

H2020: ENERGÍA LIMPIA, SEGURA Y EFICIENTE: PROGRAMA 2016-2017



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RS3: Programme Structure Call 2016-2017

Secure Clean and efficient Energy



Cross-Cutting activities

Energy Efficiency

25 Topics
Budget: 194 M.€

Low Carbon Technologies

36 topics
Budget: 720,22 M.€

Smart Cities and Communities

1 topic
Budget: 131,5 M.€



EASME

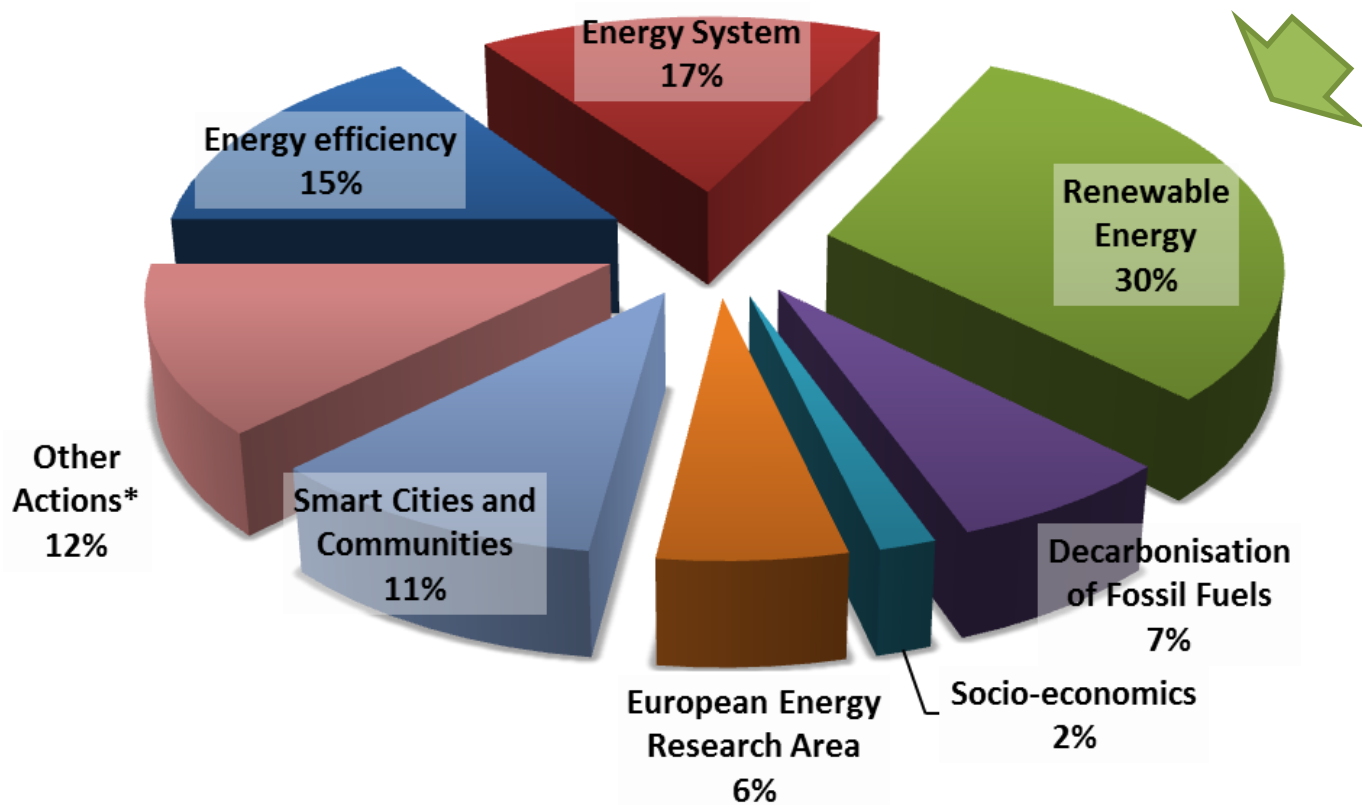
INEA

(EACI)

(TEN-T EA)



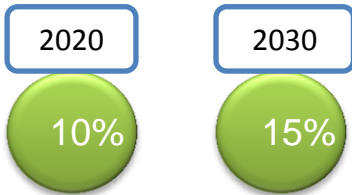
Indicative budget distribution per area for Energy calls 2016-2017



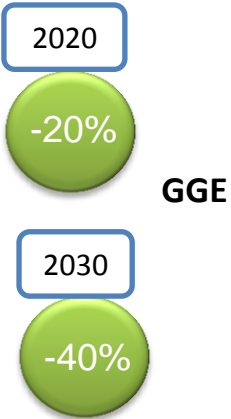
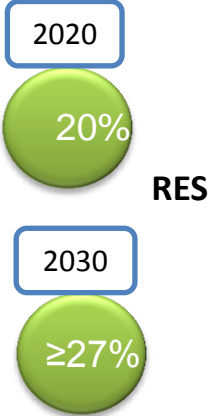
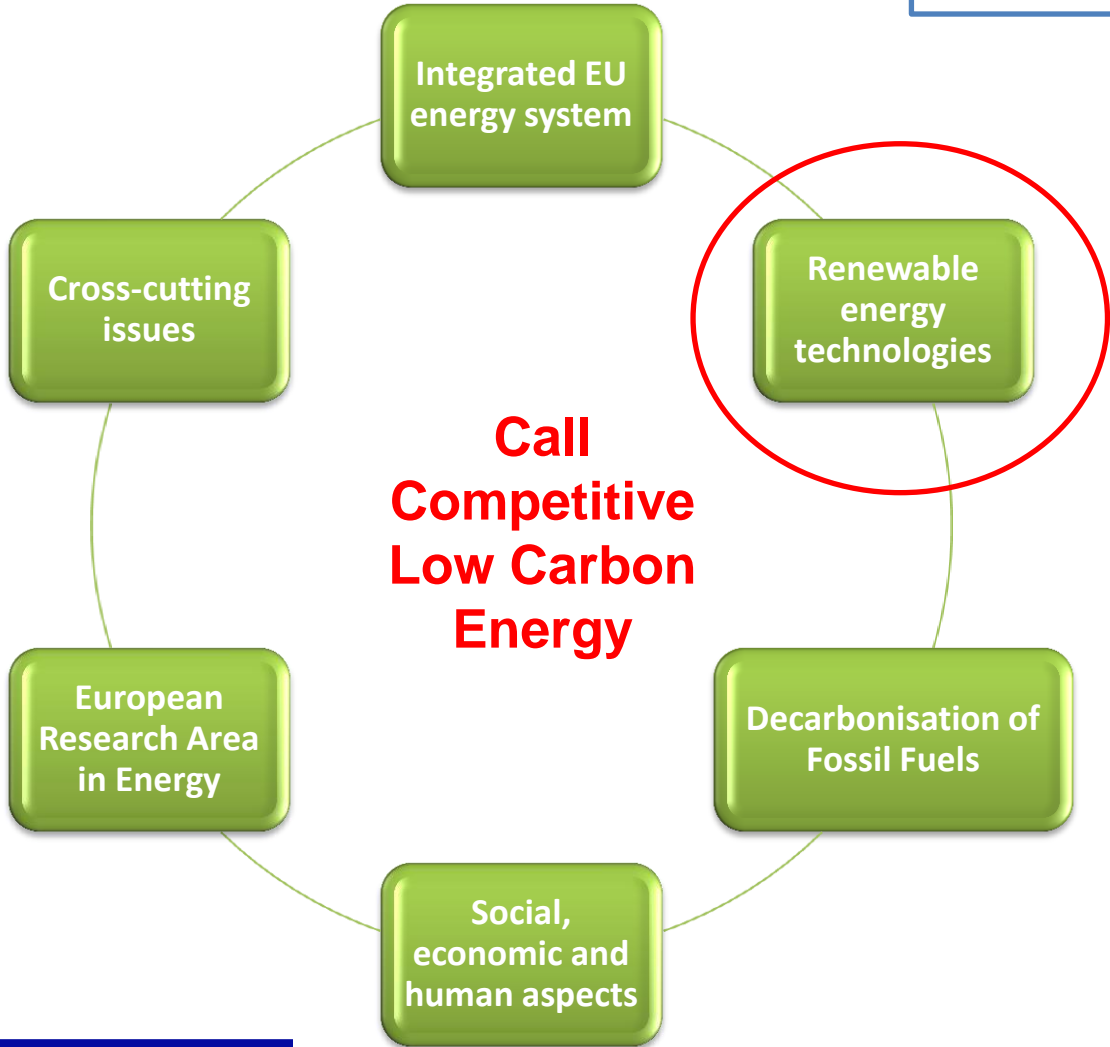
Total budget 2016-2017: EUR 1 344 million

* *Other Actions* = actions not implemented through calls for proposals (e.g. Risk Finance, procurements, subscriptions, contributions, grant to identified beneficiaries)

Interconnections



Suministro de electricidad a bajo coste y de baja emisión de carbono





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), Saliency gradient energy, etc.), **mature technologies where further innovation remains important** (hydropower, PV-thermal) and **replace critical pollutant/expensive materials by eco-friendly/sustainable materials**.



Renewable energies

	Basic Research (TRL <4)	Advanced Research (TRL 3-5)	Demonstration (TRL 5-7)	Market uptake
PV	LCE-6	LCE-7	LCE-9, LCE-10	LCE-21
CSP			LCE-11	
Solar Heating and Cooling			LCE-12	
Wind Energy			LCE-13, LCE-14	LCE-21
Ocean Energy			LCE-15, LCE-16	
Hydropower				
Geothermal Energy			LCE-17, LCE-23, LCE- 18	
CHP				
RES integration in the system				
Bio- and Renewable Alternative Fuels			LCE-8, LCE-22	LCE-19, LCE-20



Wind energy

Basic research (RIA)

- Improved understanding of the physics of wind as primary energy source and wind energy technology - LCE-6-2017

Improved understanding of the physics of wind as a primary resource and wind energy technology: For an ***improved design of large-scale wind rotors*** a better understanding of the underlying physics is needed. The challenge is to increase understanding of the underlying physics and to significantly ***improve the simulation capability for multi-scale wind flows, loads and materials failure***. Significant ***high-performance computing (HPC)*** resources will be needed for this challenge. It is expected that further research towards this challenge will continue after the project, therefore the ***data retrieved in this project should be with open access***.

Research results could contribute to IEA Wind and for that reason cooperation with IEA partner countries is expected. International cooperation with leading groups outside Europe is encouraged.



Wind energy

Advanced research (RIA)

- Reduction of environmental impact – LCE-7-2016-2017

Advanced control of large scale wind turbines and farms: *The current progress in wind energy like larger wind turbines and farms, floating **offshore wind**, but also **specific geographical challenges**, require the development of advanced control strategies to improve efficiency and to further reduce the cost of wind energy as well as to increase the value of wind energy by improving the response to power system disturbances or electricity market conditions. While one of the primary challenges to be addressed is the **development of new controls systems** that treat the entire wind plant as a controls optimization problem it is **also needed to optimize energy capture for individual assets with the wind-turbine-centric controls and to develop a better understanding of the wind resources and better wind forecasting methods**. The overall challenge is to design an integrated approach to **advanced operation of a wind turbine and/or farm**, to improve performance for new and operating wind power plants and improve control of the wind turbine and/or farm, reducing the failure rate and therefore resulting in less operation and maintenance.*



Wind energy

Demonstration (IA)

- Solutions for reduced maintenance, increased reliability and extended life-time of off-shore wind turbines/farms – *LCE-13-2016*

Offshore wind turbines, both fixed bottom and floating, are subject to high loads in form of vibrations from wind and waves, as well as from rotation of the turbines. The focus is to reduce the need for maintenance of wind turbines/farms and to develop measures for life-time extension, demonstrating innovative solutions and tools, and thereby the levelised cost of wind energy. The action can include the development of tools for doing predictive maintenance, hereunder models of component/soil degradation, and establishment a database with operational and failure data for validation of tools. The actions should consider not only the wind turbines but also the substructure and the soil conditions. Participation of wind turbine manufacturers and large wind farm operators is expected



Wind energy

Demonstration (IA)

- Large >10 MW wind turbines – LCE-14-2017

*The development of **large scale (>10MW) turbines** will have intrinsically **logistical requirements** regarding **handling, installation, operation and maintenance**, constituting a large part of the levelised cost of energy (LCOE). Improved handling (storage, loading, transport, etc.) on land, in the harbors and/or at sea, as well as improved logistics around operations and maintenance have to be taken into account in this innovation action.*

*Opening the project's test sites, pilot and demonstration facilities, or research infrastructures for **practice oriented education, training or knowledge exchange is encouraged**. Activities to **engage and involve local communities in the innovation action, to further improve social acceptance are encouraged**.*



Wind energy

Market-uptake (CSA)

- Increase market share of wind energy – LCE-21-2017

*Increasing the market share of wind energy systems: **One** of the following specific sub-challenges need to be addressed:*

- i) Develop **spatial planning methodologies and tools for new onshore wind and repowering** of old wind farms taking into account **environmental and social impacts** but also the adoption of the **latest developments in wind energy technology**;*
- ii) Identify the **bottlenecks for further deployment in Europe** and the **regulations which limit** the adoption of technological innovation and their deployment possibilities;*
- iii) Increase the **social acceptance and support** for wind energy in 'wind energy scarce regions' using, with solid involvement of social sciences and humanities and local communities and civil society to understand best practices and to increase knowledge about social and environmental impact of wind energy.*

Renewable energy – Topic overview

**Deadline 16 February
2016**

- LCE-7 – budget 61,3 M€
- LCE-8 – budget 10 M€
- LCE-23 – budget 10 M€

**Deadline 8 September
2016**

- LCE-9 – budget 25 M€
- LCE-13 – budget 10 M€
- LCE-15 – budget 15 M€
- LCE-19 – budget 15 M€
- LCE-20 – budget 15 M€
- LCE-22 – budget 5 M€

IA – green
RIA – blue
CSA- orange

Renewable energy – Topic overview

Deadline 5 January 2017

- LCE-8 – budget: 10 M€
- LCE-21 – budget 15 M€

**Deadlines*: 1st stage:
29/11/2016
2nd: 22/8/2017**

- LCE-6 – budget 20 M€
- LCE-7 – budget 63,5 M€*

Deadline 7 September 2017

- LCE-10 – budget 10 M€
- LCE-11 – budget 12 M€
- LCE-12 – budget: 8 M
- LCE-14 – budget 25 M€
- LCE-16 – budget 7 M€
- LCE-17 – budget 8 M€
- LCE-18 – budget 10 M€
- LCE-19 – budget 15 M€
- LCE-20 – budget 10 M€

RIA – blue
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*Provisional



Social Sciences and Humanities (SSH)

Transition to a low-carbon energy system is a complex societal problem because it changes the interrelations between all relevant actors in the system (-> policy, economic, governance challenges)

- Socioeconomic incentive structures that encourage or discourage **energy-responsible behaviour**;
- Political, institutional, and organizational frameworks that **condition and structure citizen participation**, including questions of inclusiveness, gender, democracy, organizational formats and business models.
- **Topic:** LCE31 RIA. 10M€ budget. Prop 2-4M€

Deadline*: Previsto en 2 fases. Cierre de la primera fase el 29/11/2016

*Provisional

Supporting the development of the European Research Area in energy

- Encourage coordination of national and EU efforts to increase effectiveness and efficiency;
- Pool resources and create critical mass to address challenges that no country can tackle alone;

Topic: LCE 35,37* (ERA-NETs)



European Research Area

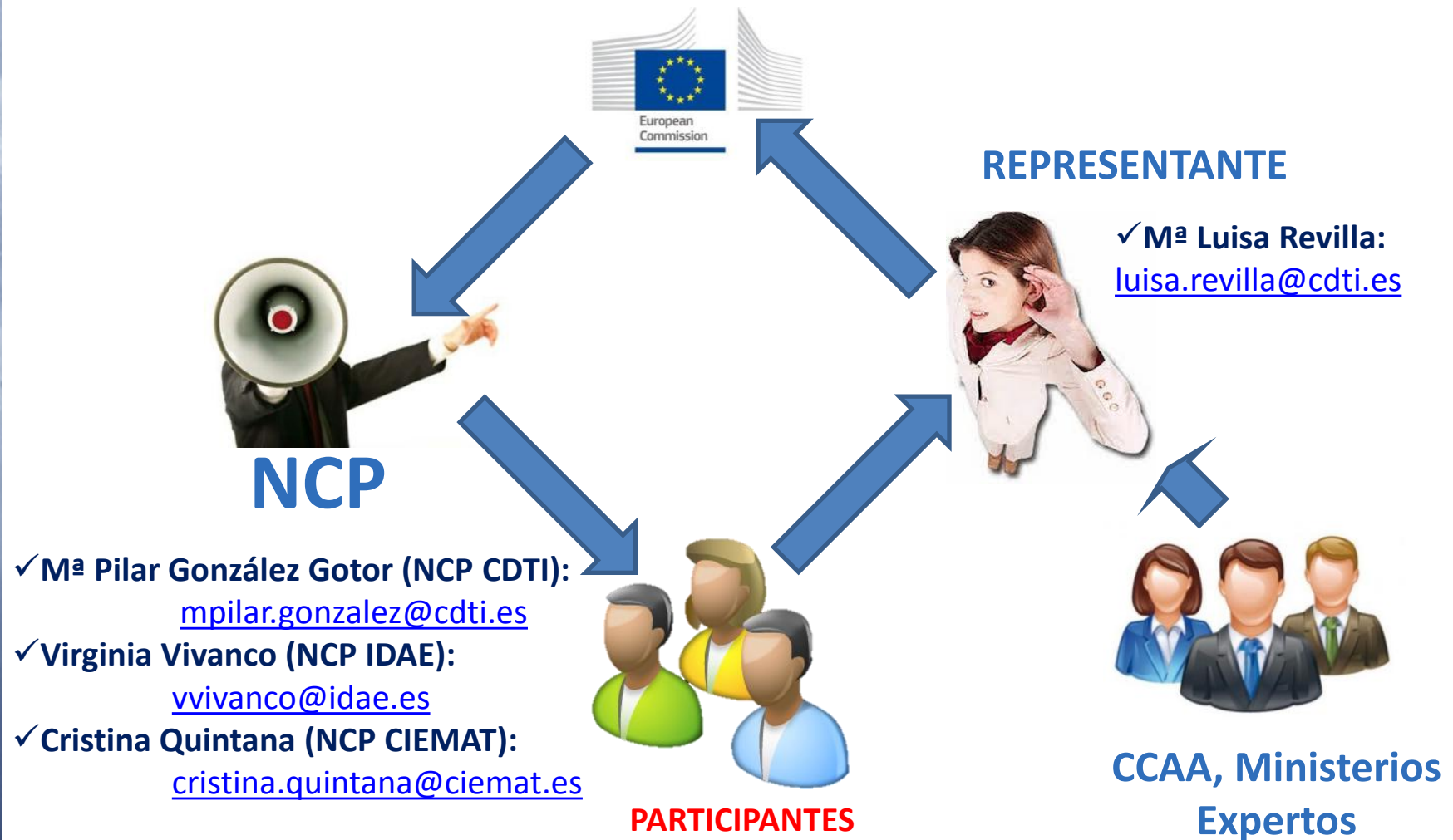


- Align efforts to develop a European Research Area in energy and to create the Energy Union, one of the political priorities of the Juncker Commission;
- The new Integrated SET Plan provides the strategic framework for setting priorities and for discussing implementation;



*Provisional

Roles en la gestión de Horizonte 2020



ESHORIZONTE2020

Portal español del Programa Marco de Investigación e Innovación de la Unión Europea

MUCHAS GRACIAS



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