

# OPORTUNIDADES EN EL PILAR-3 DE H2020, RETOS SOCIALES

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# **ENERGÍA EN HORIZONTE 2020, RETOS SOCIALES**

# Dónde está Energía en H2020...



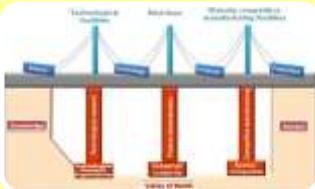
## Excellent Science

European Research Council (ERC)

Future and Emerging Technologies (FET)

Marie Skłodowska-Curie actions on skills, training and career development

European research infrastructures



## Industrial Leadership

ICT

Nanotechnology

Biotechnology

Advanced Materials

Advanced Manufacturing & Processing

Space

Access to Risk Finance

Innovation in SMEs



## Societal Challenges

Health, demographic change and wellbeing

Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bioeconomy;

Secure, clean and efficient energy;

Smart, green and integrated transport;

Climate action, environment, resource efficiency and raw materials

Europe in a changing world-Inclusive, innovative and reflexive societies

Secure Societies: Protecting freedom and security of Europe and its citizens



División  
Programas de la UE

# Estructura programa de ENERGIA Call 2014-2015

Secure Clean end  
efficient Energy

→ **Energy  
Challenge**

Energy Efficiency  
21 topics

Low Carbon  
Technologies  
22 topics

Smart Cities and  
Communities  
4 topics

# Estructura programa de ENERGIA Call 2016-2017

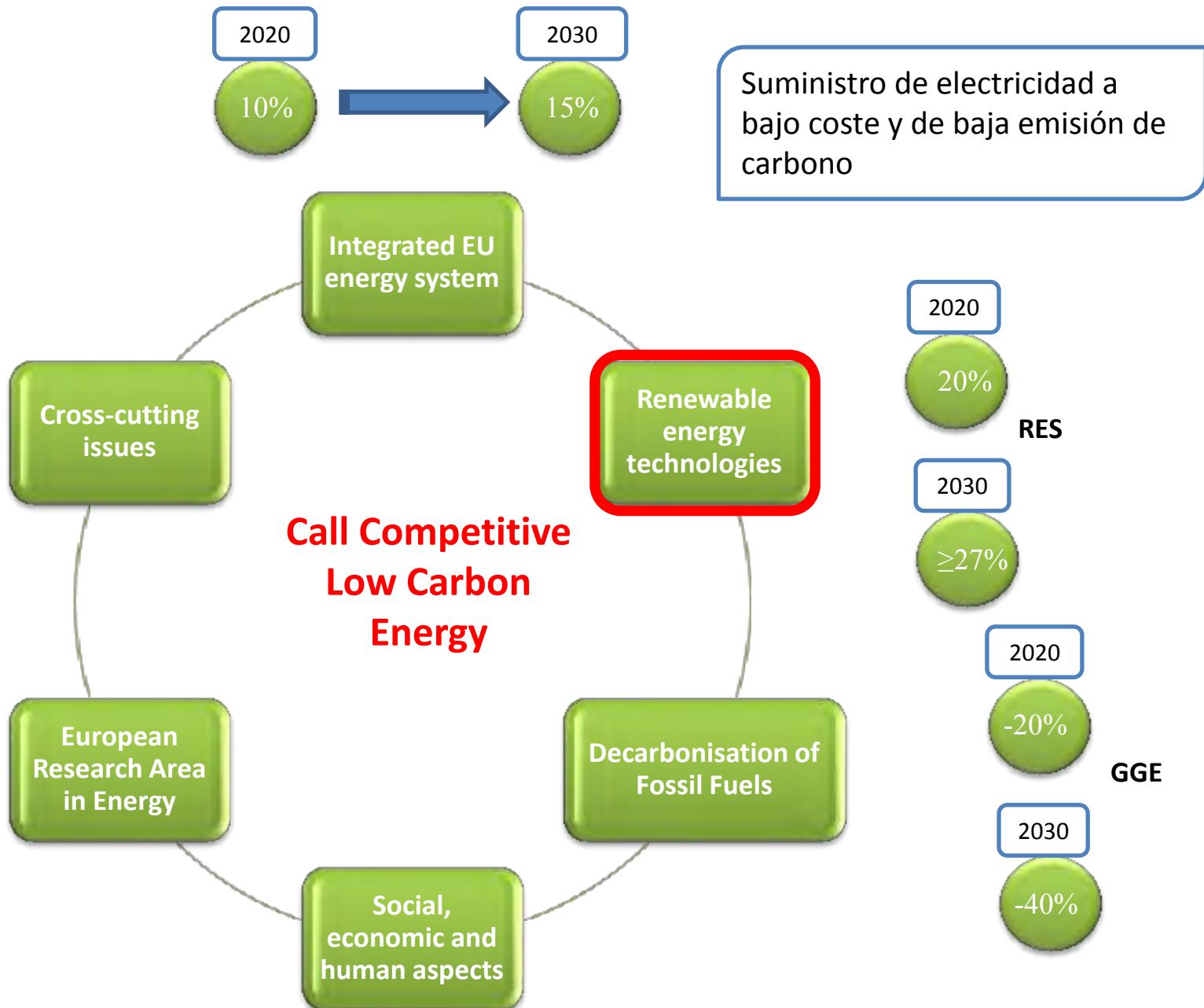
Societal Challenge 3 "Secure  
Clean end efficient Energy

Cross-Cutting  
activities

Energy  
Efficiency  
25 topics

Low Carbon  
Technologies  
36 topics

Smart and  
Sustainable Cities  
4 topic



# Renewable energies

- Support the **next set of technologies** for **cost-competitiveness** and market introduction (off-shore wind, certain areas of PV, CSP, tidal and wave energy, and geothermal energy);
- Continue supporting those technologies that have **started to reach cost-competitiveness but where continued efforts are needed** (on-shore wind, areas of PV, **advanced biofuels**, and solar heating and cooling);
- Continue supporting **new and emerging technologies** (e.g. advanced and solar fuels, ocean thermal energy conversion (OTEC), Salinity gradient energy, etc.), **mature technologies where further innovation remains important** (hydropower, PV-thermal) and **replace critical pollutant/expensive materials by eco-friendly/sustainable materials.**

# Biofuels (1/2)

- European industries have leading technologies, but currently little deployment in EU;
- Biofuels are medium-term solution for road and maritime transports and the only solution for air transport;
- Both biological and thermo-chemical pathways are necessary to provide technology diversity, but the challenges in each pathway are different;
- Large scale demonstrations are needed to boost market access;
- Research needed to reduce cost, improve environmental impact and performance efficiency.

## **Basic research (RIA)**

- Diversification of renewable fuel production through novel conversion routes/fuels - LCE-6-2017

## **Advanced research (RIA)**

- LCE-8-2016-2017. Next generation of:
  - **Biofuels from CO<sub>2</sub>** in industrial waste flue gases through biochemical conversion by autotrophic ( chemo and photo –autotrophic) micro-organisms;
  - **Biofuels from organic fraction** of municipal and industrial wastes through thermochemical, biochemical or chemical pathways with improved performance and sustainability;
  - **Biofuels from phototrophic algae & bacteria** with improved performance and sustainability.

# Biofuels (2/2)

## *Advanced research (RIA) Cont.*

- LCE-22-2016
  - Cooperation with Brazil on advanced lignocellulosic biofuels

## *Demonstration (IA)*

- LCE-19-2016-2017
  - Biomass gasification (2016)
  - Biomass pyrolysis and torrefaction to intermediate bioenergy carriers (2016)
  - Biochemical conversion to diesel and jet fuels (2016)
  - Biofuels from waste flue gases / other wastes and residues (2017)
  - Biomass from aquatic biomass (2017)
- LCE-20-2016-2017
  - Pre-commercial production of advanced aviation biofuels

## *Market-uptake (CSA)*

- Market roll-out of liquid advanced biofuels and liquid renewable alternative fuels – LCE-21-2017

# **MEDIOAMBIENTE EN HORIZONTE 2020, RETOS SOCIALES**

# Dónde está Medioambiente en H2020...



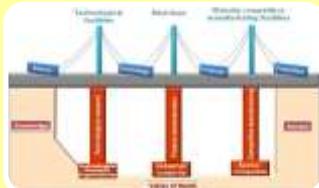
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## H2020 – “Mainstreaming of climate and sustainable development objectives”

- **Acción por el clima, medio ambiente, eficiencia de recursos y desarrollo sostenible** es uno de los temas transversales para todo el programa Horizonte 2020.
- Al menos el 60% del presupuesto de Horizonte 2020 deberá estar relacionado con el **desarrollo sostenible**.
- Temas relacionados con la “**acción por el clima**” deberá superar el **35%** del presupuesto de Horizonte 2020.

**5.1 Lucha contra el cambio climático y adaptación al mismo**

**5.2 Protección del medio ambiente, y gestión sostenible de los recursos naturales, del agua, de la biodiversidad y de los ecosistemas**

**5.3 Garantía de un abastecimiento sostenible de materias primas no agrícolas y no energéticas**

**5.4 Posibilitar la transición hacia una economía y una sociedad verdes a través de la eco-innovación**

**5.5 Desarrollo de sistemas completos y duraderos de observación e información sobre el medio ambiente mundial**

**5.6 Patrimonio cultural**



# Reto Social 5 -Programa de Trabajo 2016-2017

- ***Call – Industry 2020 in the Circular Economy***

- Circular Economy

- ***Call – Smart and Sustainable Cities***

- Sustainable cities through nature-based solutions

17-Cross Cutting Activities

- ***Call – Greening the Economy***

- Climate services
  - Towards a Low-Carbon Europe
  - Nature-Based Solutions for Territorial Resilience
  - Water
  - Raw Materials
  - Earth Observation
  - Cultural Heritage for Sustainable Growth
  - Support to Policy and Preparing for Innovation Procurement

12-Climate Action,  
Environment, Resource.....

## Contribución a otros Retos Sociales:

Blue Growth (SC2), Sustainable Food Security (SC2), Competitive low-carbon energy (SC3)

- Su vínculo con el programa LIFE
- *GRANDES INICIATIVAS* → *Calls for Commitments en las EIP Raw Materials & EIP Water.* No hay financiación, sólo posicionamiento & networking.
- **Claro vínculo con el RIS3**
- Infraestructuras de Investigación
- Relevante Cooperación Internacional

# Implementación

## III. Prioridad «Retos sociales»

5. Acción por el clima, eficiencia de los recursos y materias primas

3.081

Convocatorias ordinarias  
Implementadas por la EC  
Programas de trabajo bienales

Grandes iniciativas  
Agendas estratégicas propias  
Procedimiento y convocatoria propios

Convocatorias ordinarias  
Implementadas por la EC  
Programas de trabajo bienales

## EJES PRINCIPALES

- 1. Systemic eco-innovation for a circular economy**
- 2. Climate Services**
- 3. Nature-based solutions and re-naturing cities**
- 4. Raw Materials**

## PRIORIDADES

- Earth Observation
- Water
- Cultural Heritage
- The Arctic

# Implementación

Tipo de Iniciativa	Iniciativa relacionada
European Innovation Partnership (EIP)	EIP Agua y EIP Materias Primas
Public Private Partnership (PPP)	SPIRE
European Research Alliance (ERA)	European Climate Research Alliance (ECRA)
Joint Programming Initiatives (JPI)	Water Challenges for a Changing World, Cultural Heritage, Climate, Oceans, etc
Knowledge Innovation Communities (KIC)	Climate-KIC RawMatters
ERA-NET COFUND	Biodiversidad, Agua, Clima, Obs Tierra, etc (16 aprox.)
Art. 185	PRI MA- Water and Food Systems in the Euromediterranean

## Grandes iniciativas

Agendas estratégicas propias  
Procedimiento y convocatoria propios

## European Research Alliance

## Grandes iniciativas

Agendas estratégicas propias

Procedimiento y convocatoria propios

The screenshot shows the homepage of the European Climate Research Alliance (ECRA). The header features a large image of a landscape with a bright sun or moon in the sky. The navigation bar includes links for Home, About us, Collaborative Programmes, Members, and a search bar. The main content area has a green header "Home" and a section titled "Mission - Towards a European Climate Research Alliance". It discusses the alliance's aim to strengthen, expand, and optimise EU climate research capabilities through the sharing of world-class national facilities in Europe and the collaborative realisation of pan-EU programmes. It highlights the need for national and European climate change research programmes to be streamlined and coordinated to ensure optimum use of human resources, modelling capacities, field activities, and infrastructure, maximising therefore the impact of scientific results and reinforcing the European Research Area for climate change science. Below this is a section on "Key objectives of ECRA" which lists several bullet points about accelerating research, improving integration, strengthening capacity, developing training programs, and providing advice to policy and public. To the right, there is a sidebar with sections for "Events & Events" listing workshops and fellowships, and a "Publications" section featuring a recently released ECRA Briefing Document.

[www.ecra-climate.eu](http://www.ecra-climate.eu)

## Public Private Partnerships

- Agua – 500 M EUR
- SPIRE – 900 m eur

Recapitulation of topics in the WP of relevance to water:

key:	= topic devoted to water issues
	= topic contributing to water issues

	2016	2017
CSA to support JPI Water INCO activities	CSA	X
ERA-NET co-fund on Water (with JPI)	ERANET Cof.	X
Large-scale demos/market replication for circular economy: Water (SPIRE&EIP)	IA	X
Placeholder: Food systems and water resources for the development of inclusive, sustainable and healthy Euro-Mediterranean societies	tbc	tbc
Demonstrators/pilots for climate services in mature sectors	IA	X
R&I: Case studies for climate services in less mature sectors	RIA	X
R&I: European regional modelling action	RIA	X
ERA-NET co-fund (JPI Climate) for climate services roadmap implementation	ERANET Cof.	X
Climate services: market studies	experts	X
ERA-NET Co-fund: contribution to cross-thematic topic on applied geosciences	ERANET Cof.	X
Large-scale demonstrators on urban NBS (2016 EE&climate; 2017 social)	IA	X
ERA-NET co-fund (Belmont): sustainable urbanisation	ERANET Cof.	X
Large-scale demonstrators on NBS for hydro-meteorological risk reduction	IA	X

## Grandes iniciativas

Agendas estratégicas propias  
Procedimiento y convocatoria propios



[www.spire2030.eu](http://www.spire2030.eu)

## ERANETs COFUND

Framework Partnership Agreement!!

## Grandes iniciativas

Agendas estratégicas propias

Procedimiento y convocatoria propios

Título	2016	2017	Comentarios
ERA-NET Co-fund Strategic EU research and innovation for systemic eco-innovation	X		Continuación de ECOINNOVERA. Encuadre: Economía Circular.
ERA-NET Co-fund Transformations to sustainability	X		Origen: Belmont Forum. Encuadre: Economía Circular.
ERA-NET Co-fund Sustainable urbanisation	X		Apoyo a la JPI Urban Europe. Encuadre: Smart Cities with Nature-based solutions
ERA-NET Co-fund Climate services roadmap implementation		X	Continuación al apoyo de la JPI de Clima. Encuadre: Servicios Climáticos.
ERA-NET Co-fund IPCC-AR5 knowledge gaps in climate-earth system	X		Origen: 5º Informe del Intergovernmental Pannel of Climate Change. Apoyo a la JPI de clima. Encuadre: Servicios Climáticos.
ERA-NET Co-fund on Raw materials	X	X	Continuación de ERAMIN. Apoyo a la EIP de Materias Primas. Encuadre: Materias Primas.
ERA-NET Cofund on Water		X	Continuación al apoyo de la JPI de Agua. Apoyo a la EIP de Agua. Encuadre: Agua.
ERA-NET Co-fund: contribution to cross-thematic topic on applied geosciences		X	Propuesta de los servicios geológicos europeos. Carta de apoyo del IGME a la misma.

# Enlaces de interés

- ✓ Horizon 2020. <http://ec.europa.eu/programmes/horizon2020/>
- ✓ esHorizonte2020. [www.eshorizonte2020.es](http://www.eshorizonte2020.es)
- ✓ Research and Innovation – Environment. [http://ec.europa.eu/research/environment/index\\_en.cfm](http://ec.europa.eu/research/environment/index_en.cfm)
- ✓ EC – Environment. [http://ec.europa.eu/environment/index\\_en.htm](http://ec.europa.eu/environment/index_en.htm)
- ✓ EC – Climate Action. <http://ec.europa.eu/clima/>
- ✓ EC- Enterprise and Industry. [http://ec.europa.eu/enterprise/policies/raw-materials/index\\_en.htm](http://ec.europa.eu/enterprise/policies/raw-materials/index_en.htm)
- ✓ EIP de Agua - Strategic Implementation Plan (SIP). <http://www.eip-water.eu/about/basics>
- ✓ JPI de Agua - Strategic Research and Innovation Agenda (SRIA). <http://www.waterjpi.eu/>
- ✓ EIP de Materias Primas – SIP. <https://ec.europa.eu/eip/raw-materials/en/content/about-sip>
- ✓ Critical Raw Materials. [http://ec.europa.eu/enterprise/policies/raw-materials/critical/index\\_en.htm](http://ec.europa.eu/enterprise/policies/raw-materials/critical/index_en.htm)
- ✓ Nature-based solutions. [http://www.vhg.org/media/rtf/Kennisbank/2015\\_0739\\_DG\\_RTD\\_WEB-Publication\\_A4\\_NBS\\_long\\_version\\_20150310.pdf](http://www.vhg.org/media/rtf/Kennisbank/2015_0739_DG_RTD_WEB-Publication_A4_NBS_long_version_20150310.pdf)
- ✓ From Niche to Norm (Circular Economy).  
[http://northseaseplus.eu/wordpress/download/EU%20From%20Niche%20to%20Norm%20\\_EI.pdf](http://northseaseplus.eu/wordpress/download/EU%20From%20Niche%20to%20Norm%20_EI.pdf)
- ✓ Getting cultural heritage to work for Europe. [http://www.nemo.org/fileadmin/Dateien/public/service/Report\\_of\\_the\\_Horizon\\_2020\\_expert\\_group\\_on\\_cultural\\_heritage.pdf](http://www.nemo.org/fileadmin/Dateien/public/service/Report_of_the_Horizon_2020_expert_group_on_cultural_heritage.pdf)
- ✓ A european Roadmap for climate Services.  
<http://ec.europa.eu/research/index.cfm?pg=events&eventcode=552E851C-E1C6-AFE7-C9A99A92D4104F7E>



# Consultas públicas

- Climate Action, Environment, Resource Efficiency and Raw Materials - Work Programme 2018-2020 preparation

Consultation of Stakeholders (until 08.04.2016)

- PRIMA (Partnership for Research and Innovation in the Mediterranean Area) initiative

Open Public Online Consultation: PRIMA in Horizon 2020  
(From 01.02.2016 to 24.04.2016)

“Stakeholder Event”, Malta (17 March 2016)

## "Nature-based solutions"



- ✓ Inspiradas o basadas en la naturaleza
- ✓ Beneficios económicos, sociales y medioambientales
- ✓ Intervenciones sistémicas, eficientes en el uso de los recursos y adaptadas localmente
- ✓ Más naturaleza en las ciudades y paisajes

➤ **OBJETIVO:** Hacer que Europa sea líder mundial en la innovación en soluciones basadas en la naturaleza

# Nature-Based solutions



## Definición

- **Nature-based solutions** (green and blue infrastructure, green roofs and vertical walls, natural water retention measures, salt marshes and dunes, floodplains, etc.)
- Multi-purpose, multi-functional and multi-beneficial, **inspired and supported by nature**
- **Use the properties and functions of ecosystems** to provide ecosystem services (water regulation, flood risk protection, climate change adaptation, etc) → **“living solutions”**
- Are designed to bring **more nature and natural features and processes into cities**, landscapes and seascapes, **through systemic interventions**

# Nature-Based solutions



- Se trata de **evidenciar** los **beneficios** (en todos los ámbitos) y **eficacia** de las NBS.
- Deben ser **co-diseñadas**, **co-implementadas**, **sistémicas**, basadas en **demostraciones** a gran escala y que puedan **replicarse** y **escalarse**, ('*living labs*')
- Objetivo: Crear un **mercado para las NBS** (oferta y demanda, modelos de negocio, inversores)
- Creación de una plataforma de **todas** las partes interesadas ('*stakeholders*'')
- Promover la cooperación internacional

**“FOOD SECURITY, SUSTAINABLE AGRICULTURE AND FORESTRY, MARINE AND  
MARITIME AND INLAND WATER RESEARCH AND THE BIOECONOMY”,  
H2020 RETOS SOCIALES**

# Dónde está “Food Security...” en H2020



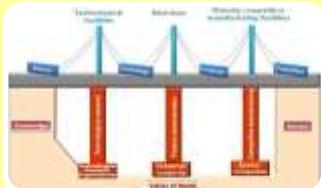
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## FP6 - Food Quality and Safety

## FP7 - Food, Agriculture and Fisheries, and Biotechnology

Building a European **Knowledge Based Bio-Economy (KBBE)** by bringing together science, industry and other stakeholders, to exploit new and emerging research opportunities that address social, environmental and economic challenges.

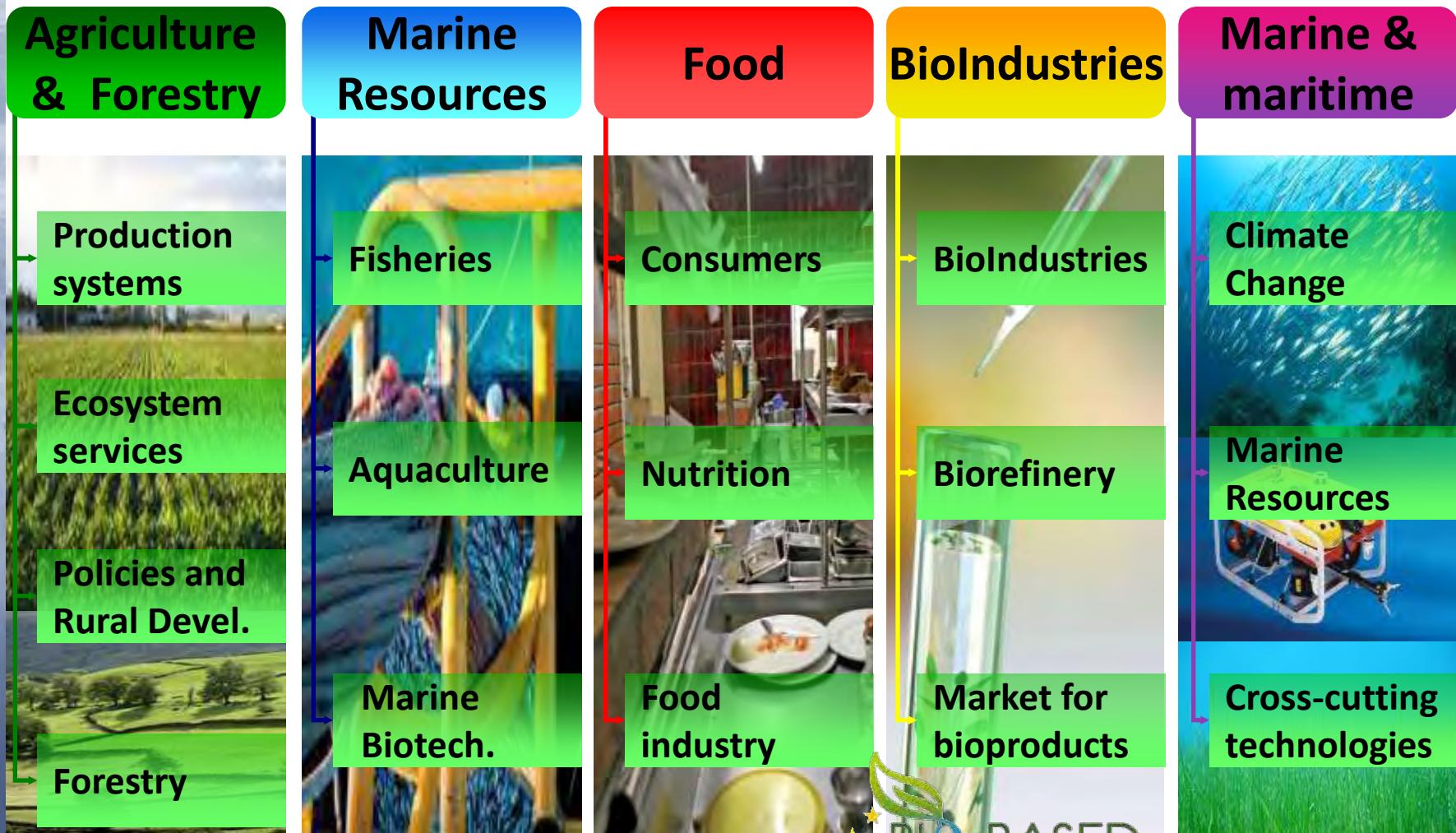
## H2020 - Food security, sustainable Agriculture and Forestry, Marine and Maritime and Inland Water research and the Bioeconomy

The specific objective is to secure sufficient supplies of safe, healthy and high quality **food and other bio-based products**, by developing productive, sustainable and resource-efficient **primary production systems...**

## **Support to Policies is essential - links between research projects and EU policies**

- **DG Health and Consumers (DG SANCO):** plant health protection, animal health and welfare, food security and food safety, sustainability, obesity, ...
- **DG Agriculture and Rural Dev. (DG AGRI):** organic farming, quality products.
- **DG Environment (DG ENV):** soil protection, water, waste management, genetic resources (agriculture, forest and microbial)
- **DG Maritime Affairs and Fisheries (DG MARE):** Common Fisheries Policy (FCP), aquaculture – fish farming, maritime policy including its environment pillar, the Marine Strategy framework directive.
- **DG Enterprise and Industries (DG ENTR):** eco-innovation in the food industry, particularly SMEs, development of industrially relevant technologies

# Structure and Contents



## SC2 WP 2016-2017.- Areas covered

Sustainable  
Food Security

Blue  
Growth

Rural  
Reinassance

Bio-based  
innovation for  
Goods and  
Services



# Structure and Contents. WP 2016-2017

## SC2 WP 2016-2017.- Sustainable Food Security

### Resilient, resource-efficient value chains

- Abiotic stresses
- Biotic stresses
- Plant & animal breeding and conservation
- Pests & diseases
- Specific actions for organic farming
- Sustainable fisheries and aquaculture
- ERA-NETs + SME

25 topics 206 M€

### EnvironmentClimate -smart primary production

- GHG emissions, environmental contamination of agriculture
- Specific production systems (legumes, permanent grassland, ...)
- Socio-economics of agriculture & farming for tomorrow
- ERA-NETs

7 topics 64 M€

### Competitive food industry

- Food value chains & dynamics
- Competitiveness of agri-food chains
- Sustainable food packaging
- ERA-NET + SME

3 topics 24 M€

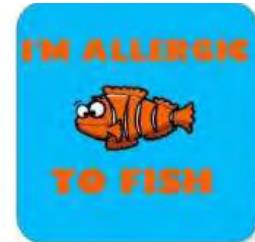
### Healthy food and diets for all

- One Health co-fund (zoonoses)
- Impact of consumer practices in food safety
- Impulsivity & compulsivity, links with nutrition & lifestyle;
- Tackling childhood obesity
- sweeteners

5 topics 85,5M€

# Structure and Contents. WP 2016-2017

## SC2 WP 2016-2017.- Call Blue Growth



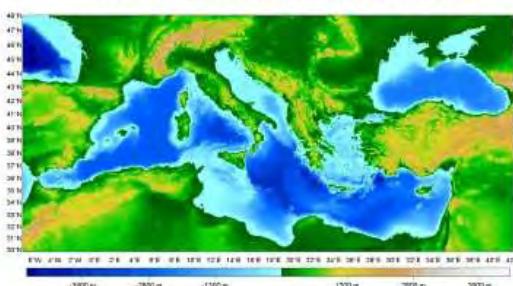
Offshore



Cleaning the Sea



The BLUEMED Initiative



# Structure and Contents. WP 2016-2017

## SC2 WP 2016-2017.- Call Rural Reinassance

### Policies & governance

**Territorial interactions: enhance synergies, adapt policies, foster cross-sectorial cooperation**

- Rural-urban
- Coastal-Rural
- 'Towards 2030': policies and decision tools for an integrated management of natural resources

- Economic benefits from ecosystem services:
  - Farming & drinking water
  - Forest ecosystem services (IA)

**5 topics 32 M€**

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### Value chains & business models

- Crop diversification systems for delivery of food, feed, industrial products and ecosystem services
- Resource-efficient and profitable industrial crops on marginal lands
- Demonstration of integrated logistics centres for food and non-food applications
- Business models for modern rural economies

**4 topics 47 M€**

Source: European Commission & REA

### Innovation and skill development

- Thematic networks
- Experimental and demonstration farms
- Building a future science and education system
- Advisors' role in AKIS
- Working together in EU countries where cooperation level is low
- Optimising interactive innovation to speed up innovation in rural areas

**7 topics 49 M€**

# Structure and Contents. WP 2016-2017

## SC2 WP 2016-2017.- Call Biobased Innovations

### Securing Sustainable biomass supply

- **Forest production systems**
  - Tree breeding strategies and tools
  - Intelligent solutions
- **Sustainability schemes for the bio-based economy**
- **Statistical data on bio-based industries and products**

**4 topics 22 M€**

### Building the bio-based markets of the future

- Bio-based products: Mobilisation and mutual learning
- Bio-based industries regional dimension

**2 topics 4 M€**

### Cross cutting activities Call Circular Economy

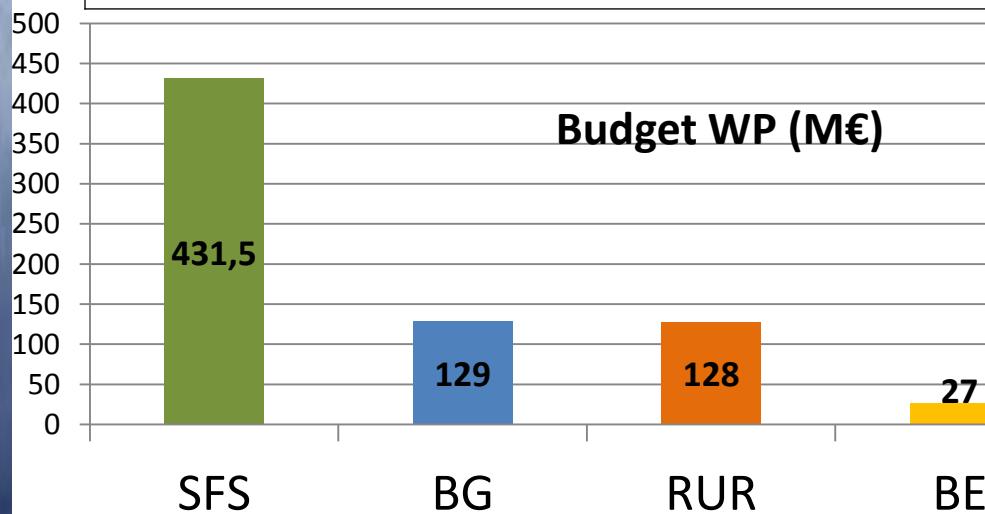
- Potential of urban waste. Production of high value bio-based products

**1 topics 3 M€**

# Structure and Contents. WP 2016-2017

## SC2 WP 2016-2017.- 4 Calls

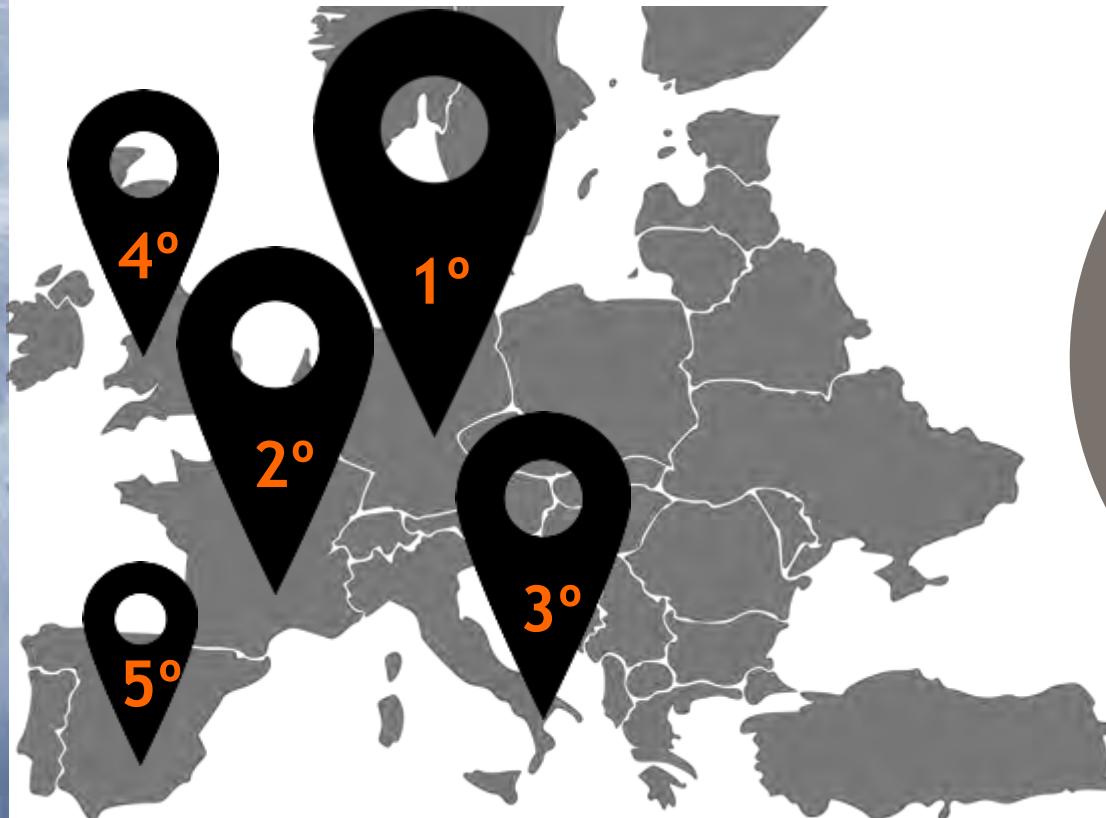
	Budget WP (M€)	Budget 2016 (M€)	Budget 2017 (M€)	%
Call for Sustainable Food Security -SFS Resilient and resource-efficient value chains	431,5	180,5	251	60,30
Call for Blue Growth - BG Demonstrating an ocean of opportunities	129	82	47	18,00
Call for a Rural Renaissance - RUR Fostering innovation and business opportunities	128	66	62	17,90
Call for the Bioeconomy - BE Bio-based innovation for sustainable goods and services	27	12	15	3,80
Total	715,5	340,5	375	100



Publication	Submission procedure	Topics	Stage	Deadline	Info to applicants	Grant Agreements
14 Oct. 2016	single stage	18 topics (8 CSA, 4 IA, 3 ERANET, 3 RIA) 144 M€	Single stage	17 Feb. 2016	June 2016	Oct. 2016
	2-stages	25 topics (RIA Only) 197 M€	1 <sup>st</sup> stage	17 Feb. 2016	May 2016	-
			2 <sup>nd</sup> stage	13 Sept. 2016	Nov. 2016	May 2017

## A possible scenario for 2020.

### Food Research Area & PPP on Food Industries and Nutrition



annual turnover  
**14,9%**<sub>total</sub>  
1.017.000 mill. €

companies  
**287.000**  
99,1% SMEs

employment  
**4,25 mill.**

# A possible scenario for 2020.

## cPPP on Integrated Crop Production

### Main Areas:

- Plant KET
- Soil KET
- Yield stability
- Resource Efficiency
- Plant health
- Agronomical Strategies
- Sectors: Machinery??? Food Industry???
- ETP Plants for the Future (BIOVEGEN) + EPSO

# A possible scenario for 2020.

## Blue Growth

- A cPPP to be explored, if there is EU added value
  - Areas to be covered:
    - Observing, Surveying and Monitoring Systems
    - Multi-use Offshore Platforms
    - Marine Renewable Energy
    - Biomass Valorisation and Blue Biotechnology
    - Vessels?
    - Fisheries and Aquaculture
- (how to benefit from activities in the previous areas)*

# A possible scenario for 2020.

BlueMED –

R&I Initiative for blue jobs and growth in the Mediterranean Sea

Main Areas:

- **Key enabling knowledge** (*ecosystems, climate change, hazards and protection,...*)
  - **Key sectorial enablers** (*marine bio-resources, fisheries, aquaculture, tourism, maritime clusters,...*)
  - **Enabling technology** (*transport, observing systems, offshore platforms, cultural heritage...*)
- **Topic 2016-2017 (SC2), CSA for implementation**

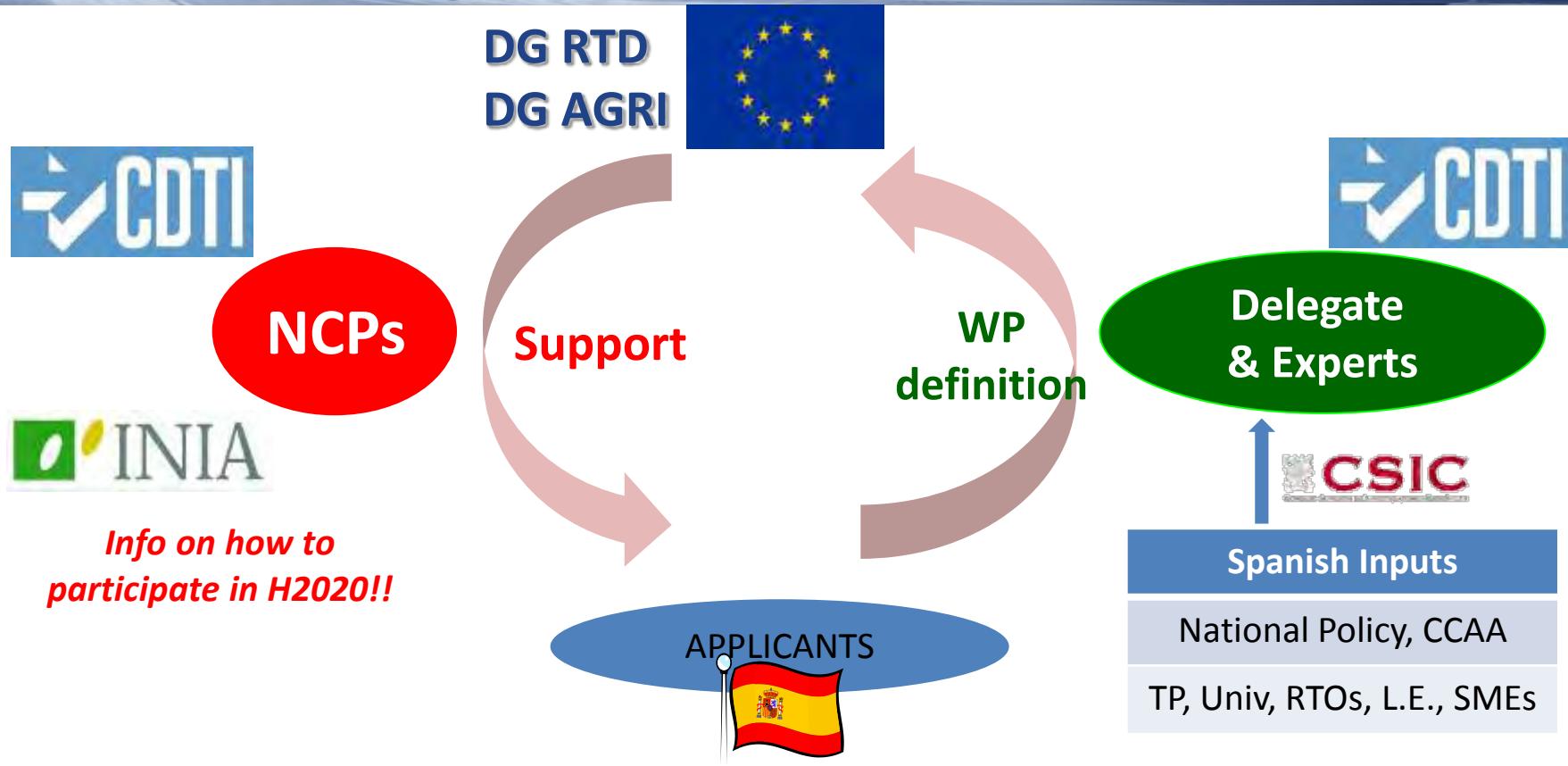
# A possible scenario for 2020.

## PRIMA (Mediterranean Area) – Water and Food

### Main Areas:

- Exploitation of natural resources
- Soil erosion
- Water management
- Irrigation
- Animal and plant diseases
- Food supply chains, nutrition
- Food and water losses
- Business food systems

➤ Topic 2016-2017 (SC5), CSA for implementation



### SC2 Bioeconomy + LEIT (Biotechnology) + JTI BBI

- **Marta Conde (CDTI)** - *NCP*
- **Andrés Montero (INIA)** - *NCP*

### SC2 Bioeconomy

- **José Manuel González (CDTI)** - *Delegate*
- **Diego Intrigliolo (CSIC)** – *Expert*
- **Antonio Ruiz (CLM)** – *Expert CCAA*

# Muchas gracias...

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