

# Desafio Societal 3 – Energia segura, não poluente e eficiente



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H2020

## Participação Nacional no Horizonte 2020 – DS Energia

Propostas PT: **368**

Projetos financiados com PT: **57**

Projetos coordenados: **4**

Participantes: **621**

Financiamento PT: **36,45 M€ → 2,38%**

# Objetivos estratégicos na área da Energia no Horizonte 2020

**Redução do  
consumo**

**Eletricidade  
hipocarbónica**

**Combustíveis  
alternativos**



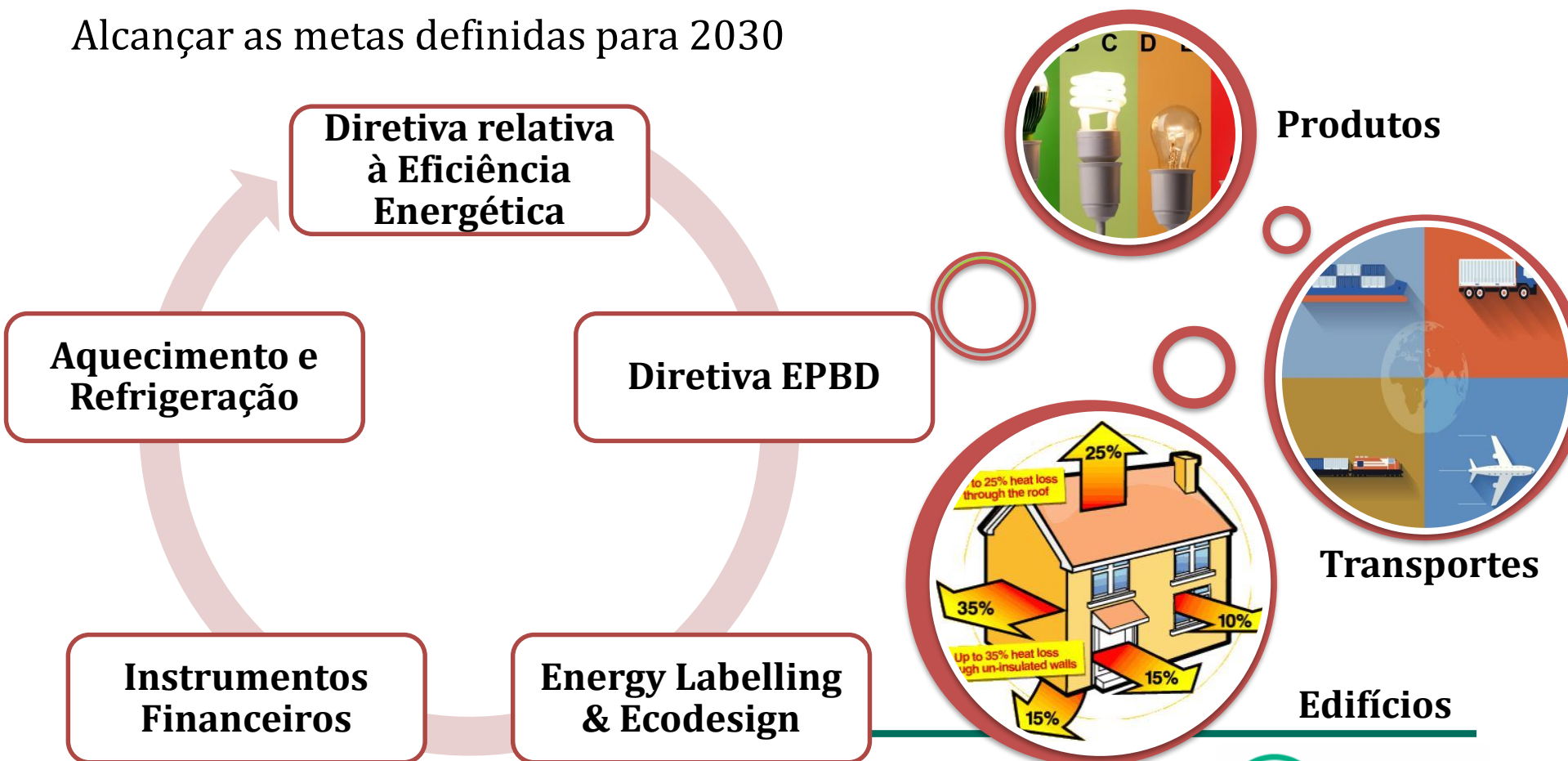
**Uma rede  
europeia única e  
inteligente**



# Desafio Societal da Energia – União da Energia

## Eficiência Energética

Alcançar as metas definidas para 2030



# Programa de Trabalhos do Desafio Societal 3 (2016-2017) – Concursos Abertos 2016 & 2017



## CALL ENERGY EFFICIENCY

**2016** - 9 TÓPICOS → até 15/09/ 2016

**2017** - 14 TÓPICOS → até 05/01/2017 & 07/09/2017

136M €



## CALL LOW CARBON ENERGY

**2016** - 12 TÓPICOS → até 07 /06/2017

**2017** - 22 TÓPICOS → até 07 /06/ 2017

487M €



## CALL SMART AND SUSTAINABLE CITIES

### Lighthouse projects (SCC1)

**2016** – 1 TÓPICO → até 5/04/2016

**2017** - 1 TÓPICO → até 14 /02/2017

131M €

# Programa de Trabalhos de Energia 2016-2017

## ENERGY EFFICIENCY – 25 TÓPICOS



## SMART CITIES AND COMMUNITIES – 1 TÓPICO



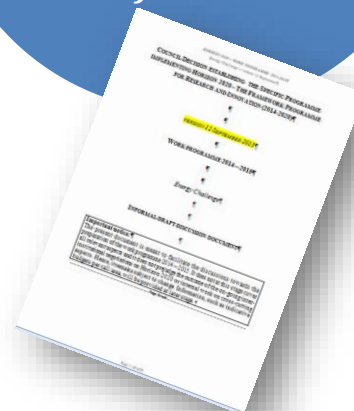
## COMPETITIVE LOW CARBON ENERGY – 37 TÓPICOS



## SMES FOR A LOW CARBON ENERGY AND EFFICIENT ENERGY SYSTEM 1 TÓPICO



*Programa de  
Trabalhos 2016-  
2017  
– Energia Segura,  
Não Poluente e  
Eficiente*



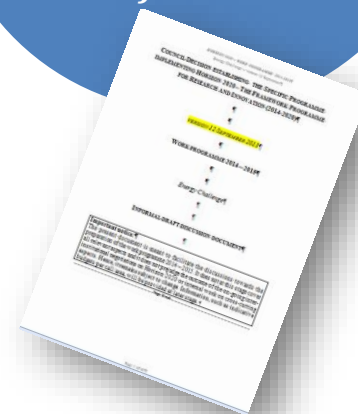
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# Programa de Trabalhos de Energia 2016-2017

## ENERGY EFFICIENCY – 25 TÓPICOS



*Programa de  
Trabalhos 2016-  
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# Desafio Societal Energia – Concursos 2016/2017 – Eficiência Energética

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## Áreas de financiamento



Sistemas de Aquecimento e Arrefecimento



Edifícios e Consumidores



Indústria e Produtos



Investimento





# Aquecimento e arrefecimento

Heating and Coolings	TOPIC	Type of scheme	€/project
EE 1 – 2017	Waste heat recovery from urban facilities and re-use to increase energy efficiency of district or individual heating and cooling systems	IA (TRL 6-8)	3-4M€
<i>Keywords: Waste heat and waste water heat recovery in urban areas in services sector and transport system facilities</i> <i>Important aspects: replicability scalability, modularity; build on previous projects supported in FP7 and H2020</i>			
EE 2 – 2017	Improving the performance of inefficient district heating networks	CSA	1-2M€
<i>Keywords: concrete regional or national action plans for the retrofitting of inefficient district heating networks</i>			
EE 4 – 2016/2017	New heating and cooling solutions using low grade sources of thermal energy	IA (TRL5-6 to 7-8)	3-4M€
<i>Keywords: technologies to use low grade energy sources (residual and RES sources of thermal energy) and/or technologies that are able to take advantage of <b>very low and low</b> (moderate) temperature resources by upgrading them</i>			





# Consumidores

Engaging consumers	TOPIC	Type of scheme	EC Contribution
EE 6 – 2016/2017	Engaging private consumers towards sustainable energy	CSA	1-2M€

*Keywords: awareness of the collective consumer action, actions to motivate changes, prosumers, vulnerable consumers, ict-solutions, understading energy bills*

EE 7 – 2016/2017	Behavioural change toward energy efficiency through ICT	IA	1-2M€
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*Keywords: ICT-based solutions (smart meters, smart plugs, smart appliances), energy savings, factors influencing consumer choices and behaviour*

EE 9 – 2016/2017	Engaging and activating public authorities	CSA	1-1,5M€
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*Keywords: a) develop, finance and implement sustainable energy plans and measures  
b) peer to peer learning for pub. Authorities – capacity to help deliver the energy transition*



# Edifícios

Buildings	TOPIC	Type of scheme	EC Contribution
EE 11 – 2016/2017	Overcoming market barriers and promoting deep renovation of buildings	IA (TRL 6-8)	1-2M€
<i>Keywords: remove regulatory barriers and non-regulatory barriers, at least 60% of energy savings, financial mechanisms, instruments and business models</i>			
EE 12 –2017	Integration of Demand Response in Energy Management Systems while ensuring interoperability through PPP (EeB PPP)	CSA	3-4M€
<i>Keywords: Solutions to optimize the interaction between buildings and Intelligent Energy Management Systems towards optimizing, at building level, energy consumption, renewable energies production and local storage</i>			
EE 14 – 2016/2017	Construction skills	CSA	1-2M€
<i>Keywords: upgrading or setting upqualification and training schemes to increase the number of skilled building professionals/blue collar workers/installers</i> 			



# Indústria, Serviços e Produtos

Industry, Services, products	TOPIC	Type of scheme	EC Contribution
EE 15 –2017	Increasing capacities for actual implementation of energy efficiency measures in industry and services	CSA	1-2M€

*Keywords: Capacity building programmes for qualified experts carrying out energy audits OR to enhance corporate policy towards energy efficiency*

EE 16 – 2016/2017	Effective implementation of EU product efficiency legislation	CSA	1-2M€
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*Keywords: Energy efficient products regulations: market “push” and market “pull”*

EE 17 – 2016/2017	Valorisation of waste heat in industrial systems <b>(SPIRE PPP)</b>	RIA (TRL5-7)	4-5M€ 5-6 M€
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*Keywords: Energy Intensive Industries, design, build and test & demonstrate new processes/components or innovative adaptation of existing solutions for waste energy recovery in large industrial systems*






# Indústria, Serviços e Produtos

Industry, Services, products	TOPIC	Type of scheme	EC Contribution
EE 18 – 2017	Energy efficiency of industrial parks through energy cooperation and mutualised energy services	CSA	1-2M€

*Keywords: Improve energy efficiency of industry parks: energy cooperation between businesses OR joint energy services*

EE 19 – 2017	Public Procurement of Innovative Solutions for Energy Efficiency	PPI 	1-2M€
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*Keywords: Procurement of innovative solutions for buildings, products or services not available on a commercial basis and with a higher energy performance level*

EE 20 –2017	Bringing to market more energy efficient and integrated data centres	IA	2-3M€
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*Keywords: innovative and energy efficient cooling solutions, waste heat reuse, geographical and temporal workload balance, integration of local and remote renewable energy sources, integration in smart grids, integration with district heating/cooling networks, integration of power backup system in the grid and use of heat pumps for efficient use of waste heat*



# Investimento

Financing for Energy Efficiency	TOPIC	Type of scheme	EC Contribution
EE 22– 2016/2017	Project Development Assistance	CSA	0,5-1,5M€

*Keywords: sustainable energy investments (7.5M€-50M€); financial engineering,*

EE 23 –2017	Innovative Financing Schemes	CSA	1-2M€
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*Keywords: Development or replication of innovative financing schemes: energy efficiency financing support, impact analysis, capacity building, training schemes*

EE 24 – 2016/2017	Making the energy efficiency market investible	CSA	1-1,5M€
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*Keywords: standardization and benchmarking of EE investments, financial performance of EE investments, institutional investors*

# Prazos de submissão – Concurso Eficiência Energética 2016

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Concurso	Tópico	Prazo de Submissão
<b>H2020-EE-2016-CSA</b>	EE-06, 09, 11, 13, 14, 22, 24, 25	Single stage 15/09/2016
<b>H2020-EE-2017</b>	EE-01, 04, 07, 12, 17, 20	Single stage 19/01/2017
<b>H2020-EE-2017-CSA</b>	EE-02, 06, 09, 11, 14, 15, 16, 18, 19, 23, 24	Single stage 07/06/2017

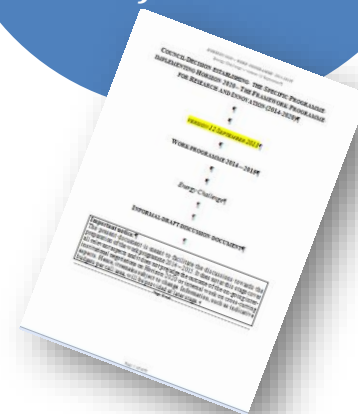
# Programa de Trabalhos de Energia 2016-2017



**COMPETITIVE LOW CARBON ENERGY  
– 37 TÓPICOS**



*Programa de  
Trabalhos 2016-  
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Eficiente*







# COMPETITIVE LOW-CARBON ENERGY – Áreas

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1. Towards an **integrated EU energy system**
2. **Renewable energy technologies**
3. Enabling the **decarbonisation of the use of fossil fuels** during the transition to a low-carbon economy
4. **Social, economic and human aspects** of the energy system
5. Supporting the development of a **European research** in the field of energy

# COMPETITIVE LOW-CARBON ENERGY



Towards an Integrated Energy System	TOPIC	Type of scheme	TRL	EC Contribution
LCE 1	Next generation innovative technologies enabling smart grids, storage and energy system integration with increasing share of renewables: distribution network	RIA 	3-6	2-4 M€
<i><b>Keywords:</b> solutions beyond the state of the art; Areas for 2017: demand response/intelligent electricity distributioongrid</i>				
LCE 4	Demonstration of system integration with smart transmission grid and storage technologies with increasing share of renewables	IA 	5-8	15-20 M€
<i><b>Keywords:</b> Power transmission technologies and management of large scale generation to increase share of renewables; large scale storage relevant to the transmission network; flexibility and integration of storage in transmission grid; wholesale market facilitating the participation of variable renewables.</i>				
LCE 5	Tools and technologies for coordination and integration of the European energy system	RIA	3-6	2-4 M€
<i><b>Keywords:</b> Planning tools, TSO/DSO collaboration tools, neutral data access points, synergies between electricity, gas and heat networks, socio-economic and environmental aspects</i>				

# Renewable Energies Technologies

## Contexto

- Energy Union
- Desafios das alterações climáticas
- SET-Plan
- Acelerar a transição energética

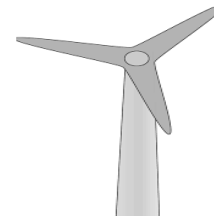


Investigação  
Básica

Investigação  
Avançada



Demonstração



Mercado



Portfolio Supported	Basic Research	Advanced Research	Demonstration	Market uptake
Photovoltaics	LCE-6-2017	LCE-7-2016/2017	LCE-9-2016	LCE-21-2017
			LCE-10-2017	
Concentrated Solar Power			LCE-11-2017	LCE-21-2017
Solar Heating and Cooling			LCE-12-2017	
Wind Energy			LCE-13-2016	
			LCE-14-2017	
Ocean Energy			LCE-15-2016	
			LCE-16-2017	
Hydropower				
Geothermal Energy			LCE-17-2016	LCE-21-2017
			LCE-23-2016	
		LCE-18-2017		
Combined Heat and Power				
RES integration in the system				
Bio and Renewable Alternative Fuels	LCE-8-2016/2017	LCE-19 -2016/2017	LCE-21-2017	
	LCE-22-2016	LCE-20-2016/2017		

# COMPETITIVE LOW-CARBON ENERGY



## Developing the next generation of renewable energy technologies (research activities)

Renewable Energy Technologies	TOPIC	Type of scheme	TRL	EC Contribution
LCE 6	New knowledge and technologies	RIA	4	2-4 M€

**Keywords:** *scale up energy technologies, better understanding of the physics of wind to improve simulation and current technologies, novel conversion routes and novel fuels.*

LCE 7	Developing the next generation technologies of renewable electricity and heating/cooling	RIA	4-5	2-5 M€
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**Keywords:** *Perovskite PV cells, CSP – new cycles and power blocks, Solar Heating & Cooling – residential single-family solar active houses, environmental impact of wind energy, ocean energy – power take-off systems and control strategies, hydropower – increase flexibility, materials for deep geothermal installations (medium-high temperature), combined heat & power, RES integration*

# COMPETITIVE LOW-CARBON ENERGY



## Developing the next generation of renewable energy technologies (research activities)

Renewable Energy Technologies	TOPIC	Type of scheme	TRL	EC Contribution
LCE 8	Development of next generation biofuel technologies	RIA	3-4 (final:4-5)	3-6 M€

**Keywords:** Biofuels from CO<sub>2</sub> in industrial waste flue gases through biochemical conversion by autotrophic micro-organisms; biofuels from organic fraction of municipal and industrial wastes through thermochemical, biochemical or chemical pathways; biofuels from phototrophic algae & bacteria.

# COMPETITIVE LOW-CARBON ENERGY



## Developing the next generation of renewable energy technologies (demonstration activities)

Renewable Energy Technologies	TOPIC	Type of scheme	TRL	EC Contribution
LCE 10	Reducing the cost of PV electricity	IA	5-6 (final:6-7)	7-10 M€

**Keywords:** *PV modules and balance-of-system components*

LCE 11	Near-to-market solutions for reducing the water consumption of CSP plants	IA	7 (final)	10-12 M€
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**Keywords:** *Solutions that significantly reduce or replace water consumption of CSP plants in regions with very good solar resource values (Direct Normal Irradiation > 2000 kWh/m<sup>2</sup> year)*

# COMPETITIVE LOW-CARBON ENERGY

## Demonstrating innovative renewable energy technologies (demonstration activities)

Renewable Energy Technologies	TOPIC	Type of scheme	TRL	EC Contribution
LCE 12	Near-to-market solutions for the use of solar heat in industrial processes	IA	Final: 7	5-8 M€
LCE 14	Demonstration of large >10MW wind turbine	IA	Final: 7	20-25 M€
LCE 16	2 <sup>nd</sup> generation of design tools for ocean energy devices and arrays development and deployment	IA	Final: 6	5-7 M€

**Keywords:** *less complex, cost effective, significantly increase the share of solar heat in industrial processes*

**Keywords:** *Improved handling (storage, loading, transport, etc.) on land, in the harbours and/or at sea, as well as improved logistics around operations and maintenance*

**Keywords:** *Tools for ocean energy generators which will facilitate a significant increase in reliability, survivability, performance improvement and cost reduction of devices and arrays.*



# COMPETITIVE LOW-CARBON ENERGY

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## Demonstrating innovative renewable energy technologies (demonstration activities)

Renewable Energy Technologies	TOPIC	Type of scheme	TRL	EC Contribution
LCE 17	Easier to install and more efficient geothermal systems for retrofitting buildings	IA	Final: 7	5-8 M€

**Keywords:** *make geothermal energy a standard source of heat and cold in building renovation*

LCE 18	Enhanced Geothermal Systems in different geological conditions	IA	Final: 7	6-10 M€
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**Keywords:** *ensure reservoir productivity in different geological settings and energy production at competitive costs*

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# COMPETITIVE LOW-CARBON ENERGY

## Demonstrating innovative renewable energy technologies (demonstration activities)

Renewable Energy Technologies	TOPIC	Type of scheme	TRL	EC Contribution
LCE 19	Demonstration of the most promising advanced biofuel pathways	IA	5-6 (to 6-7)	10-15 M€
<b>Keywords:</b> <i>Biofuels from the carbon content in flue gases of industrial wastes through biochemical and/or biological conversion; biofuels from aquatic biomass: liquid biofuels from wastes and residues</i>				
LCE 20	Enabling pre-commercial production of advanced aviation biofuel	IA	5-6 (to 6-7)	5-15 M€
<b>Keywords:</b> <i>EU Biofuel FlightPath targets, industrial demonstration projects, production target: several tens of thousand tonnes per year</i>				

# COMPETITIVE LOW-CARBON ENERGY

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## Demonstrating innovative renewable energy technologies (demonstration activities)

Renewable Energy Technologies	TOPIC	Type of scheme	TRL	EC Contribution
LCE 21	Market uptake of renewable energy technologies	CSA	3-4 (to 4-5)	3-5 M€

**Keywords:** *PV grid penetration; Heat Pumps; Market share of wind energy systems; Geothermal energy grid penetration; market roll-out of liquid advanced biofuels and liquid renewable alternative fuels*

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# Social, economic and human aspects of the energy system

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Social, economic and human aspects	TOPIC	Type of scheme	TRL	EC Contribution
LCE 31	Social Sciences and Humanities Support for the Energy Union	RIA		2-4 M€

**Keywords:** 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.

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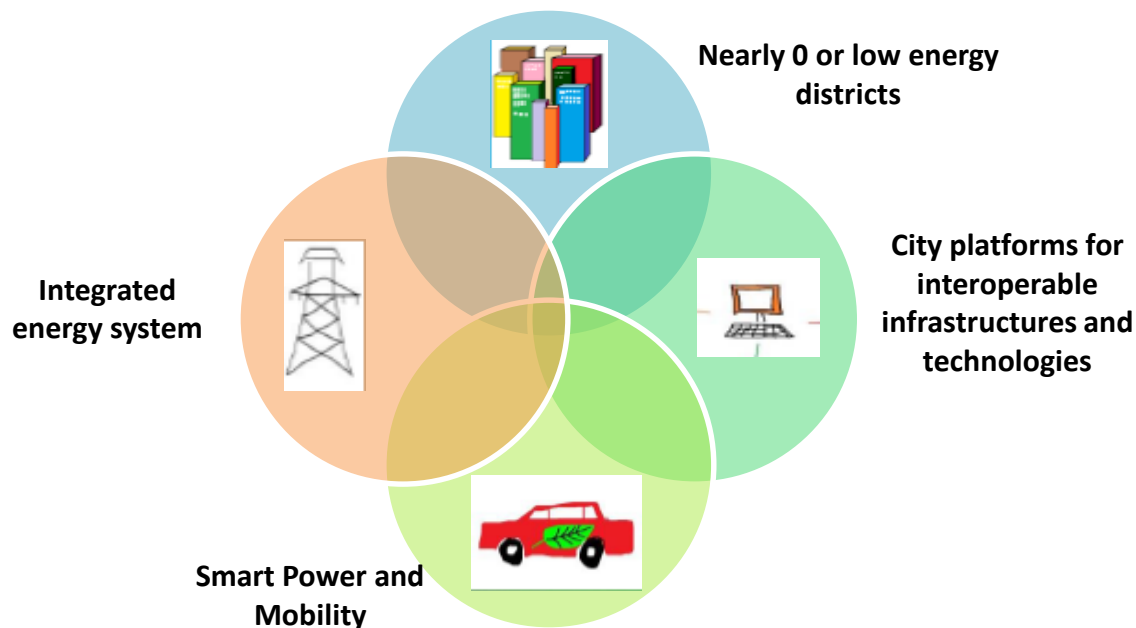
# Prazos de submissão – Concurso Eficiência Energética 2016

Concurso	Tópico	Prazo de Submissão
<b>H2020-LCE-2017</b>	LCE 9, 13, 15, 19, 20, 22, 35	08/09/2016
	LCE 6, 7, 8, 21, 27, 28, 29, 30, 31	05/01/2017
	LCE 1, 4, 5, 9, 13, 15, 19, 20, 22, 35	14/02/2017
	LCE 10, 11, 12, 14, 16, 17, 18, 19, 20	07/09/2017

# Smart Cities and Communities

Smart Cities and Communities	TOPIC	Type of scheme	EC Contribution
SCC 1 – 2016/2017	Smart Cities and Communities lighthouse projects	IA (> TRL 7)	12-18 M€

*Keywords: smart homes, smart energy, ICT systems and electric vehicles, integration, replication of solutions*





**KEEP  
CALM  
AND  
CALL  
THE NCP**

# Dúvidas?



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