E in small ruminants.

IP: Modélisation Systémique Appliquée aux Ruminants (MoSAR), Francia

Socios: Francia (Systèmes d’Elevage Méditerranéens et Tropicaux, Génétique Physiologie et Systèmes d’Elevage), Egipto (Animal Production Research Institute), España (Centro de Investigación y Tecnología Agroalimentaria), Túnez (Institut National de la Recherche Agronomique de Tunisie, Ecole Supérieure d’Agriculture du Kef)

Presupuesto total: 707.278€

Concedido ES: 170.000€

Proyecto 11

FREECLIMB. Fruit crops adaptation to climate change in the mediterranean basin

The FREECLIMB project is built to match topic 1.2.1 of the PRIMA (Sect. 2) framework in developing smart and sustainable farming systems in Mediterranean countries, to preserve natural resources (water and land use) by increasing production efficiency. This will be pursued by advancing knowledge on mechanisms of plant environmental adaptation and biotic/abiotic stress resilience. The project targets major fruit tree species with the aim of improving the availability of breeding and germplasm material adapted to limited external resources (input) and future climatic scenarios predicted for the Mediterranean area, through the characterization and exploitation of local biodiversity. The project will focus on key ideotypes elaborated in collaboration with Fruit Farming Actors (FFAs, breeders, nurseries, growers) with the core objective of providing a toolkit (diverse germplasm, tools and methods) to accelerate

exploitation, breeding and selection of resilient varieties in key traditional fruit crops of Mediterranean agriculture (stone fruits such as peach, apricot and almond; Citrus spp.; grape and olive).

IP: Università degli Studi di Milano (La Statale), Italia

Socios: Italia (Consiglio per la Ricerca in Agricoltura e l'Analisi dell'Economia Agraria, Università di Catania, CNR), Argelia (Ecole Nationale Supérieure, Agronomique Université Freres Mentouri Constantine I), Egipto (Agricultural Research Center), España (Centre de Recerca en Agrigenòmica), Francia (Génétique et Amélioration des Fruits et Légumes), Grecia (Institute of Plant Breeding and Genetic Resources, Hellenic Agricultural Organization Demeter), Marruecos (Institut National de la Recherche Agronomique), Túnez (Institut de l'olivier), Turquía (Cukurova University)

Presupuesto total: 1.763.450€

Concedido ES: 170.000€

Proyecto 12

GENDIBAR. Utilization of local genetic diversity to understand and exploit barley adaptation to harsh environments and for pre-breeding

GENDIBAR aims to achieve the following objectives: (i) harnessing barley diversity to detect new alleles that have the potential to cope with projected climate change, shifts of agroecological zones of the Mediterranean and resistance to powdery mildew, (ii) creating new knowledge and molecular tools to assess and appraise the genetic bases of heat tolerance and intolerance at vulnerable stages of barley development, (iii) providing new hypotheses for adopting better agricultural practices to minimize the effects of climate change in current and future Mediterranean environments, (iv) improving model-aided ideotype design for the different agro-ecological zones, (v) enabling the creation of tolerant and resilient barley varieties exploiting barley diversity. To reach the aforementioned objectives, GENDIBAR will (i) exploit the pattern of genetic variants detected in selected panels of barley landraces, (ii) combine morphological and RNA expression analyses to identify key genes involved in the differential response to heat stress during sensitive stages of barley development in field and controlled conditions, (iii) exploit morphological and physiological traits measured in Mediterranean landraces to improve crop simulation models for designing heat tolerant ideotypes and (iv) identifying other possible agricultural practices for barley farming, (v) conduct pre-breeding programs using cutting-edge technologies. Overall, GENDIBAR will provide new knowledge to fill the existing research gaps to adapt barley farming in relation to the projected climate change and shifts of the Mediterranean agroecological zones and will valorise barley biodiversity applying targeted pre-breeding

IP: Consiglio per la Ricerca in Agricoltura e l'analisi dell'economia agraria (CREA), Italia

Socios: Italia (Università degli Studi di Milano), Argelia (École Nationale Supérieure Agronomique), Alemania (Max Planck Institut für Pflanzenzüchtungsforschung), Egipto (Ain Shams University), España (Universidad de Lleida, Agencia Estatal Consejo Superior de Investigaciones Científicas-Estación Experimental Aula Dei), Túnez (University of Sfax Institute of Biotechnology), Turquía (TEKFEN Tarim)

Presupuesto total: 1.239.967€

Concedido ES: 128.000€+85.000€=213.000€

Proyecto 14

VEG-ADAPT. Adapting mediterranean vegetable crops to climate change-induced multiple stress

The main goal of our research is to understand how primary nitrogen and sulphur metabolism is regulated and coordinated and how they modulate growth and development. We are especially interested in the way other adverse environmental conditions like extreme temperatures and drought modulate nutrient status and nutrient stress responses. We are

conducting different high throughput genetic strategies, developing system biology tools, and a set of growth conditions to dissect the signalling pathways and the molecular and genetic mechanisms involved in the control of the nutrient status on growth and development. Arabidopsis and tomato and their relative wild species are used as models in the different research lines.

IP: Università degli Studi di Torin, Italia

Socios: Alemania (Leibniz Institute of Vegetable and Ornamental Crops), **España (Universidad de las Islas Baleares, Instituto Nacional de Investigación y Tecnología, Abiopep S.L.)**, Francia (Génétique et Amélioration des Fruits et Légumes), Grecia (Agricultural University of Athens, Agricultural Cooperative Notos), Jordania (National Agricultural Research Center), Marruecos (Institut National de la Recherche Agronomique Maroc), Turquía (Ege University, Menemen Chamber of Agriculture)

Presupuesto total: 2.041.695€

Concedido ES: 130.000€+86.000€=216.000€

Proyecto 19

LAGMED. Improvement of preventive actions to emerging LAGoviruses in the MEDiterranean basin: development and optimisation of methodologies for pathogen detection and control

In this project we will monitor Rabbits haemorrhagic disease (RHD) epidemiology in the Mediterranean basin and perform a genomic characterization of circulating strains. We will collect samples from wild rabbits and hares found dead in the field, through current collaborations and ongoing monitoring activities, but also from farm animals. Genomes of the strains will be used to develop more accurate, rapid and sensitive diagnostic tools, especially relevant for the rabbit-related industry, and develop cheaper and more efficient vaccines. Considering the dynamics of the strains, we expect to test and apply biosecurity measures to prevent outbreaks and better contain the disease in the field and in rabbit-production systems. Serological status of leporid populations will also be determined. We further expect to determine the role of the rabbit immune system for vaccine design. This might be useful for containing disease outbreaks in rabbit production systems, particularly in countries located south to the Mediterranean basin. Information gathered within this proposal will be used to advise and train stakeholders and our partners in Africa on disease diagnosis and prophylaxis, and technical management. We expect to contribute to sustainable farming systems, particularly in Africa, by developing containing measures against a still emergent animal disease.

IP: CIBIO/InBIO-UP, Rede de Investigação em Biodiversidade e Biologia Evolutiva, Portugal

Socios: Argelia (Ecole Nationale Supérieure Vétérinaire - ENSV), **España (Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria, Universidad de Córdoba)**, Francia (Agence nationale de sécurité sanitaire de l'alimentation, de l'environnement et du travail, Office national de la chasse et de la faune sauvage, Institut National de la Recherche Agronomique), Italia (Istituto zooprofilattico sperimentale della Lombardia e dell'Emilia Romagna), Túnez (École Nationale de Médecine Vétérinaire de Sidi Thabet)

Presupuesto total: 902.400€

Concedido ES:120.000€+95.000€=215.000€

Proyecto 20

Med-Berry. Developing new strategies to protect strawberry crop in Mediterranean countries

Med-Berry will develop new strategies, materials and molecules to control strawberry fungal diseases in Mediterranean countries. For this Med-Berry Consortium will valorize local resistant germplasm, test new breeding technologies and RNAi based methods and assess their sustainability.

IP: Alma Mater Studiorum University of Bologna, Italia

Socios: Italia (Polytechnic University of Marche, University of Milan), **España (Universidad de Córdoba, Cifef, Viveros California)**, Francia (INRA), Marruecos (IAV), Turquía (University of Cukurova)

Presupuesto total: 1.290.000€

Concedido ES: 170.000€

Proyecto 22

ArtiSaneFood. Innovative Bio-interventions and Risk Modelling Approaches for Ensuring Microbial Safety and Quality of Mediterranean Artisanal Fermented Foods

The objective of this project is to develop efficient bio-intervention strategies, enhanced process criteria, and an easy-to-use food safety decision support IT tool for participating artisanal food producers, aiming to the reduction and control of food-borne pathogens in 15 artisanal fermented foods of meat or dairy origin produced in Portugal, Spain, Italy, France, Greece, Morocco, Tunisia and Algeria. The project will be developed through an integrated risk-based approach sustained by the concepts of (i) extensive tracking surveys in the artisanal food chains, in order to identify origin, routes of contamination, risk factors favouring pathogens' survival, and technological causes for lack of homogeneity in the quality/ safety of end-products; (ii) biopreservation, whereby functional starter cultures and natural extracts will be assessed as extra hurdles to ensure safety and extend shelf-life; (iii) fate studies of pathogens, and (iv) risk process modelling, for the delineation of the most effective bio-interventions, optimisation of process variables and norms/standards, and design of quality monitoring tools.

IP: Polytechnic Institute of Bragança, Portugal

Socios: Argelia (University of Oran I Ahmed BENBELLA), **España (Universidad de Córdoba)**, Estados Unidos (USDA Agricultural Research Service), Francia (Centre National Interprofessionnel de l'Economie Laitière, French Agency for Food, Environmental and Occupational Health and Safety), Grecia (Agricultural University of Athens), Italia (Università di Bologna), Marruecos (University Ibn Zohr), Túnez (MIHOUBI University of Manouba)

Presupuesto total: 1.451.806€

Concedido ES: 115.000€

Proyecto 27

VEGGIE-MED-CHEESES. Valorisation of thistle-curdled CHEESES in MEDiterranean marginal areas

The aim of Veggie Med Cheeses is to study and build upon existing cheese making technologies in order to: valorize traditional and typical local cheeses by meeting the world-wide increase demand of cheeses made by non-animal rennet; assess the technological and socio-economic viability of the utilization and valorization of spontaneous herbaceous plants in the Mediterranean as traditional alternatives to animal rennet; build up traditional knowledge and culinary heritage while establishing the conditions for better control of safety and quality of these traditional cheese and then to improve the traditional cheese-making value chain.

IP: Università Politecnica Delle Marche, Italia

Socios: Italia (Consiglio per la Ricerca in Agricoltura e l'Analisi dell'Economia Agraria), España (Universidad Católica San Antonio de Murcia), Grecia (Hellenic Agricultural Organization Demeter), Túnez (High Institute of Agronomy of Chott-Mariem Sousse University)

Presupuesto total: 989.750€

Concedido ES: 120.700€

Convocatoria conjunta internacional 2019

Países participantes	Alemania, Argelia, Argentina, Chipre, Croacia, Egipto, Eslovenia, España, Francia, Grecia, Israel, Italia, Líbano, Luxemburgo, Marruecos, Portugal, Túnez, Turquía
Temáticas:	<p>1- Thematic Area 1-Water management: Topic 2.1.1 RIA Bridging the gap between potential and actual irrigation performance in the Mediterranean Topic 2.1.2 RIA Management of low quality waters under water scarcity and climate change conditions</p> <p>2- Thematic Area 2-Farming systems: Topic 2.2.1 RIA Small scale farming systems innovation. Topic 2.2.2 RIA Use and management of biodiversity as a major lever of sustainability in farming systems</p> <p>2- Thematic Area 3-Agrofood chain: Topic 2.3.1 RIA Extending shelf-life of perishable Mediterranean food products Topic 2.3.2 RIA Enhancing horizontal and vertical integration in Mediterranean agro-food value-chains</p>
Presupuesto total	38 M€
Presupuesto ES	2.722.000€
Proyectos aprobados	30
Proyectos con financiación AEI	17 (2 proyectos coordinados)

No.	Acrónimo y título del proyecto	Países participantes
1	AdaMedOr. Adapting Mediterranean Orchards-science-based desing of resilient furit tree portfolios for the Mediterranean region.	Alemania, España, Marruecos, Túnez
2	Biodiversify. Boost ecosystem services through highly Biodiversity-based Mediterranean Farming System.	Argelia, Alemania, España, Francia, Grecia, Italia, Túnez
3	BIOFRESHCLOUD. Enhancing Mediterranean Fresh Produce Shelf-life using Sustainable Preservative Technologies and communicating knowledge on dynamic shelf-life using Food Cloud Services and Predictive Modelling.	Turquia, Alemania, Marruecos, Argentina
4	BioProMedFood. Bio-protective cultures and bioactive extracts as sustainable combined strategies to improve the shelf-life of perishable Mediterranean food	Croacia, España, Italia, Eslovenia, Turquía
5	BIORANGEPACK. Smart and innovative packaging, post-harvest rot management and shipping of organic citrus fruit	Italia, TúnEz, España, Argelia, Turquía, Francia
6	BrasExplor. Smart and innovative packaging, post-harvest rot management and shipping of organic citrus fruit	Argelia, España, Francia, Italia, Túnez, Turquía
7	CAMEL-SHIELD. Camel breeding systems: actors in the sustainale economic development of the northern Sahara territories through innovative strategies for natural resource management and marketing	Argelia, Francia, Itlia, Marruecos
8	CEREALMED. Enhancing diversity in Mediterranean cereal farming systems	Italia, Egipto, España, Grecia, Líbano, Marruecos, Turquía
9	DIVICIA. Use and management of Vicia species for sustainability	Francia, Argelia, Italia, Líbano, Marruecos, España, Portugal, Túnez
10	EADANMBRT. Evaluation and development of anaerobic membrane bioreactor (AnMBR) technology to promote unrestricted wastewater reuse and mitigate compromised surface water quality in the Mediterranean region	Egipto, Francia, España

11	EXPLOWHEAT. Exploring durum wheat genotypes to minimize drought stress impact on grain yield and nutritional quality	Argelia, España, Italia, Túnez
12	FEDKITO. FrEsh FooD sustainable paKaging in the circular ecOnomy	Francia, Grecia, Italia, Marruecos, Túnez
13	FIGGEN. Valorising the diversity of the fig tree, an ancient fruit crop for sustainable Mediterranean agriculture	España, Italia, Túnez, Turquía
14	Fish-PhotoCAT. Photocatalytic water remediation for sustainable fish farming	Egipto, Italia, Túnez
15	FRUALGAE. Sustainable technologies and methodologies to improve quality and extend product shelf life in the Mediterranean agrofood supply chain	Alemania, Egipto, Grecia, Italia, Portugal, Líbano
16	GREENPALM. Development of sustainable date palm-based agro systems by preserving their biodiversity.	Italia, Portugal, Túnez, Argelia
17	HALOFARMS. Development and optimization of halophyte-based farming systems in salt-affected Mediterranean soils	Túnez, Egipto, España, Francia, Italia, Portugal
18	HUBIS. Open innovation Hub for Irrigation Systems in Mediterranean agriculture	Francia, Argelia, Grecia, Marruecos, Portugal, España, Túnez
19	IDEWA. Irrigation and Drainage monitoring by remote sensing for Ecosystems and Water resources management	España, Italia, Marruecos
20	LEGU-MED. Legumes in biodiversity-based farming systems in Mediterranean basin	Italia, Alemania, Argelia, Croacia, Líbano, Túnez, España, Turquía
21	MEDISMART. Mediterranean Citrus: innovative soft processing solutions for S.M.A.R.T. (Sustainable, Mediterranean, Agronomically evolved, nutritionally enriched, Traditional) products	Egipto, España, Italia, Portugal, Turquía
22	Nano4Fresh. Nanomaterials for an environmentally friendly and sustainable handling of perishable products	España, Italia, Marruecos, Portugal
23	Pulping. Development of Pumpkin Pulp Formulation using a Sustainable Integrated Strategy	Argelia, Alemania, Egipto, Grecia, Portugal, Túnez
24	RESIDUE. Risk reduction of chemical residues in soils and crops – impact due to wastewater used for irrigation	Israel, España, Alemania, Italia
25	SmaCuMed. Smart irrigation cube for sustainable agriculture in the Mediterranean region	Alemania, Marruecos, Portugal, Túnez
26	SMARTIES. Real time smart irrigation management at multiple stakeholders' levels	Egipto, España, Francia, Italia, Luxemburgo, Marruecos, Túnez
27	StopMedWaste. Innovative Sustainable technologies to extend the shelf-life of Perishable MEDiterranean fresh fruit, vegetables and aromatic plants and to reduce WASTE	Italia, Chipre, Túnez, Turquía, España
28	SUPERTROUT. Improving Sustainability and PERformance of aquaculture farming system: breeding for lactococcosis resistance in rainbow TROUT	España, Grecia, Italia, Turquía
29	VALUEFARM. Valorization of Mediterranean small-scale FARMS by cropping wild UnExploited species	Portugal, Chipre, Turquía, España, Alemania, Egipto, Argelia, Grecia
30	WILDFOOD. Eating the wild: improving the value chain of Mediterranean Wild Food Products (WFP)	España, Italia, Portugal, Túnez, Argelia, Eslovenia

Convocatoria nacional: APCIN 2020

Proyecto 1

AdaMedOr. Adapting Mediterranean Orchards-science-based desing of resilient furit tree portfolios for the Mediterranean region.

AdaMedOr aims to assess the current agro-biodiversity of temperate fruit trees in the Mediterranean area (Objective 1) by mapping cultivar distributions, identifying promising cultivars and assembling a database on cultivar phenology and performance.

We will anticipate future tree performance with a novel state-of-the-art phenology modeling and climate impact projection framework (Objective 2), which will be used to estimate the thermal needs of Mediterranean tree cultivars, anticipate their future suitable ranges and map present and future chill and heat availability.

Controlled experiments will facilitate model refinement.

IP: Universidad de Bonn, Alemania

Socios: España, Túnez, Marruecos

Concedido ES: Centro De Investigación Y Tecnología Agroalimentaria de Aragón (CITA) 93.000 € + Agencia Estatal Consejo Superior De Investigaciones Científicas (CSIC) 95.000

Presupuesto total: 738.000€

Proyecto 2

Biodiversify. Boost ecosystem services through highly Biodiversity-based Mediterranean Farming System.

Biodiversify will implement a co-design approach, incorporating local experts and scientific knowledge, organised in 8 regional case studies that represent a wide range of systems and pedo-climatic conditions of the Mediterranean basin, such as:

Algeria: Diversified arable rotation and intercropping in the Setif Plain.

France: 1) Agroecological vineyard with multiservice cover crops in the Languedoc area; 2) Agroforestry systems in the Occitanie region.

Greece: 1) Agroecological vineyard with multiservice cover crop in the Central Macedonia region; 2) Intercropping of cereal and legumes in the Thessaloniki region.

Italy: Olive groves with multiservice cover crops and grazed crops in the Umbria region.

Spain: Biodiversified arable rotations in the Ebro valley region.

IP: Centre de Coopération Internationale en Recherche Agronomique pour le Développement - CIRAD, Francia

Socios: Francia, Argelia, Alemania, Grecia, Italia, España, Túnez

Concedido ES: 95.000 €

Presupuesto total: 1.273.600€

Proyecto 3

BIOFRESHCLOUD. Enhancing Mediterranean Fresh Produce Shelf-life using Sustainable Preservative Technologies and communicating knowledge on dynamic shelf-life using Food Cloud Services and Predictive Modelling.

The proposal aims to develop an integrated, innovative, and eco-friendly approach to assess optimal shelf-life and minimize food losses of strawberries and tomatoes produced in the Mediterranean region, by combining food bio-preservation technologies, food modelling, and Food Cloud tools.

IP: Universidad de Córdoba, España

Socios: Turquía, Alemania, Marruecos, Argentina

Concedido ES: 195.000 €

Presupuesto total: 704.000€

Proyecto 5

BIORANGEPACK. Smart and innovative packaging, post-harvest rot management and shipping of organic citrus fruit

The overall objective of the project is to increase the efficiency, sustainability and competitiveness of the post-farming processing chain of organic citrus fruit, by intervening in points of weakness and the unresolved problems of this supply chain. Consistently with the scope, specific objectives include:

i) Reduction of losses caused by post-harvest rots during storage and transportation, by treating the fruits with non-toxic, eco-friendly substances and bio-products

ii) raising of the quality standards of fresh fruits and juice by using molecular diagnostics for the detection of pathogenic quarantine fungi and mycotoxins and excluding fruits that do not comply with EU and EPPO phytopathological and toxicological standards;

iii) extension of the shelf-life of fresh fruit using biodegradable active biocoating and smart packaging;

iv) application of smart technologies (ICT-based technologies and machine learning techniques) to reduce shipping times and optimize the delivery of fruits to the targeted markets (20% increase in shipment efficiency and exclusion of complaints or cuts by GDO;

v) minimizing the waste of the industrial fruit transformation by recycling and exploiting the most of citrus pulp, the major by-product of juice and essence industry, by utilizing it as a raw material to produce a biodegradable and natural biocoating of fruit packaging, in accordance with the principles of circular economy and the standards of organic food

IP: Università degli Studi di Catania, Italia

Socios: Italia, Túnez, España, Argelia, Francia, Turquía

Concedido ES: Universidad de Valencia 95.000 € + Asoc. de Investigacion de Materiales Plasticos (Instituto Tecnológico del Plástico) 95.000 €

Presupuesto total: 1.282.397€

Proyecto 8

CEREALMED. Enhancing diversity in Mediterranean cereal farming systems

CerealMed will pursue and achieve the following specific objectives: evaluate the available wheat, lentil and chickpea biodiversity, both domesticated relatives and landraces, by testing collections/populations for adaptation to different environmental conditions, disease resistance and quality traits across the Mediterranean region, create new wheat, lentil and chickpea-related biodiversity through the development of “new germplasm” by inter-generic and interspecific crosses such the example of Tritordeum.

Valorise the wheat, lentil and chickpea biodiversity by re-designing and optimizing a sustainable wheat-based cropping system. Biodiversity-based agriculture practices considering the spatial and temporal combinations of wheat and legumes (rotation/consociation) will be tested under conservative agriculture management, together with the use of tailored microorganisms applications, to achieve relevant ecosystem targets.

Agricultural targets: new high nutritional, value-added food products as well as new alternative products from cereal straw or farming side products; Environmental targets: restoration of soil fertility, enrichment of soil biodiversity, reduction of chemical input (mineral fertilizer, pesticides). compare the different options of biodiversity-based wheat farming in respect to more traditional/local agricultural systems in term of environmental and technical-economic outcomes/consequences to assess their profitability and their sustainability at regional level.

Implement an integrated bioeconomic model for the assessment of the sustainability at farming level. **IP:**

Università degli Studi di Bari Aldo Moro, Italia

Socios: Italia, Egipto, España, Grecia, Líbano, Marruecos, Turquía

Concedido ES: Universidade de Santiago De Compostela 95.000 € + Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC) 95.000 €

Presupuesto total: 1.198.570€

Proyecto 9

DIVICIA. Use and management of Vicia species for sustainability

The project aims to exploit key agro-ecological functions of legumes to restore agro-biodiversity and improve sustainability and resilience of Mediterranean cereal cropping systems. The identification of a wide range of promising landraces and new productive drought-adapted genotypes of Vicia species will help to implement best practices of rotations, intercropping or mix-cropping. DiVicia will mitigate, through a participatory process, the downward spiral of soil fertility decline and food insecurity, with a major impact on improving the livelihoods of the rural populations. The project consortium will make use of its multidisciplinary expertise together with stakeholders, integrating tacit and scientific knowledge to propose innovative agronomic practices, new local and drought-adapted germplasms, and tools to support farmers in such transition.

IP: Groupe Ecole Supérieure d’Agricultures d’Angers Loire, ESA, Francia

Socios: Francia, Argelia, Italia, Líbano, Marruecos, España, Portugal, Túnez

Concedido ES: 148.000€

Presupuesto total: 1.000.000€

Proyecto 10

EADANMBRT. Evaluation and development of anaerobic membrane bioreactor (AnMBR) technology to promote unrestricted wastewater reuse and mitigate compromised surface water quality in the Mediterranean region

The technologies necessary for widespread unrestricted irrigation reuse across the Mediterranean are not at a level ready for municipal or market application.

Based on this, the project team will focus on development, advancement, and application of the emerging technology known as the anaerobic membrane bioreactor (AnMBR) for unrestricted wastewater reuse. Integrated testing of AnMBR technology for treatment of wastewaters in multiple participating countries will be performed, with a specific focus on mitigation of contaminants of emerging concern (CECs). In order to broaden the potential reuse application scenarios, low-impact membrane-based tertiary treatment will also be investigated and applied for these systems. Scale-up of AnMBR technology will be addressed using a pilot-scale system, specifically focusing on practical operational strategies to reduce greenhouse gas emissions and enhance energy recovery efficiency. Specific objectives of pilot-scale assessments will include increasing influent waste stream diversification and effluent methane valorization strategies. Operational practicality will be assessed by incorporating life cycle assessment analyses using collected data. Based on the experiments conducted, we will implement a plan for advancing AnMBR technology to a point where technology transfer to local/national stakeholders and responsible governance agencies can occur.

IP: Lebanese American University, LAU. Líbano

Socios: Egipto, Francia, España

Concedido ES: 140.000 €

Concedido total: 415.000€

Proyecto 16

GREENPALM. Development of sustainable date palm-based agro systems by preserving their biodiversity.

The main objective of this proposal is to conserve the biodiversity and improve the sustainability of Mediterranean date-palm agrosystems by genetic, microbiological and technological approaches.

GreenPalm focuses not only on conservation of genetic diversity of date palm cultivars with high added value, but also considers underexploited and neglected cultivars with culinary, cosmetics or medicinal roles.

IP: Consejo Superior de Investigaciones Científicas CSIC, España

Socios: Italia, Portugal, Túnez, Argelia

Concedido ES: 176.000 €

Concedido total: 703.600€

Proyecto 17

HALOFARMS. Development and optimization of halophyte-based farming systems in salt-affected Mediterranean soils

The overall objective of HaloFarMs is to develop and optimise sustainable and environmentally friendly new farming practices and producing systems based on the cultivation of halophytes, able to cope with soil and water salinization and to restore biodiversity. HaloFarMs will optimize The produced halophytes will be biochemically characterized for nutritional profile and functional properties; since these high added-value products can be used in the cosmetic, food and veterinary industries.

IP: Centre de Biotechnologie deBorj Cédria, CBBC, Túnez

Socios: Túnez, Egipto, España, Francia, Italia, PortugalConcedido: 176.000 €

Concedido ES: 145.000

Presupuesto total: 847.872€

Proyecto 18

HUBIS. Open innovation Hub for Irrigation Systems in Mediterranean agriculture

The main objective is to favour the emergence, evaluate and boost innovations aiming at reducing the performance gap and thus improve the sustainability of irrigation systems in the Mediterranean region.

The innovations comprise new tools and services for farmers and water users associations, designed to increase water, nutrient and energy use efficiency.

IP: Institut National d'Etudes Supérieures Agronomiques de Montpellier, Francia

Socios: Francia, Argelia, Grecia, Marruecos, Portugal, España, Túnez

Concedido ES: Instituto Andaluz de Investigación y Formación Agraria Pesquera Alimentaria y de La Producción Ecológica 57.000 € + Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC) 128.000 €

Presupuesto total: 1.170.706€

Proyecto 19

IDEWA. Irrigation and Drainage monitoring by remote sensing for Ecosystems and Water resources management

Retrieving drainage from remote sensing is not an easy task since there is no direct measurement of soil water transfers from space. However, the water Budget modeling can be constrained from the remotely sensed crop evapotranspiration (ET), soil moisture (SM) and vegetation water stress (VEG) indices. The main idea is to assimilate remotely sensed ET, SM and VEG data in land surface models at multiple (field, sub-basin and basin) scales. Moreover, the impact of drainage on ecosystems will be measured by remotely sensed water quality indices.

The project will be implemented in two Mediterranean representative case and well-monitored study areas in the Ebro (Spain) and Tensift (Morocco) basins. In particular, the drainage retrieval approach will be tested over the Algerri-Balaguer district, where drainage is actually measured at an integrated spatial scale. Since the land consolidation twenty years ago, this irrigated area has been drained by a network of constructed ditches and buried pipelines feeding a general outlet in a 3-meter deep well, which now allows for continuously monitoring the flow rate and electrical conductivity. This configuration, resembling a huge passive lysimeter of 3500 ha, thus represents a unique opportunity to develop and test the satellite-based drainage retrieval

IP: Centre d'Etudes Spatiales de la Biosphère, CESBIO, Francia

Socios: España, Italia Marruecos

Concedido ES: UNIVERSIDAD DE LLEIDA 95.000 € + UNIVERSITAT RAMON LLULL, FUNDACIO PRIVADA 95.000

Presupuesto total: 645.240€

Proyecto 20

LEGU-MED. Legumes in biodiversity-based farming systems in Mediterranean basin

Future Mediterranean farming systems with enhanced environmental sustainability.

We have assembled a multi-disciplinary consortium composed by 11 partners from 8 countries and consisting of 5 public universities, 5 research centers and 1 company. Our activities are designed to increase ecosystem services, maintain soil fertility, minimize the use of synthetic chemical compounds, and maintain a satisfactory and steady income for growers. LEGU-MED will use a participatory process where a subset of stakeholder's community will be involved in the co-creation of innovative solutions. **IP:**

Università di Firenze, UNIFI, Italia

Socios: Italia, Alemania, Argelia, Croacia, Líbano, Túnez, España, Turquía

Concedido ES: 115.000 €

Presupuesto total: 1.240.190€

Proyecto 22

Nano4Fresh. Nanomaterials for an environmentally friendly and sustainable handling of perishable products

Nano4fresh aims to extend the shelf-life of perishable products, reducing post-harvest chemical treatments, food losses and wastes.

This will be achieved by developing nanomaterials (carbons, zeolites, MOFs and PCPs) with innovative and versatile characteristics, in terms of adsorption, catalytic photoactivity and antibacterial/fungi performances, to surpass the current state-of-the-art approaches for prevention of the ripening processes of food products.

In practical terms, novel filters and photoreactors will be developed and optimised for the storage (atmosphere control) during the ripening process. This approach comprises the ethylene removal, both during long storage, transportation and at the retail stores, leading to eradicate the use of chemicals as a post-harvest strategy to prevent the ripening process. The developed technology will be tested, and the performances validated in a laboratory-controlled and real-life environment to supply fruit quality

parameters (colour, compactness, sugar content, enzymatic activity) in the presence and absence of developed devices.

IP: Universidade de Lisboa, Portugal

Socios: Portugal, España, Italia, Marruecos

Concedido ES: 145.000 €

Presupuesto total: 666.332€

Proyecto 24

RESIDUE. Risk reduction of chemical residues in soils and crops – impact due to wastewater used for irrigation

The main goal of the project is to improve the safety of agricultural products grown in countries, which are obliged to use waste materials for irrigation and fertilization in agriculture. The concept of the project is to develop a technology with significantly reduced risks of transfer of organic contaminants into the agricultural products. The new technology will be based on i) the improvement of soil functions to enhance in situ the removal and detoxification of introduced organic pollutants, (ii) new production procedures for safe soil amendments and (iii) a clear discrimination of non-bioavailable organic pollutants introduced into soil that do not constitute a risk for agriculture.

IP: Fraunhofer Gesellschaft, Alemania

Socios: Israel, España, Alemania, Italia

Concedido ES: 145.000 €

Presupuesto total: 1.111.488€

Proyecto 27

StopMedWaste. Innovative Sustainable technologies to extend the shelf-life of Perishable MEDiterranean fresh fruit, vegetables and aromatic plants and to reduce WASTE

The overall objective of StopMedWaste is to preserve perishable Mediterranean fresh fruit, vegetables and aromatic plants through innovative strategies that are safe for consumers, to reduce waste of agricultural products, and at the same time to minimise or reduce the application of synthetic pesticides. Project StopMedWaste aims to extend the shelf-life of this produce by applying physical means (gaseous ozone, ozonated water, electrolysed water), natural compounds (chitosan, essential oils, antifungal edible coatings [AECs]) and biocontrol agents.

IP: Università Politecnica delle Marche, Italia

Socios: Italia, Chipre, Túnez, Turquía, España

Concedido ES: 140.000 €

Presupuesto total: 1.009.017€

Proyecto 29

VALUEFARM. Valorization of Mediterranean small-scale FARMS by cropping wild UnExploited species

To propagate and cultivate selected WEPs species, to describe and evaluate agronomic performance of WEPs, to evaluate the potential of cultivating WEPs in degraded soils and assess their soil improvement properties, to diversify existing farming systems, to evaluate innovative approaches, to analyze chemical composition, nutritional value and bioactive compounds content of WEPs, to increase knowledge and public awareness on the nutritional value and the bioactive compounds content of WEPs, to create physical labs and to implement living lab platforms for technological transfer in each zone of the project.

IP: Università Politecnica delle Marche, Italia

Socios: Italia, Chipre, Túnez, Turquía, España

Concedido ES: 145.000 €

Presupuesto total: 1.242.435€

Proyecto 30

WILDFOOD. Eating the wild: improving the value chain of Mediterranean Wild Food Products (WFP)

To propagate and cultivate selected WEPs species, to describe and evaluate agronomic performance of WEPs, to evaluate the potential of cultivating WEPs in degraded soils and assess their soil improvement properties, to diversify existing farming systems, to evaluate innovative approaches, to analyze chemical composition, nutritional value and bioactive compounds content of WEPs, to increase knowledge and

public awareness on the nutritional value and the bioactive compounds content of WEPs, to create physical labs and to implement living lab platforms for technological transfer in each zone of the project.

IP: Centre de Ciència i Tecnologia Forestal de Catalunya, España

Socios: España, Italia, Portugal, Túnez, Argelia, Eslovenia

Concedido ES: 190.000 €

Presupuesto total: 814.220€

Borrador V5

CRCNS - Collaborative Research in Computational Neuroscience (CRCNS) Innovative Approaches to Science and Engineering Research on Brain Function

La neurociencia computacional proporciona una base teórica y un rico conjunto de enfoques técnicos para comprender sistemas neurobiológicos complejos, basándose en la teoría, los métodos y los hallazgos de la informática, la neurociencia y muchas otras disciplinas. Participantes: U.S. National Science Foundation (NSF), National Institutes of Health (NIH), and Department of Energy (DOE); the German Federal Ministry of Education and Research (Bundesministerium für Bildung und Forschung, BMBF); the French National Research Agency (Agence Nationale de la Recherche, ANR); the United States-Israel Binational Science Foundation (BSF); Japan's National Institute of Information and Communications Technology (NICT); and **Spain's State Research Agency (Agencia Estatal de Investigación, AEI)** and National Institute of Health Carlos III (Instituto de Salud Carlos III, ISCIII).

Se considerarán dos clases de propuestas en respuesta a esta solicitud:

- Propuestas de investigación que describen proyectos de investigación colaborativa, y
- Propuestas de intercambio de datos para permitir el intercambio de datos y otros recursos.

CONVOCATORIAS CONJUNTAS DE PROYECTOS

Número convocatorias conjuntas internacionales: 1 (2019)

Participación de AEI en convocatorias conjuntas: 1 (2019)

Convocatoria conjunta 2019

Países participantes	España; Estados Unidos
Temáticas	Neurociencia computacional
Concedido ES	400.000€
Proyectos aprobados	2
Proyectos con financiación AEI	2

No.	Acrónimo y título del proyecto	Países participantes
1	AGEDYN. Age-related changes to cortical dynamics underlying working memory	España
2	NULL. Circuit-level mechanisms of adaptive decision-making	España

Convocatoria nacional APCIN 2020

Proyecto 1

AGEDYN. Age-related changes to cortical dynamics underlying working memory

Normal aging in primates often leads to impaired cognitive function, particularly in working memory, which begins to decline in middle-age. Cognitive impairment correlates with structural and functional changes observed with aging in neurons and white matter pathways in the prefrontal cortex (PFC), a brain area that is a key player in working memory. However, we currently lack a mechanistic understanding of how the changes at the single-cell and pathway

level impact network function and thus working memory performance. Moreover, the prefrontal cortex is only one node in a distributed network of brain regions that contributes to working memory (Christophel et al. 2017; Leavitt et al. 2017), and aging not only leads to local changes in PFC but also alters other – particularly fronto-parietal and visual – brain areas and long-range inter-areal connections (Luebke et al. 2010; Liu et al. 2017; Xie et al. 2016). The central goal of the proposed project is to advance our understanding of the computational and neural mechanisms underlying working memory as well as the age-related changes to this executive function in the rhesus monkey model of normal aging. Specifically, we will test the hypothesis that working memory arises through coordinated interaction of visual and fronto-parietal brain regions, and that aging-related decline in working memory results from changes to both local circuit dynamics and inter-area communication. The proposed work employs a highly interdisciplinary approach that combines psychophysical, anatomical and electrophysiological experiments with theory and computational modeling, taking advantage of the complementary expertise of the PIs and their laboratories.

The proposed research has the following specific aims:

Aim 1: Identify aging effects on individual neurons, white matter pathways and resting state fMRI activity in fronto-parietal and visual cortices.

Aim 2: Develop a multi-area computational neural network model in which working memory function emerges from interacting distributed circuits.

Aim 3: Model-based interpretation and experimental validation of the neuronal mechanisms underlying age-related working memory decline.

Socios: Estados Unidos y España

Concedido ES: 204.000 €

Proyecto 2

A NULL. Circuit-level mechanisms of adaptive decision-making

Mammals continuously adapt the process of action selection in noisy and volatile environments so as to maximize the success of future decisions. This flexible decision-making is mediated by corticobasal-ganglia- thalamic (CBGT) circuits that both control action selection and use feedback signals to modify the approach to future decisions (i.e., undergo reinforcement learning; RL).

Problem. Despite the fact that decision-making and RL originate from a common neural substrate, they are generally studied as independent processes. Understanding the unified nature of action selection and learning requires a careful re-evaluation of how cognitive algorithms emerge from the circuit-level dynamics of CBGT networks.

Approach. We propose a series of empirical and theoretical investigations that bridge across levels of analysis to unify algorithmic models of learning and decision-making by characterizing how they emerge from the circuit-level interactions within CBGT networks. We will achieve this aim by first developing a computational 'upwards mapping' framework that links accumulator-RL hybrid models with biologically realistic spiking models of CBGT networks under constraints imposed by behavioral observations from a set of adaptive decision-making experiments (Objective 1). This approach will allow us to characterize precisely how different neurophysiological properties (e.g., plasticity linked to phasic dopamine in cortico-striatal pathways) contribute to distinct cognitive processes (e.g., drift rate) during the acquisition of flexible behavioral repertoires. Using this paradigm we will characterize how plasticity mechanisms can push networks into distinct states that manage the speed-accuracy trade-off in contextually appropriate ways (Objective 2) and build testable predictions about the neural mechanisms shaping action selection across network states, validated against a novel, large-scale neuroimaging data set of dozens of hours of human behavior in a dynamic decision-making task (Objective 3).

Socios: Estados Unidos y España

Concedido ES: 130.450€

Proyectos en colaboración internacional financiados a través de la
convocatoria de
Proyectos de Colaboración Internacional
–PCI–
(2014-2020)