

H2020: ENERGÍA LIMPIA, SEGURA Y EFICIENTE: LA TECNOLOGÍA EÓLICA EN EL WP2018-2020*



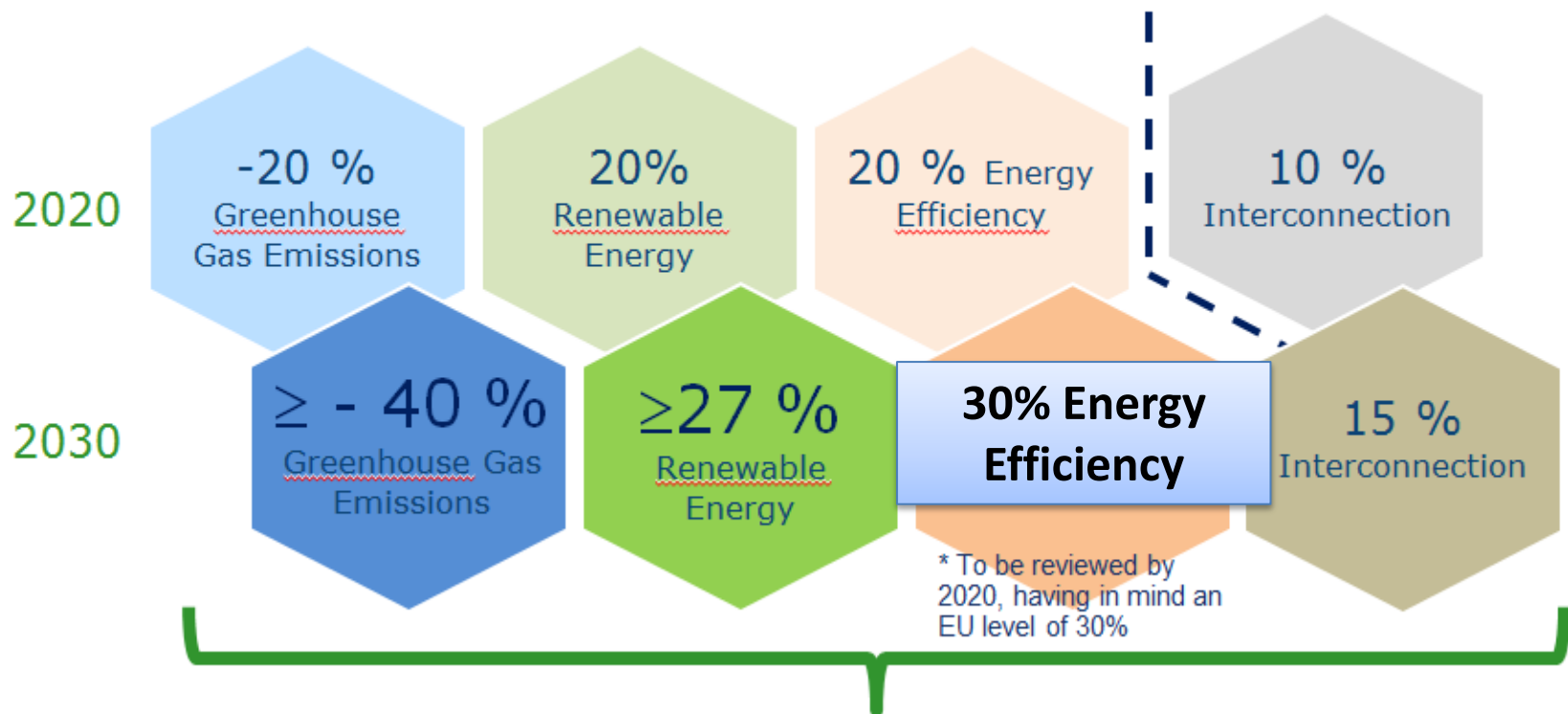
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Asamblea REOLTEC, 20 de noviembre de 2017

UE: 2030 Framework for Climate and Energy

Agreed headline targets



New governance system + indicators

Political Context (1)

Energy Union

- Energy **security**, solidarity and trust
- A fully **integrated** internal energy market
- **Energy efficiency** first
- Transition to a **low-carbon** society
- An Energy Union for Research, Innovation and Competitiveness



Political Context (2)



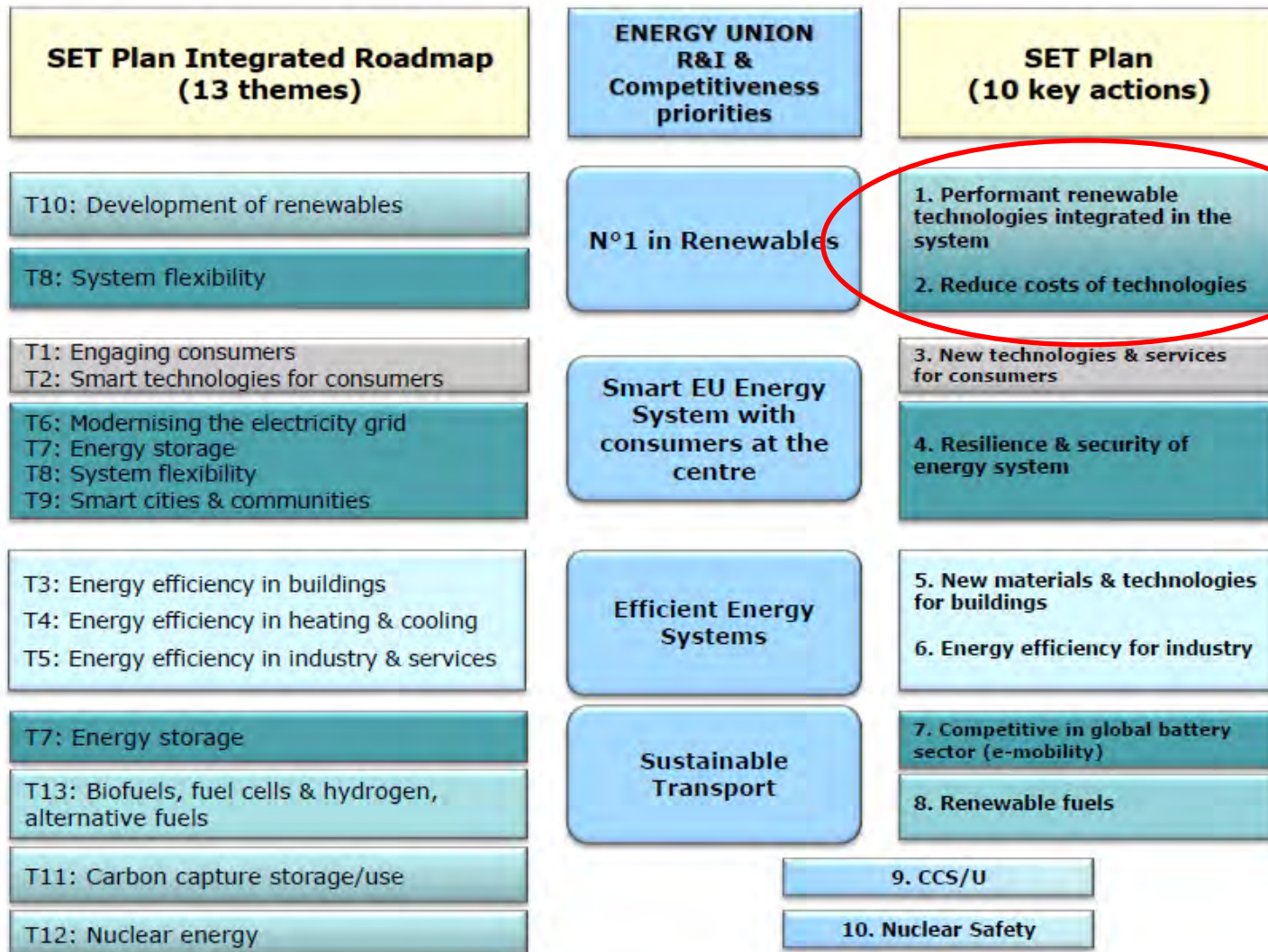
<https://ec.europa.eu/energy/en/news/commission-proposes-new-rules-consumer-centred-clean-energy-transition>



MISSION INNOVATION
Accelerating the Clean Energy Revolution

<http://mission-innovation.net/>

http://unfccc.int/paris_agreement/items/9485.php



<https://setis.ec.europa.eu/low-carbon-energy-technologies>

SET-Plan – Declaration on Strategic Targets in the context of an Initiative for Global Leadership in Offshore Wind

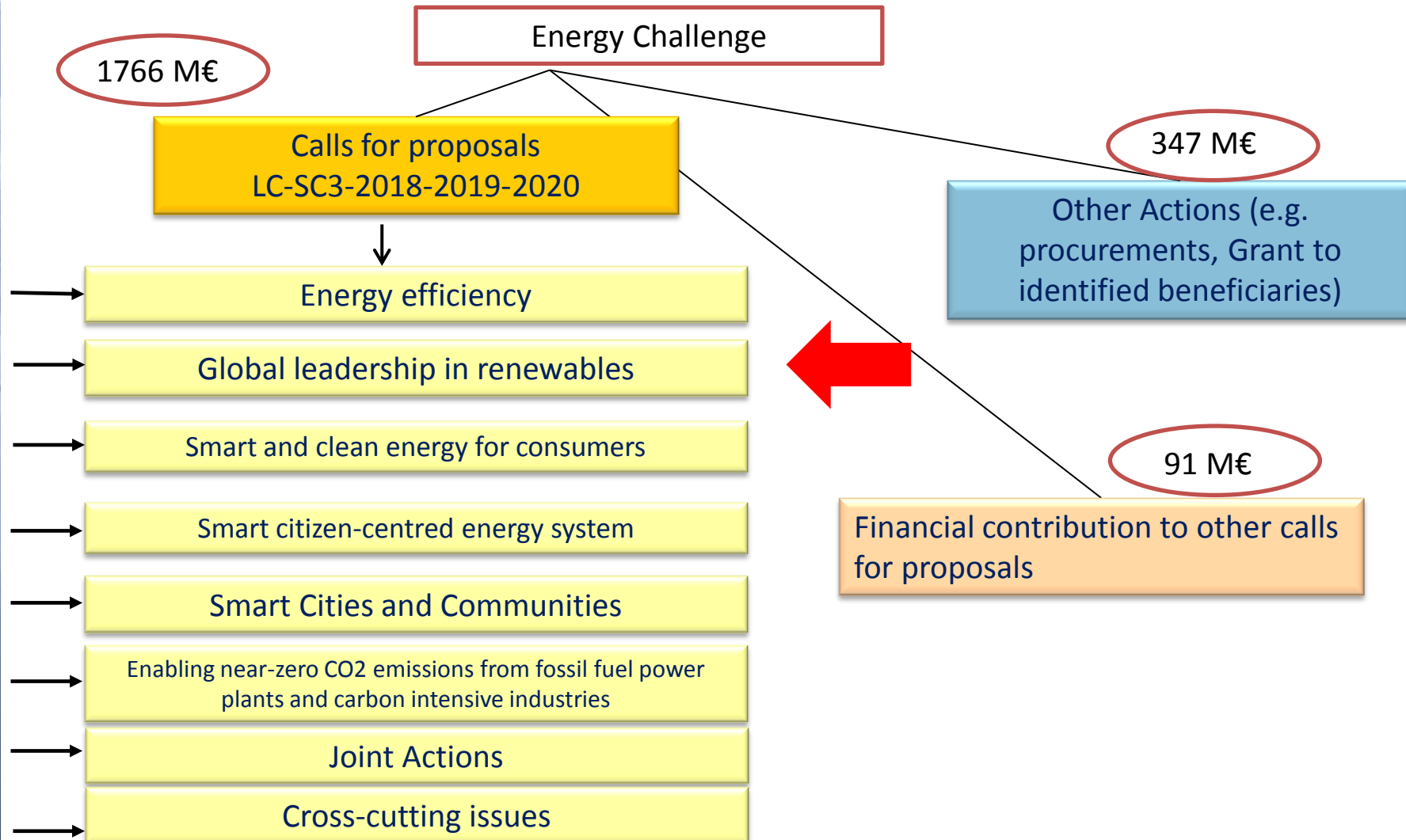
Agreed strategic targets for offshore wind energy

1. Reduce the **levelised cost of energy** (LCoE) at final investment decision (FID) for fixed offshore wind* by improvement of the performances of the entire value chain to
 - ✓ less than 10 ct€/kWh by 2020 and to
 - ✓ less than 7ct€/kWh by 2030;
- 2. Develop cost competitive integrated wind energy systems including substructures which can be used in **deeper waters** (>50m) at a maximum distance of 50 km from shore with a LCoE* of
 - ✓ less than 12 ct€/kWh by 2025 and to
 - ✓ less than 9 ct€/kWh by 2030

* the costs for delivering the electricity to onshore substations are taken into account within the LCoE

https://setis.ec.europa.eu/system/files/integrated_set-plan/declaration_of_intent_wind.pdf

Societal Challenge 3 - Secure, clean and efficient energy



Societal Challenge 3 - Secure, clean and efficient energy

Calls for proposals LC-SC3-2018-2019-2020

Energy efficiency	Global leadership in renewables	Smart and clean energy for consumers	Smart citizen-centred energy system	Smart Cities and Communities	Enabling near-zero CO2 emissions from fossil fuel power plants and carbon intensive industries	Joint Actions	Cross-cutting issues
192 M€*	445 M€*	20 M€*	176 M€*	110 M€*	88 M€*	52 M€*	42 M€*

* Budget figures for **2018-2019** only (2020 to be confirmed at a later stage)

Calls for proposals LC-SC3-2018-2019-2020

- Energy efficiency
- **Global leadership in renewables**
- Smart and clean energy for consumers
- Smart citizen-centred energy system
- Smart Cities and Communities
- Enabling near-zero CO2 emissions from fossil fuel power plants and carbon intensive industries
- Joint Actions
- Cross-cutting issues

Global leadership in renewables



	2018	2019	2020
Next renewable energy solutions	RES-2	RES-1	RES-3
Renewable energy solutions at consumer scale	Energy generation at building scale RES-4, RES-5, RES-6	Renewable energy solutions at district level and for industrial processes RES-7, RES-8	RES-9, RES-10
Renewable energy solutions for energy system implementation	Reduce costs of key technologies for renewable energy conversion RES-11, RES-12, RES-13	Optimize processes and manufacturing RES-14, RES-15 Provide flexibility to the energy system RES-16, RES-17	RES-18, RES-19, RES-20
Renewable fuels for transport	Drop-in fuel solutions for fossil-fuel substitution RES-21, RES-22	Upscaling renewable fuels production RES-23 RES-24	RES-25, RES-26, RES-27
Market Uptake Support	RES-28	RES-28	RES-28

Global leadership in renewables



Technology area	Research activities (RIA)	Innovation activities (IA)
Solar energy (PV, CSP)	RES-1-2019, RES-2-2018, RES-4-2018, RES-7-2019, RES-11-2018, RES-14-2019	RES-6-2018, RES-8-2019, RES-13-2018, RES-15-2019, RES-17-2019
Wind energy	RES-1-2019, RES-4-2018, RES-11-2018	RES-13-2018
Ocean energy	RES-1-2019, RES-11-2018, RES-14-2019	
Biofuels / alternative fuels	RES-1-2019, RES-2-2018, RES-16-2019, RES-21-2018, RES-23-2019	RES-17-2019, RES-22-2018, RES-24-2019
Geothermal energy	RES-1-2019, RES-4-2018, RES-11-2018, RES-14-2019	RES-8-2019, RES-13-2018
Heating / cooling, CHP	RES-1-2019, RES-4-2018, RES-11-2018	RES-5-2018, RES-8-2019, RES-12-2018
Hydro energy	RES-1-2019, RES-11-2018, RES-16-2019,	RES-17-2019
Virtual Power Plant	RES-16-2019	

- Topics for 2018 in black font; for 2019 in purple font; topics for 2020 not included (added as of mid-2018)
- Market-uptake activities (CSA, RES-28) cover all areas

Next renewable energy solutions



RES-1-2019: Developing the next generation of renewable energy technologies

- *Bring technologies that form be the backbone of the energy system in 2050 to TRL 3 to 4*
- *Recommended EU contribution per project: EUR 2-5 million*
- *Indicative topic budget: EUR 20 million, RIA*

RES-2-2018: Disruptive innovation in clean energy technologies

- *Accelerate technology development for Photovoltaic windows and bionic leaf from TRL3 to at least TRL5*
- *Stage-gate approach based on milestones and periodic reviews.*
- *Recommended EU contribution per project: EUR 2-3 million*
- *Indicative topic budget: EUR 12 million, RIA*

RES-3-2020: International Cooperation with USA on alternative renewable fuels for energy and transport

- *Text, budget and deadlines to be decided as of mid-2018*

Next renewable energy solutions



LC-SC3-RES-1-2019

Bringing these new energy conversion solutions, new renewable energy concepts and innovative renewable energy uses faster to commercialization

To TRL 3 to 4

RIA

EUR 20 million

Developing the next generation of renewable energy technologies

- Beside the development of the technology, the proposal will have to clearly address the following related aspects: the potential **lower environmental and climate impact** on a life cycle basis, the **better resource efficiency**, issues related to social acceptance or resistance to new energy technologies, related socioeconomic and livelihood issues.
- Support will be given to activities which focus on converting renewable energy sources into an energy vector, or the direct application of renewable energy sources.

Renewable energy solutions for implementation at consumer scale



2018: Energy generation at **building scale**

- **RES-4: Renewable energy system integrated at the building scale**
 - *RIA, TRL 3/4 -> TRL 4/5, EUR 2-5 million/project, topic budget: EUR 27.5 million, 2-stage submission*
- **RES-5: Increased performance of technologies for local heating and cooling solutions**
 - *IA, TRL 5/6 -> TRL 6/7, EUR 3-10 million/project, topic budget: EUR 10 million*
- **RES-6: Demonstrate significant cost reduction for Building Integrated PV (BIPV) solutions**
 - *IA, TRL 5/6 -> TRL 6/7, EUR 6-10 million/project, topic budget: EUR 30 million*

2019: Renewable energy solutions at district level and **for industrial processes**

- **RES-7: Solar Energy in Industrial Processes**
 - *RIA, TRL -> TRL 4/5, EUR 3-5 million/project, topic budget: EUR 10 million*
- **RES-8: Combining Renewable Technologies for a Renewable District Heating and/or Cooling System**
 - *IA, TRL -> TRL 6, EUR 8-15 million/project, topic budget: EUR 15 million*

Renewable energy solutions for implementation at consumer scale

Decarbonisation of the building sector (heating, cooling, electricity)

Further integration of energy technologies (and storage)

Highest possible share of RES in buildings, considering costs and implications for the user

TRL to 4-5

RIA

EUR 2 to 5 million

LC-SC3-RES-4-2018

Renewable energy system integrated at the building scale

- Solutions combining **different renewable energy technologies** to cover the highest possible share of **electricity, heating and cooling** needs
- Multi-family **residential or commercial or public or industrial buildings** (in the case of the industrial buildings, energy needs of the industrial process should not be addressed)
- Needs and requirements of **users and installers** to be addressed (**SSH expertise**)
- **Reduction of air pollutants**



- ✓ Mission Innovation
- ✓ EeB cPPP



Renewable energy solutions for energy system level implementation

2018: Reduce costs of key technologies for renewable energy conversion

- **RES-11: Developing solutions to reduce the cost and increase performance of renewable technologies**
 - *RIA, TRL 3/4 -> TRL 4/5, EUR 2-5 million/project, topic budget: EUR 30 million, 2-stage submission*
- **RES-12: Demonstrate highly performant renewable technologies for combined heat and power (CHP) generation and their integration in the EU's energy system**
 - *IA, TRL 5 -> TRL 7/8, EUR 15-20 million/project, topic budget: EUR 30 million*
- **RES-13: Demonstrate solutions that significantly reduce the cost of renewable power generation**
 - *IA, TRL 5 -> TRL 7, EUR 15-20 million/project, topic budget: EUR 45 million*

2019: Optimize processes and manufacturing

- **RES-14: Optimising manufacturing and system operation**
 - *RIA, TRL 3/4 -> TRL 4/5, EUR 3-5 million/project, topic budget: EUR 20 million, 2-stage submission*
- **RES-15: Increase the competitiveness of the EU PV manufacturing industry**
 - *IA, TRL 5/6 -> TRL 6, EUR 10-13 million/project, topic budget: EUR 25 million*

2019: Provide flexibility to the energy system

- **RES-16: Development of solutions based on renewable sources that provide flexibility to the energy system**
 - *RIA, TRL 3/4-> TRL 4/5, EUR 3-5 million/project, topic budget: EUR 15 million*
- **RES-17: Demonstration of solutions based on renewable sources that provide flexibility to the energy system**
 - *IA, TRL 5-> TRL 7, EUR 12-15 million/project, topic budget: EUR 40 million*

Renewable energy solutions for energy system level implementation

Achieving or maintaining global leadership in renewable energy technologies requires cost reductions

TRL 3-4 to 4-5

RIA

EUR 2 to 5 million

Reduce the CAPEX and/or OPEX of energy generation

LC-SC3-RES-11-2018

Developing solutions to reduce the cost and increase performance of renewable technologies

- **Floating Wind** Technology development including reliable, cost efficient **anchoring and mooring system**, dynamic cabling, installation techniques, and O&M concepts;
- **Onshore Wind** Disruptive technologies for the **rotor, generator, drive train and support structures** for the development of the advanced or next generation wind energy conversion systems;

Renewable energy solutions for energy system level implementation

LC-SC3-RES-13-2018

Reduce the cost of energy generation from renewable energy sources

TRL 5 to 7

IA

EUR 15 to 20 million

Reduce the cost of energy generation rendering the renewable energy technologies competitive

Demonstrate solutions that significantly reduce the cost of renewable power generation

- **Offshore wind** Development and validation of **new manufacturing, installation and/or operation and maintenance techniques**, introduction of new materials. Health and environmental impact issues will be taken into account;

Deadlines

	2018	2019	Deadlines
Next renewable energy solutions		RES-1(2 stages)	16/10/2018 (1 st) 25/4/2019 (2 nd)
Renewable energy solutions at consumer scale	RES-4 (2 stages)		31/1/2018 (1 st) 23/8/2018 (2 nd)
Renewable energy solutions for energy system implementation	RES-11 (2 stages) RES-13		31/1/2018 (1 st) 23/8/2018 (2 nd) 13/2/2018



Resultados Energía 2014-2016

2012 propuestas, 1.100 con presencia ES (54,7%)
307 coordinadas ES (15,3%)

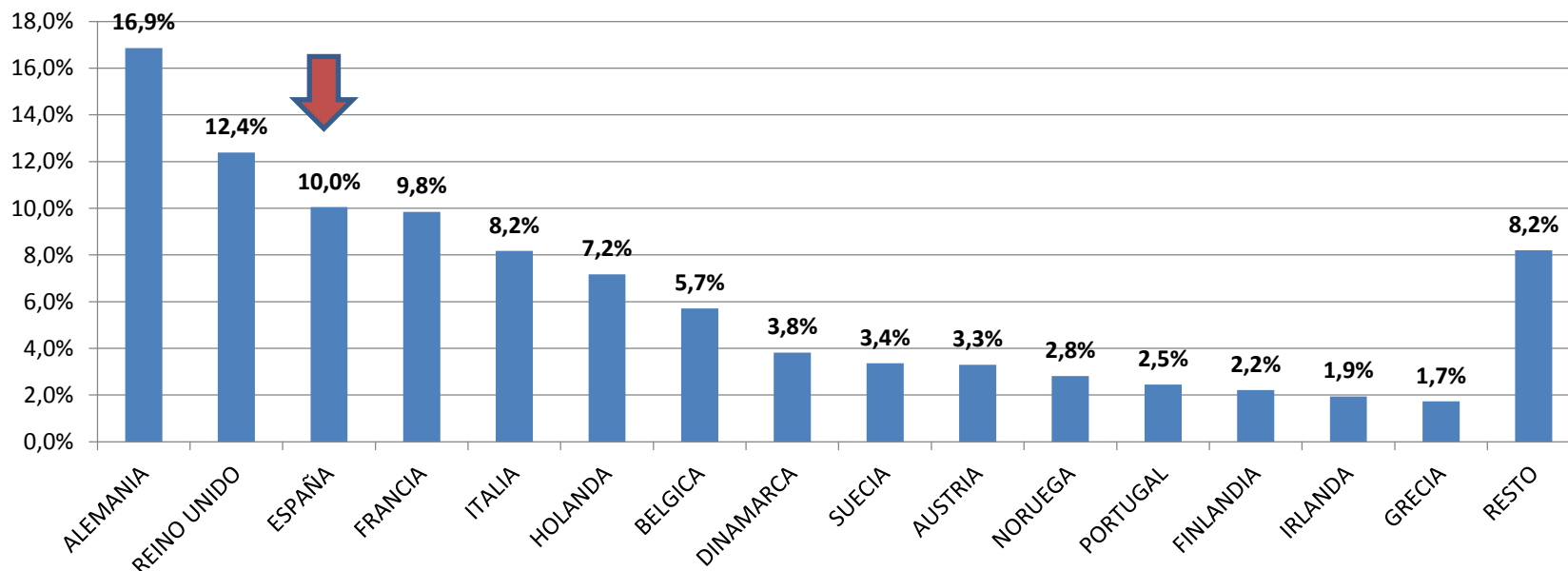
325 proyectos, 178 con presencia ES (54,8%)
48 coordinadas ES (14,8%)

Tasa de éxito ES 16,2% - En línea con la media europea
16,2%

187,1 M€ para ESPAÑA. 3º puesto por detrás de Alemania
y Reino Unido

H2020- SC 3- Low Carbon Energy (LCE)

% Retorno por países



1.187 M.€ Adjudicados. España: 119,25 M.€ (10%)

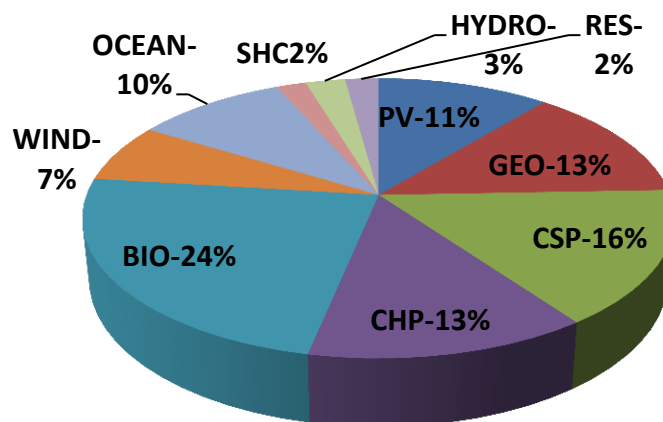
En 93 propuestas de las 178 financiadas hay participación ES (52,2%)

ES lidera 26 proyectos (14,6%)

No incluye datos de la JTI-FCH

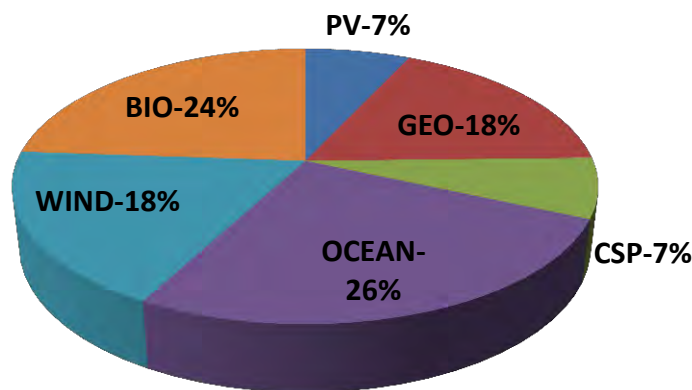
WP2014-2015-2016 - Topics RES y Bio-fuels RIA

	2014			2015			2016			TOTAL	
	Proposals	Funded	Subv (M€)	Proposals	Funded	Subv (M€)	Proposals	Funded	Subv (M€)	Funded	Subv (M€)
PV	36	2	9,5	47	1	3,3	100	3	12,8	6	25,6
GEO	11	2	12,1	18	3	14,9		1	4,0	6	31,0
CSP	25	1	6,5	13	2	11,8		4	17,9	7	36,2
CHP	31	2	12,1	19	2	9		2	9,6	6	30,7
BIO	81	2	10,6	88	4	22		4	22,3	10	54,9
WIND	25	1	7,3	10	1	3,5		1	4,9	3	15,7
OCEAN	25	0	0	20	2	10,8		3	11,7	5	22,5
HYDRO	9	0	0	4	0	0		1	5,9	1	5,9
SHC	18	0	0	6	1	4,4		0	0,0	1	4,4
RES								1	5,0	1	5
Total	261	10	58,1	225	16	79,8		20	94,1	46	231,9



WP2014-2015-2016 - Tecnologías RES y Bio-fuels - IA

	2014			2015			2016			TOTAL	
	Proposals	Funded	Subv (M€)	Proposals	Funded	Subv (M€)	Proposals	Funded	Subv (M€)	Funded	Subv (M€)
PV	3	0	0	57	1	5,5	6	1	15,0	2	20,5
GEO	6	2	11,9		2	30,7	2	1	10,0	5	52,6
CSP	8	2	20,9		0	0				2	20,9
OCEAN	8	1	17		2	30,6	6	2	30,0	5	77,6
WIND	6	2	14		2	30,4	5	1	10,0	5	54,4
BIO	5	2	30,2	17	0	0	7	4	40,7	6	70,9
Total	36	9	94	74	7	97,3	26	9	105,7	25	296,9



De interés...



WP 2018-2020:

http://ec.europa.eu/research/participants/data/ref/h2020/wp/2018-2020/main/h2020-wp1820-energy_en.pdf

Information Day Bruselas:

https://ec.europa.eu/easme/en/horizon-2020-secure-clean-and-efficient-energy-info-day?pk_campaign=energy-nwl-2017-10

Partner Search:

<http://www.partnersearch.c-energy2020.eu/>



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