

Innovation and KETs within Horizon 2020.

A Spanish perspective and opportunities for the Agrofood Sector

S3 Thematic Worksop. KETs on Agrofood.
Murcia, 11th April, 2013

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Innovation and KETs within Horizon 2020 - Agrofood Sector

CDTI. Centre for the Development of Industrial Technology.



Centro para el Desarrollo
Tecnológico Industrial



- Public Corporate Entity born in 1977.
- Under the Ministry of Economy and Competitiveness (R&D competences)
- Funding Agency focussed on enterprise's innovation.

CDTI's Mission: Increase the competitive edge of Spanish companies by raising their technological level

Nationally

- RTDI project evaluation, support and funding (soft loans and grants)
- Funding of new technology-based companies (NEOTEC y NEOTEC Venture Capital)

Internationally

- Management of international technology cooperation programs (R+D Framework Programme, Eureka, Iberoeka, Chineka...)
- Support for transfer of technology abroad (External Network)

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HORIZON 2020 – Framework Programme for Research & Innovation



HORIZON 2020 – STRUCTURE (based on EC's proposal 30.11.2011)

Societal Challenges

- **Health** demographic change and well-being
- *Food security, sustainable agriculture, marine and maritime research and the bio-based economy*
- Secure, clean and efficient **energy**
- Smart, green and integrated **transport**
- **Climate** action, resource efficiency and raw materials
- Inclusive, innovative and **secure societies**

Industrial Technologies

- Leadership in enabling & industrial technologies
 - Information & Communication Technologies (**ICT**)
 - Nano-technology
 - Advanced materials
 - **Biotechnology**
 - Advanced manufacturing systems
 - Space
- Access to risk finance
- Innovation in SMEs

Excellent Science

- European Research Council
- Future & Emerging Technologies (FET)
- Marie Curie Actions
- Research Infrastructures

European Institute of Innovation and Technology (EIT)



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HORIZON 2020 – Framework Programme for Research & Innovation



BUDGET

Excellent Science

Industrial Technologies

Societal Challenges

HORIZONTE 2020

79.271

I. Prioridad «Ciencia excelente»

24.598

1. El Consejo Europeo de Investigación (CEI)

13.268

2. Las Tecnologías Futuras y Emergentes (FET)

3.100

3. Las acciones Marie Curie

5.752

4. Las infraestructuras de investigación

2.478

II. Prioridad «Liderazgo industrial»

17.938

1. Liderazgo en tecnologías industriales y de capacitación:

13.781

1.1 Tecnologías de la información y la comunicación (TIC)

7.939

1.2 Nanotecnologías, 1.3 Materiales avanzados y 1.5 Fabricación y transformación avanzadas

3.797

1.4 Biotecnología

509

1.6 Espacio

1.536

2. Acceso a la financiación de riesgo

3.538

3. Innovación en las PYME

619

III. Prioridad «Retos sociales»

31.748

1. Salud, cambio demográfico y bienestar

8.033

2. Seguridad alimentaria, agricultura sostenible, investigación marina y marítima y bioeconomía

4.152

3. Energía segura, limpia y eficiente

5.782

4. Transporte inteligente, ecológico e integrado

6.802

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

3.160

6. Sociedades inclusivas, innovadoras y seguras

3.819

Instituto Europeo de Innovación y Tecnología (EIT)

1.360

Acciones directas no nucleares del Centro Común de Investigación (JRC)

1.962

EURATOM (2014-2018)

1.665

Precios constantes a 2011 en M€

OVERALL BUDGET

UNDER DISCUSSION!!!

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HORIZON 2020 – BIOTECHNOLOGY (Industrial Leadership)



Boosting cutting-edge biotechnologies as future innovation drivers

- Development of **emerging tools** (synthetic biology, bioinformatics, systems biology).
- Exploiting the **convergence with other enabling technologies** such as nanotechnology (e.g. bionanotechnology) and ICT (e.g. bioelectronics).
- Transfer & implementation into **new applications** (drug delivery systems, biosensors, biochips).

Biotechnology-based industrial processes

- Enabling the European industry (e.g. chemical, health, mining, energy, pulp and paper, textile, starch, food processing) to **develop new products and processes** meeting industrial and societal demands;
- **Biotechnology-based alternatives** to replace established ones;
- Potential of biotechnology for detecting, monitoring, preventing and removing **pollution** (enzymatic and metabolic pathways, bio-processes design, advanced fermentation, up- and down-stream processing, dynamics of microbial communities)
- Development of **prototypes** for assessing the techno-economic feasibility of the developed products and processes.

Innovative and competitive platform technologies

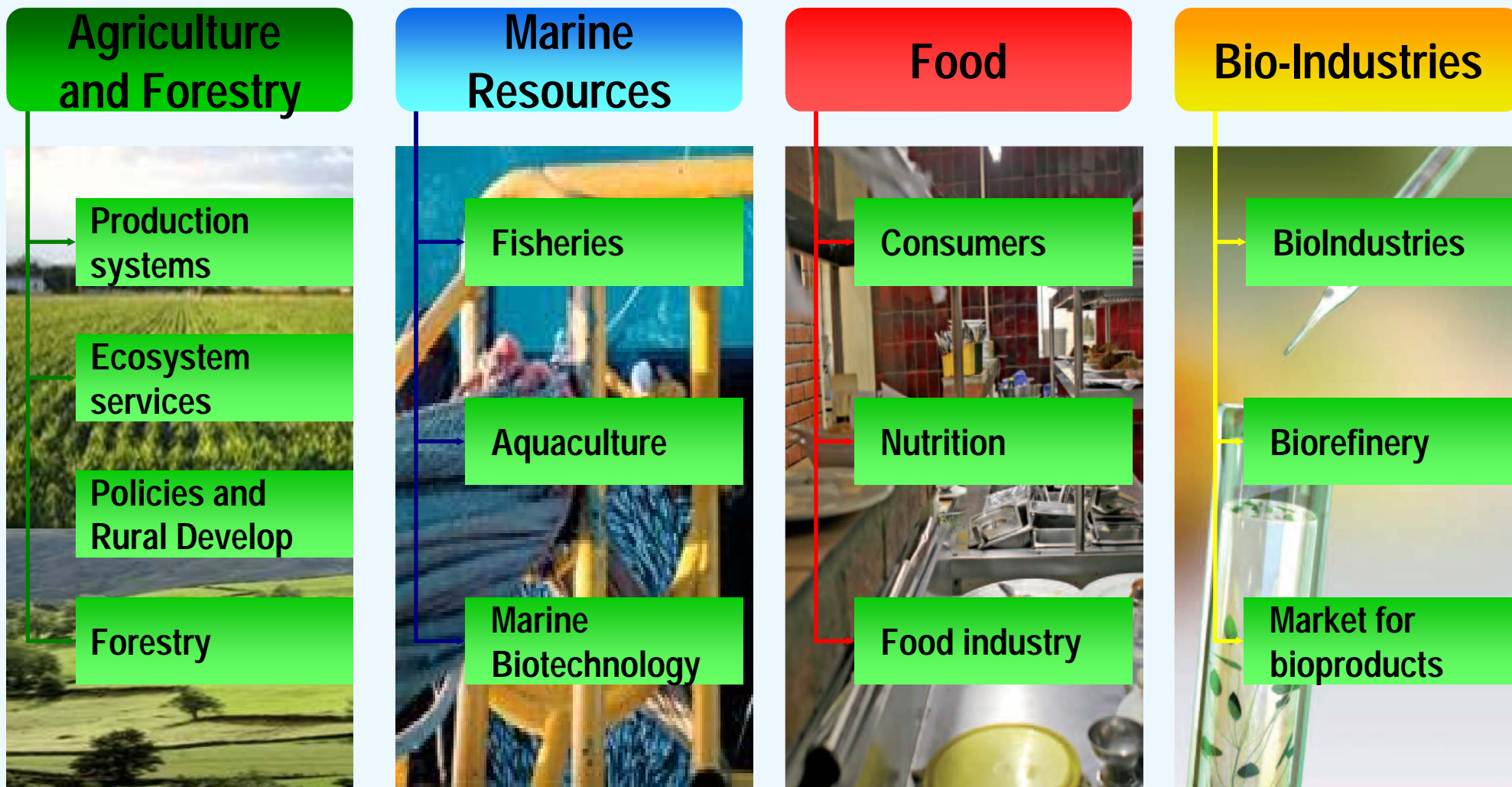
- Develop **platform technologies** (genomics, meta-genomics, proteomics, molecular tools)
- Development of **bio-resources with optimised properties** and applications beyond conventional alternatives;
- Exploration, understanding and exploitation in a sustainable manner of **terrestrial and marine biodiversity** for novel applications;
- Biotechnology-based **healthcare solutions** (diagnostics, biologicals, bio-medical devices).

Biotechnology



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HORIZON 2020 – BIOECONOMY Societal Challenge



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HORIZON 2020 – BIOECONOMY Societal Challenge



Agriculture and Forestry

Production systems

Ecosystem services

Policies and Rural Develop

Forestry

Increasing production efficiency, climate change, sustainability and resilience

- Adaptive capacity of plants, animals and production systems
- Use of biomass and by-products from agriculture and forestry for non-food applications.
- Efficient resource use (water, nutrients, energy) & ecological integrity of rural areas.
- Genetic improvement of plants and animals for adaptation and productivity traits.
- On-farm soil management for increasing soil fertility as a basis for crop productivity.
- Animal and plant health, integrated disease/pest control measures
- Eradication of animal diseases, research on antimicrobial resistance, animal welfare.

Providing ecosystem services and public goods

- Delivering commercial products and societal public goods (including cultural and recreational value) and important ecological services (biodiversity, pollination, water regulation, landscape, erosion reduction and carbon sequestration / GHG mitigation).
- Management solutions, decision-support tools. Management of agricultural systems

Empowerment of rural areas, support to policies and rural innovation

- Development opportunities for rural communities (primary production and delivery of eco-systems services, new and diversified products (food, feed, materials, energy))
- Cohesion of rural areas and prevent economic and social marginalisation, foster diversification of economic activities (including service sector),
- Support policy makers in the implementation of relevant strategies, policies & legislation
- Socio-economic and comparative assessment of farming/forestry systems

Sustainable forestry

- Sustainable produce bio-based products and sufficient biomass.
- Consideration of economic, ecological and social aspects.
- Resource efficient forestry systems. Forest resilience and biodiversity protection.

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HORIZON 2020 – BIOECONOMY Societal Challenge



Developing sustainable and environmentally-friendly fisheries

- **Marine Resources** of marine ecosystems (new insights, tools and models to what makes marine ecosystems healthy and productive)
- impact of fisheries on marine ecosystems (including deep sea).

- of management options will be measured.
- environmental changes, including climate change.
- genetic and dynamics of fish populations, on the role of key on fishing activities
- space with other activities, in particular in the coastal zone, impact will also be addressed.

European aquaculture

- safe and competitive products
- ed species and diversification for new species
- culture and aquatic ecosystems, effects of climate change
- tems in inland, on the coastal zone and offshore.
- and economic dimensions of the sector to underpin cost and

Bioeconomy through biotechnology

- and applications in the field of marine biotechnologies, which 0 % annual growth for this sector.
- e biodiversity and aquatic biomass to bring new innovative services on the markets with potential applications in sectors including chemical and material industries, pharmaceutical, fisheries and aquaculture, energy supply and cosmetic.



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HORIZON 2020 – BIOECONOMY Societal Challenge



Informed consumer choices

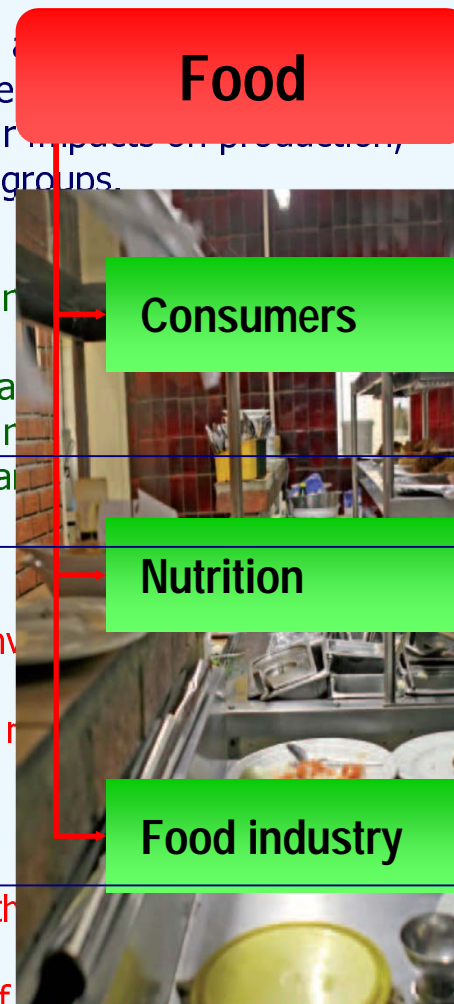
- Consumer preferences, attitudes, needs, behaviour, lifestyle
- Communication between consumers and the food chain research
- Improve informed choice, sustainable consumption and their impacts on productivity, inclusive growth and quality of life, especially of vulnerable groups.

Healthy and safe foods and diets for all

- Nutritional needs and the impact of food on physiological functions and human performance.
- Links between diet, ageing, chronic diseases and disorders and food safety
- Dietary solutions and innovations leading to improvements in food safety
- Chemical and microbial food and feed contamination, risks and food safety
- Food safety innovations, improved risk communication tools

A sustainable and competitive agri- food industry

- Needs for the food and feed industry to cope with social, environmental and economic change from local to global
- Food design, processing, packaging, process control, waste management, valorisation and the safe disposal of animal by-products.
- Innovative and sustainable resource-efficient processes
- Diversified, safe, affordable and high quality products
- Traceability, logistics and services, socio-economic factors, the impact of food chain activities against environmental and climate risks
- Limitation of negative impacts of food chain activities and of changing diets and production systems on the environment.



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HORIZON 2020 – BIOECONOMY Societal Challenge



Fostering the bio-economy for bio-based industries

- Major progress towards low carbon, resource efficient and sustainable industries.
- Discovery and exploitation of terrestrial and aquatic biological resources, minimising adverse environmental impacts.
- Potential trade-offs between the various uses of biomass.
- Development of bio-based products and biologically active compounds for industries and consumers with novel qualities, functionalities and improved sustainability.
- Economic value of renewable resources, bio-waste and by-products will be maximised through new and resource efficient processes.

Developing integrated biorefineries

- Bioproducts, intermediates and bioenergy/biofuels (cascade approach)
- Technologies and strategies will be developed to assure the raw material supply.
- Types of biomass for use in second and third generation biorefineries, including forestry, biowaste and industrial by-products

Supporting market development for bio-based products and processes

- Demand-side measures will open new markets for biotechnology innovation. Standardisation (determination of bio-based content, functionalities and biodegradability).
- Methodologies and approaches to life-cycle analysis need to be further developed and continuously adapted to scientific and industrial advances.
- Research activities supporting product and process standardisation and regulatory activities in the field of biotechnology are considered essential for supporting the creation of new markets and for realising trade opportunities.

Bio-Industries



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HORIZON 2020 Vs 7th Framework Programme (KBBE)



Agriculture



Food



Biotechnology



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KETs. Linking R&I with TRL. Could it be agreed?



LINKING R&I WITH TRLs. SOME IDEAS AND COMMENTS.

TRL	FP & H2020	R&I	Facilities / Pillar	Funding H2020??
1	ERC, Basic Research			100%
2-4	Technological Research projects	RTD	Academic / I	100%
5-7	Development, Demo projects & Trials	Innovation / Closed to market	Pilot lines / II	70%*
8-9	Deployment	Innovation & market replication	Industrial 7 III	BEI & Structural

- **TRL** are not designed to explicitly take account of systems design, configuration, integration and implementation and manufacturing aspects, so therefore, its coverage can be fully **dependant on the application sector**.
- It is not clear the straight forward identification of higher **TRL (5-7) with very large projects**: this may not make sense in all /any application sectors.
- H2020 funding for *"close-to-market"* actions at the current agreed rate (70/25) may not be suitable for projects targeting higher **TRL (8-9)**. **BEI loans** could better fit this kind of deployment investments.

CLOSE TO MARKET ACTIONS

"Close-to-market action" means an action primarily consisting of activities directly aiming at producing plans and arrangements or designs for new, altered or improved products, processes or services. For this purpose they may include prototyping, testing, demonstrating, piloting, large-scale product validation and market replication; Council PGA.

Funding. One project-one rate

- Same rate for all beneficiaries and all activities in the grant*.
- The rate is fixed ex-ante in the WP (not negotiated per project).
- Up to max 70 % funding for direct costs for actions close-to-market.
- A fix flat rate of 25% for indirect costs for all actions.

For close-to-market actions, as an exception to paragraph 3 of this Article, the Horizon 2020 grant may reach a maximum of 100% of the total eligible costs for non-profit legal entities, without prejudice to the co-financing principle. **Council PGA.*

- H2020 funding for "close-to-market" actions at the current agreed rate (70/25) may not be suitable for projects targeting higher TRL (8-9). **BEI loans** could better fit this kind of deployment investments.

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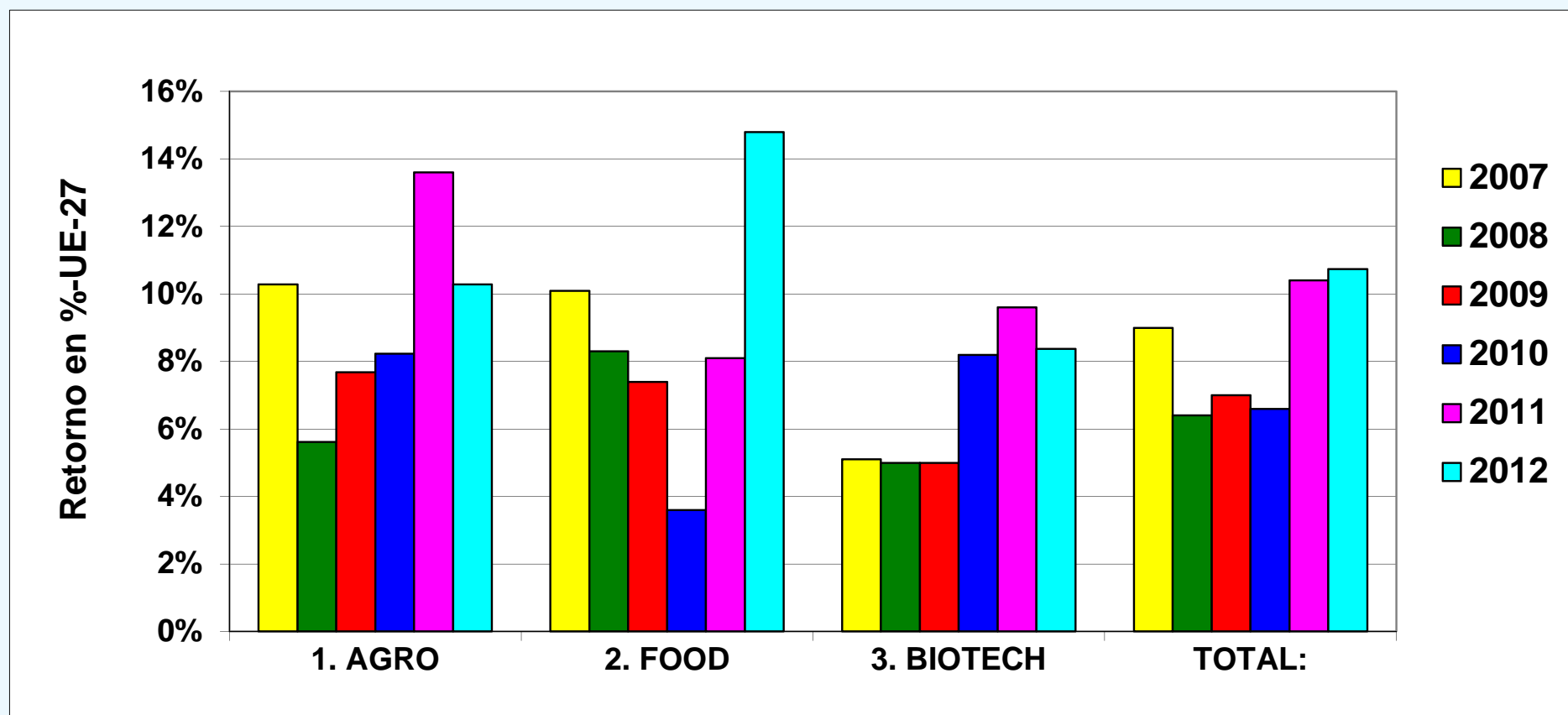
KBBE. PRELIMINARY RESULTS (2007-2012)



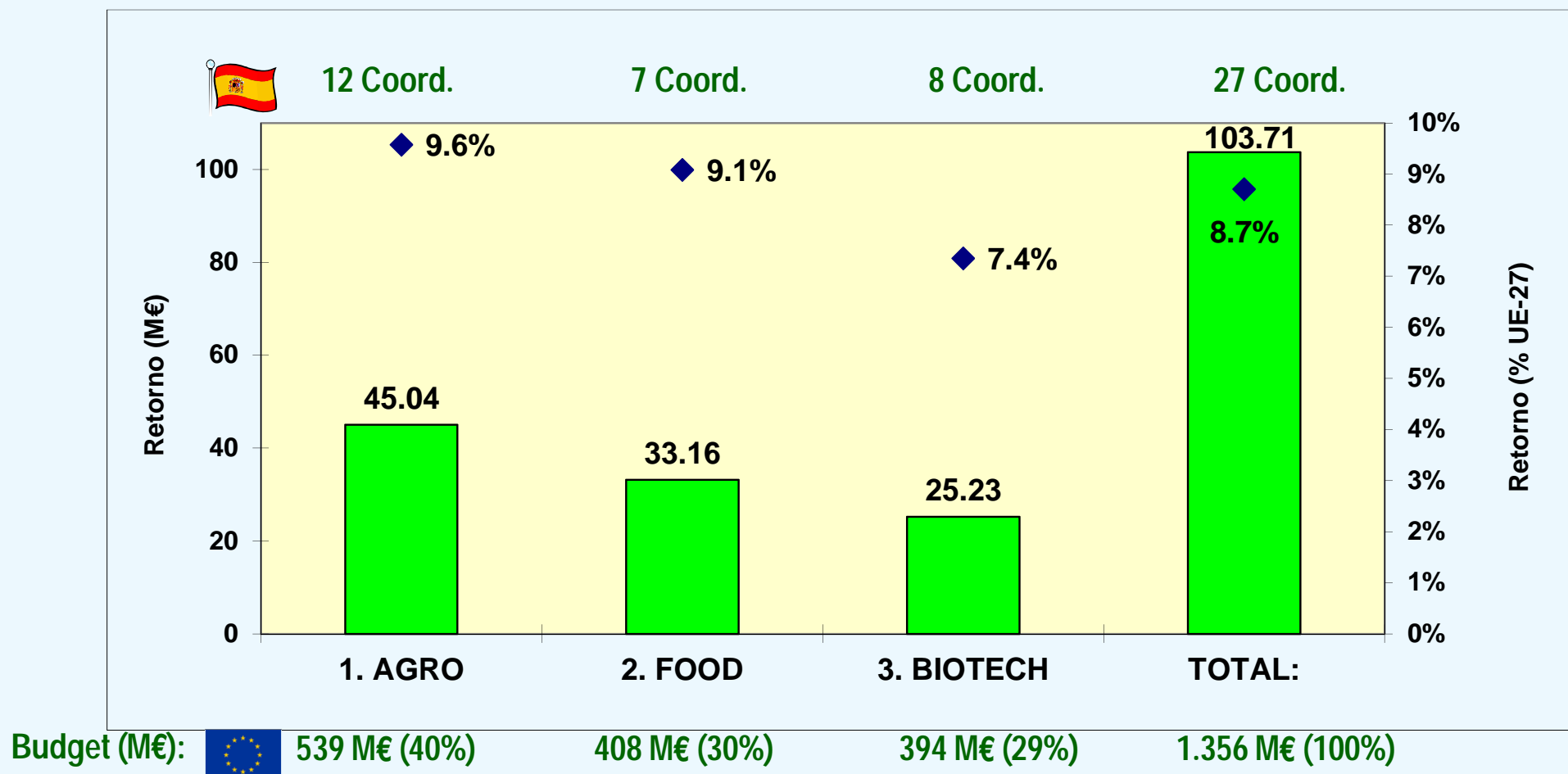
KBBE Calls 2007-12. Financial Return per COUNTRY.

SPAIN is ranked 6th		Actividades		Socios	Particip.	Subvención			2007-2011 %UE27
		Nº	Lider	Nº	Nº	Euros	%	%UE27	
	REINO UNIDO	296	62	250	606	184.073.579	13,6%	15,4%	↑ 15,2%
	ALEMANIA	279	48	281	558	154.364.745	11,4%	12,9%	↑ 12,8%
	HOLANDA	256	51	159	455	142.799.861	10,5%	12,0%	↓ 12,2%
	FRANCIA	238	48	186	445	120.759.071	8,9%	10,1%	↓↓ 11,1%
	ITALIA	249	34	192	461	108.026.967	8,0%	9,1%	↑↓ 8,9%
	ESPAÑA	220	27	227	420	103.707.526	7,6%	8,7%	↑↑↑ 8,0%
	BELGICA	178	32	128	295	78.373.736	5,8%	6,6%	6,6%
	DINAMARCA	132	18	68	204	57.765.020	4,3%	4,8%	4,4%
	SUECIA	116	10	54	160	46.505.109	3,4%	3,9%	4,1%
	SUIZA	108	6	65	151	41.925.904	3,1%	0,0%	0,0%
	FINLANDIA	80	13	41	118	37.847.329	2,8%	3,2%	3,5%
	NORUEGA	73	8	56	107	30.717.147	2,3%	0,0%	0,0%
	AUSTRIA	80	9	67	120	29.621.681	2,2%	2,5%	2,4%
	IRLANDA	73	5	37	106	27.538.314	2,0%	2,3%	2,3%
	GRECIA	88	11	47	119	22.963.641	1,7%	1,9%	2,0%
PORTUGAL	73	6	55	101	20.904.167	1,5%	1,8%	1,6%	
OTROS	---	10	768	1.164	148.593.614	11,0%	4,8%	---	
	Total:	398	398	2.681	5.590	1.356.487.411	100,0%		
	Total UE 27:					1.192.313.839	87,9%	100,0%	

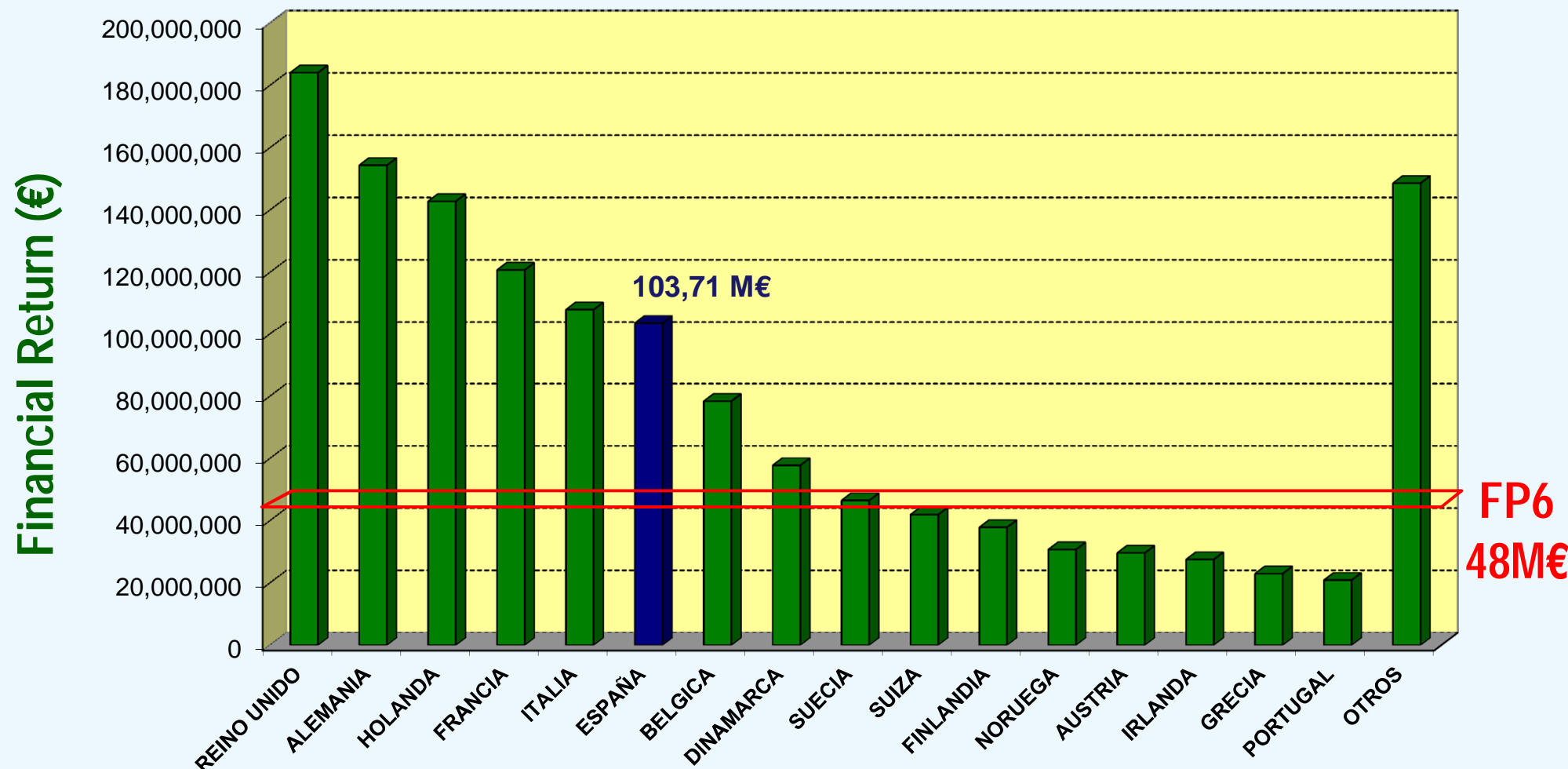
KBBE Calls 2007-12. Financial Return per ACTIVITY & YEAR.



KBBE Calls 2007-12. Overall Financial Return per ACTIVITY



KBBE Calls 2007-12. Financial Return per country (M€).



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MORE OPPORTUNITIES: SMEs INSTRUMENT in H2020

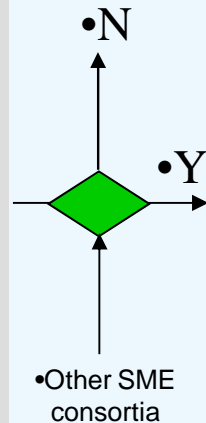


Phase 1: Concept and feasibility assessment

Idea/Concept = Business plan I

- Feasibility of concept
- Risk assessment
- IP regime
- Partner search
- Design study
- Pilot application intention
- Business plan II

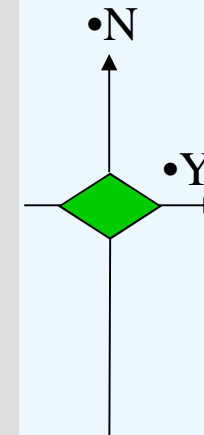
Lump sum: approx. 100 k€
EC funding 6-12 Months



Phase 2: R&D, Demonstration, market replication

- Development, prototyping, testing
- Piloting innovative processes, products and services
- Miniaturisation/design of products
- Plan & develop scaling-up
- Market replication
- Business plan III

Cost reimbursement:
1 to 3 M€ EC funding.
12 -24 Months



Phase 3: Commercialisation

- Quality label for successful projects.
- Facilitate access to private finance.
- Support via networking, training, coaching, information, addressing i.e. IP management, knowledge sharing, dissemination

No direct funding

Complementary to SME instrument

SME window in the EU financial facilities (debt and equity facility)

Mentoring and coaching scheme for beneficiaries SMEs

•*Only SME can apply for funding and can form collaborations according to their needs, including the subcontracting of R&D work.

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MORE OPPORTUNITIES: SMEs INSTRUMENT in H2020



Phase 1: Concept and feasibility assessment

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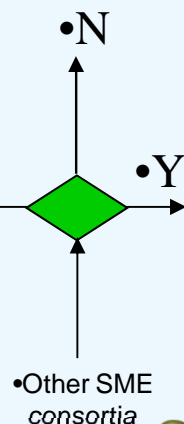
- Common calls several times a year or open calls FIFO

- Budget: 1/2 of 20% SME target or PE amendment?

- Preferably managed **CENTRALLY.**

- Professional coaches at the choice of SMEs to exit H2020

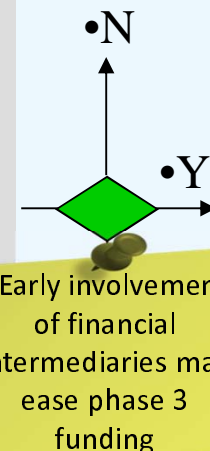
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- Business plan III

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12 -24 Months

- Evaluations done by independent industrial-investor biased panel



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Complementary to SME instrument

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With preference

Thanks for your attention!

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