

Oportunidades de Financiamento no H2020



Desafio Societal 3 - *Energia segura, não- poluente e eficiente*

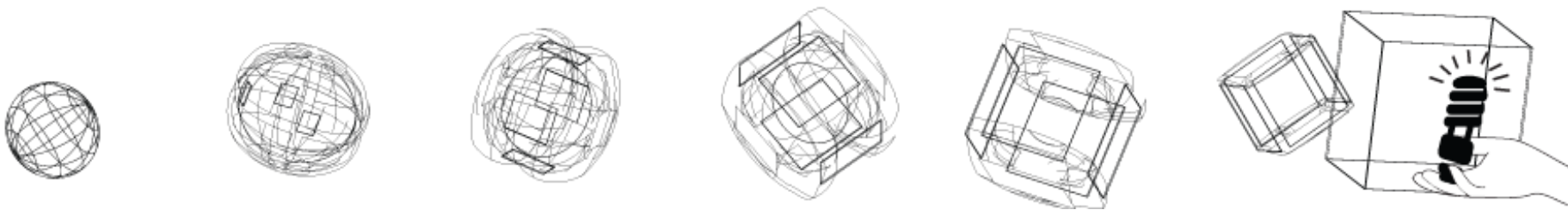
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Índice

- Enquadramento Geral
- Resultados da participação nacional no H2020 (2014 & 2015)
- Programa de Trabalhos 2016/2017 de Energia

O que é o Horizonte 2020 ?

- Principal instrumento de financiamento para apoiar investigação e inovação (2014-2020)
- Orçamento de 77 mil milhões €



Horizonte 2020 (2014-2020) – Estrutura Geral

Excellent Science ~ 24 400 M€

- **European Research Council**
Frontier Research by the best individual teams
- **Future and Emerging Technologies**
Collaborative research to open new fields of innovation
- **Marie Skłodowska-Curie Actions**
Opportunities for training and career development
- **Research Infrastructures**
(including e-infrastructure)
Ensuring access to world class facilities

Bottom up

Industrial Leadership ~ 17 800 M€

- **Leadership in enabling and industrial technologies**
ICT, NMBP (nanotechnologies, advanced materials, biotechnology, manufacturing), Space *Top down*
- **Access to Risk finance**
Leveraging private finance and venture capital for research
- **Innovation in SMEs**
Fostering all forms of innovation in all types of SMEs

Societal Challenges ~ 29 700 M€

1. Health, demographic change and wellbeing
2. Food security, sustainable agriculture, marine and maritime research & the bioeconomy
3. **Secure, clean and efficient energy**
4. Smart, green and integrated transport
5. Climate action, resource efficiency and raw materials
6. Inclusive, innovative and reflective societies
7. Security society

Top down

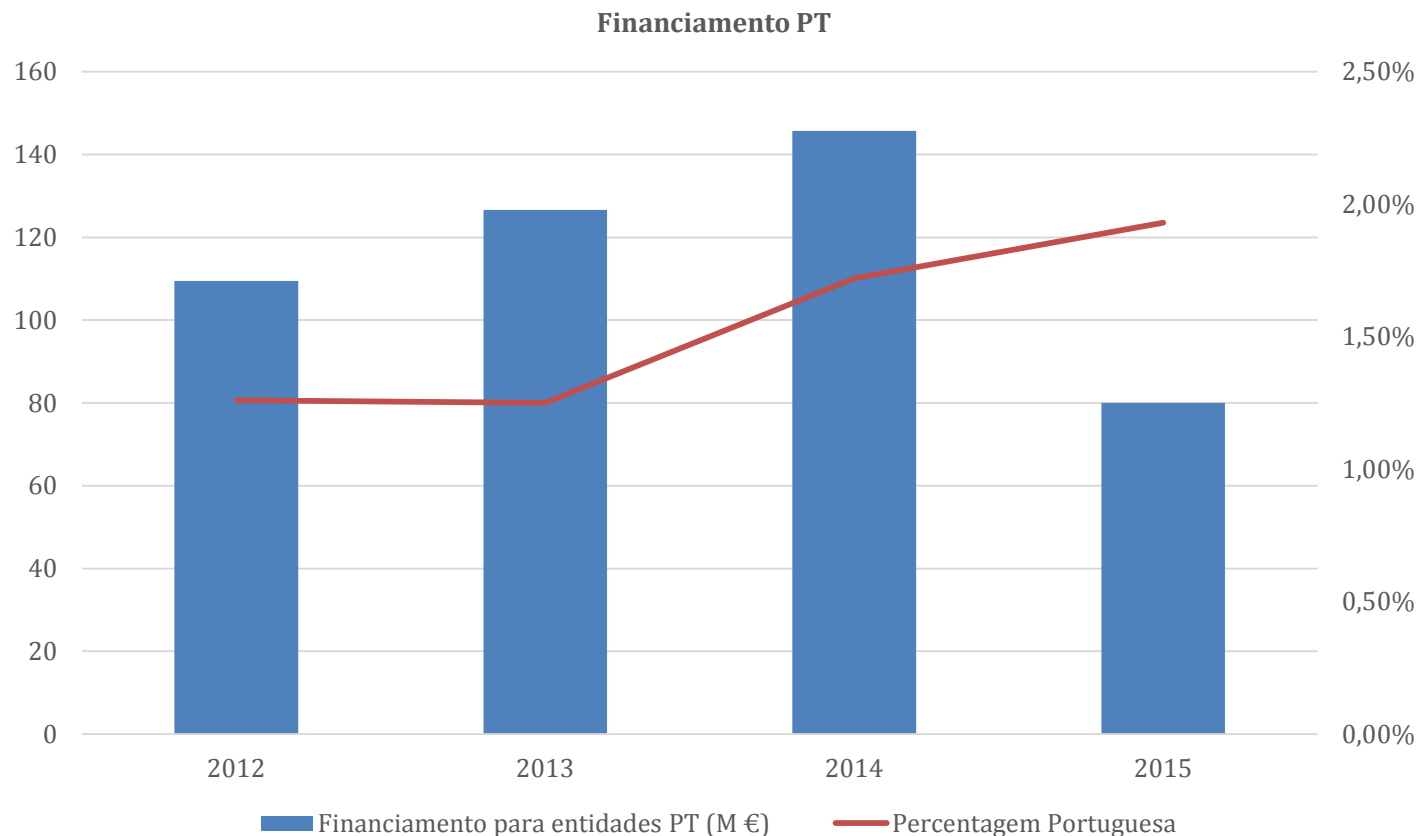
European Institute of Innovation and Technology (EIT) (~2700 M€)

Spreading Excellence and Widening Participation (~1900 M€)

Science with and for Society (~1600 M€)

Joint Research Centre (JRC)

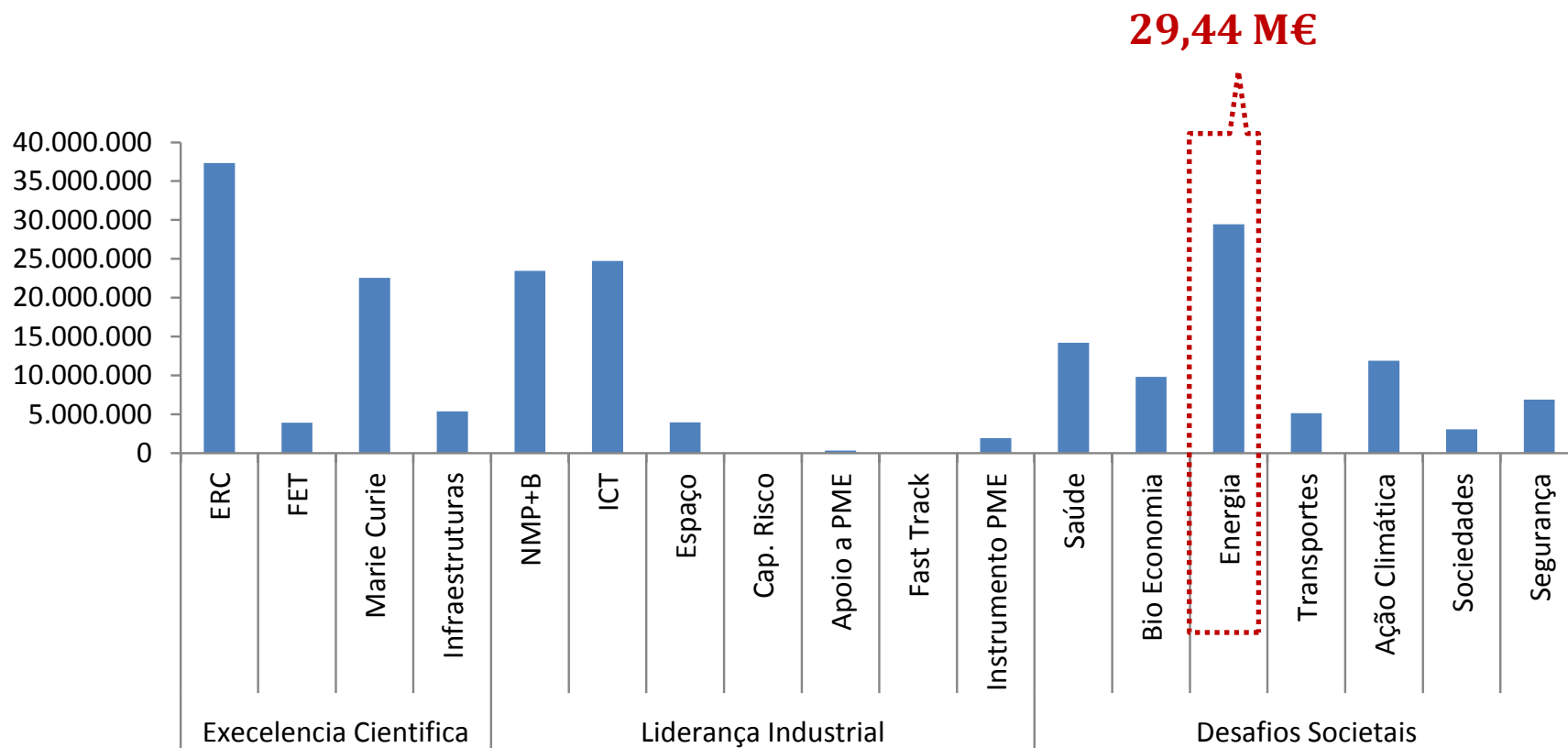
Resultados Globais da Participação Nacional 2014/2015



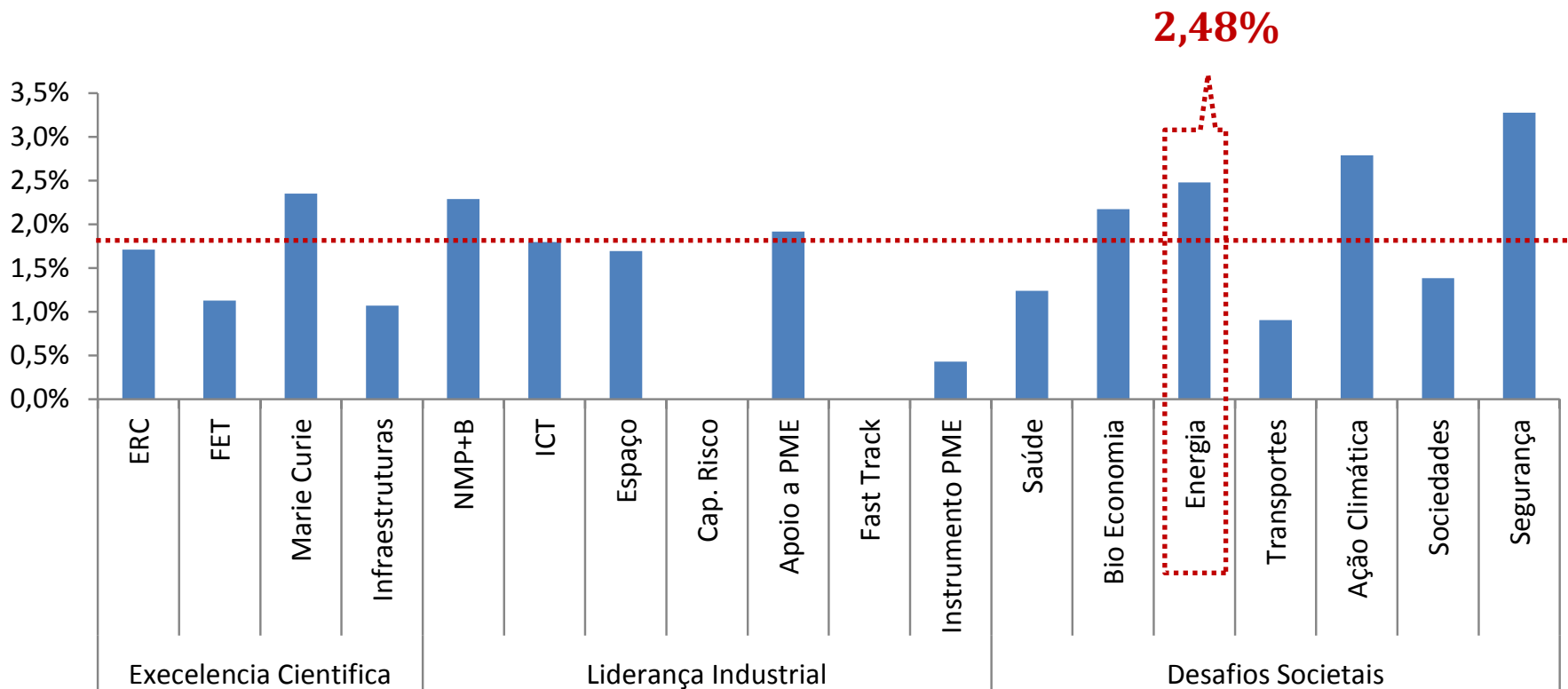
2015 – valores relativos a ca. 50% do orçamento de 2015.

Resultados da Participação Nacional 2014/2015 no DS Energia

43 projetos | 63 participações
3 coordenações nacionais

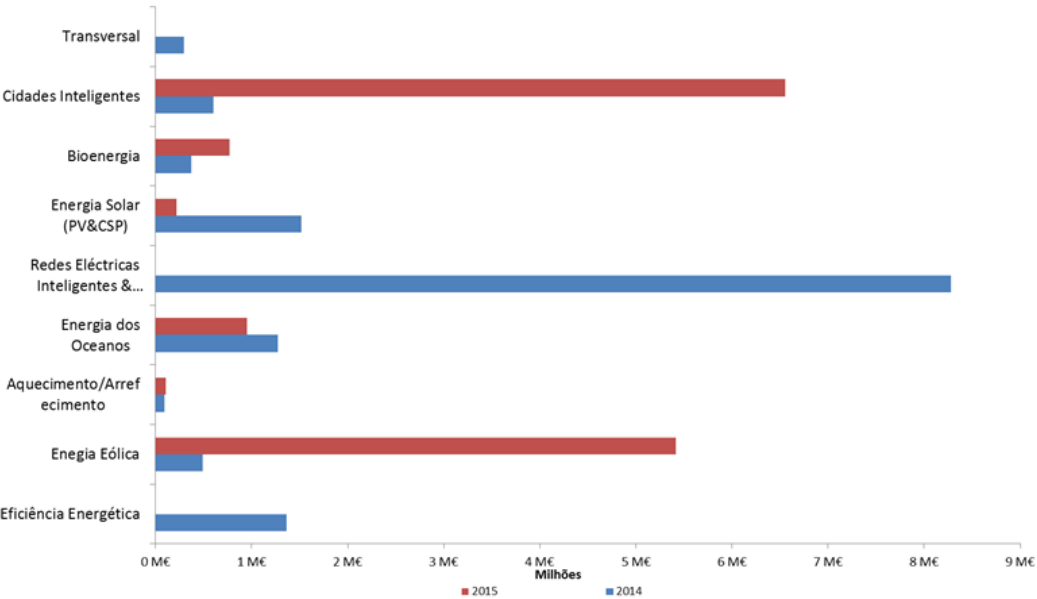


Resultados da Participação Nacional 2014/2015 no DS Energia

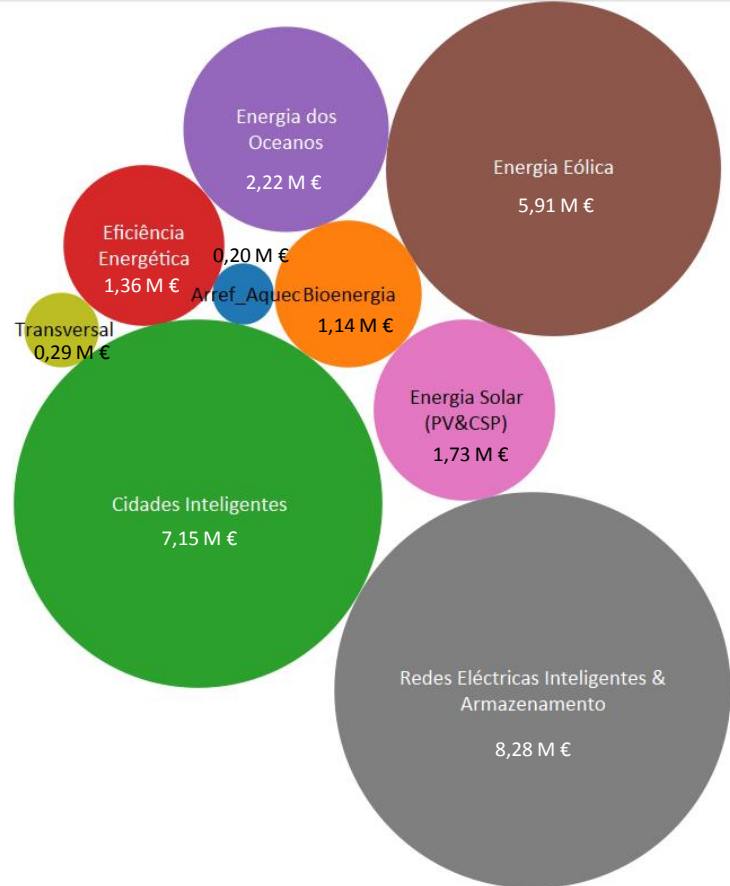


Resultados da Participação Nacional 2014/2015 no DS Energia - Áreas

Financiamento PT em projetos Energia por área / ano



Financiamento PT em projetos Energia por área





Programa de Trabalhos 2016/2017

DS3 - Energia segura, não- poluente e eficiente

Desafio Societal Energia – Estrutura dos Tópicos



Os **TÓPICOS** refletem a abordagem baseada em desafios no H2020

Specific Challenge

Estabelece o contexto, os problemas a resolver, a necessidade de intervenção

Scope

Delineação do problema, especificação do enfoque e das fronteiras de ação, mas sem detalhar as possíveis abordagens

Expected Impact

Descrição dos elementos-chave a alcançar no desafio em questão

EE 1 – 2017: Waste heat recovery from urban facilities and re-use to increase energy efficiency of district or individual heating and cooling systems

Specific challenge: Europe is not recovering enough of its waste energy. A vast amount of waste heat is produced in urban areas from a range of local sources (e.g. from metros, large buildings, extensive ventilation systems) and from urban waste or waste water systems. Data centres are another rapidly growing sector generating heat that could potentially be recovered and reused for heating or cooling buildings.

Thermal energy captured can be supplied through individual central heating and cooling systems or distributed through district heating and cooling networks to multiple buildings. In some cases, it might be needed to combine the recovery of waste heat with different technologies, (e.g., heat pumps) in order to bring the temperature level of the waste heat to those matching the existing heating and cooling applications addressed in the proposal.

Scope: Demonstrate waste heat and waste water heat recovery in urban areas, in services sector and transport system facilities and their connection and integration into the existing heating and cooling supply systems in buildings/facilities or district heating/cooling systems. Focus should be given to **replicability**, scalability and modularity that facilitate application and rapid deployment. Develop sustainable business models and organisational, managerial, and financial solutions for deployment of the proposed technological solutions in the EU, with due regard to the legislative framework.

Projects should build on previous projects supported under FP7 and Horizon 2020. The activities are expected to be implemented at Technology Readiness Level (TRL) 6-8 (please see part G of the General Annexes).

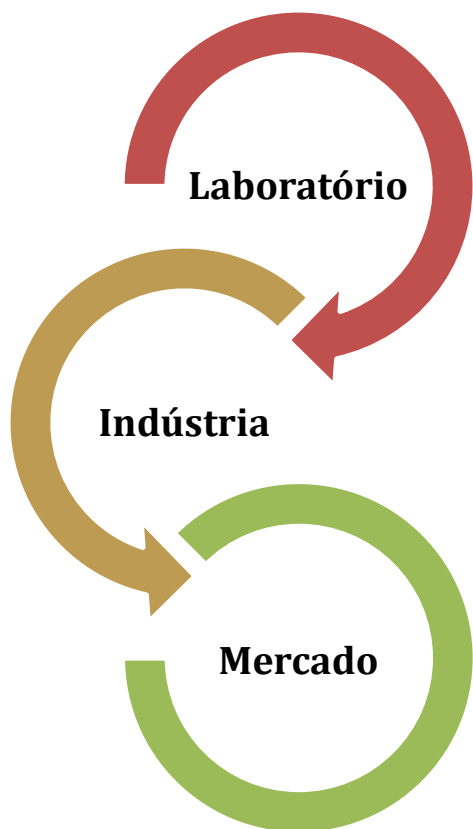
The Commission considers that proposals requesting a contribution from the EU of between EUR 3 and 4 million would allow this challenge to be addressed appropriately. This does not preclude submission and selection of proposals requesting other amounts.

Expected impact: Proposals are expected to demonstrate the impacts listed below, using quantified indicators and targets wherever possible:

- Primary energy savings and GHG emission savings triggered by the proposed actions (compared to best available solution existing today);
- Increase in share of waste heat captured and utilised in urban areas;
- Scale of the **replicability** potential of the proposed solutions.

Type of action: Innovation Actions

Aspectos Práticos – Technology Readiness Level



TRL 1 – Princípio básico observado

TRL 2 – Conceito tecnológico formulado

TRL 3 – Prova de conceito experimental

TRL 4 – Tecnologia validada no laboratório

TRL 5 – Tecnologia validada em ambiente relevante

TRL 6 – Tecnologia demonstrada em ambiente relevante

TRL 7 – Demonstração do Protótipo do Sistema em ambiente operacional

TRL 8 – Sistema completo e qualificado

TRL 9 – Sistema Real Comprovado em ambiente operacional

Energia

Horizonte 2020 – Informação Geral

- ✓ **Concursos:** 2014 & 2015 já fecharam (1º ano do H2020)
Em Out de 2015 abriram os primeiros concursos para 2016
- ✓ Programas de Trabalho **Bienais** (2014/2015; 2016/2017)
- ✓ Projetos em colaboração (**min. 3 entidades de 3 EM ou EA diferentes**)
- ✓ Países **elegíveis:** Estados-Membros (EM), Estados Associados(EA), Países em desenvolvimento, Entidades internacionais de interesse europeu;
- ✓ Países **não-elegíveis automaticamente:** BRIC, EUA, México, Japão, Austrália, Canadá, ... (isto é, podem participar, mas sem receberem financiamento)
- ✓ **Concursos temáticos** mas também **com muitas interações entre temas nos pilares dos Desafios Societais e da Liderança Industrial** (TICs, Nanociências, aspetos sócio-económicos, sustentabilidade, etc...,.)
- ✓ Tópicos **mais abertos** e com possibilidade para **diferentes tipos de abordagem**

Horizonte 2020 - Tipologia de Projecto

ORÇAMENTO: pagamento baseado no tipo de projeto e não no tipo de participante

Research and Innovation Action [RIA] → 100% custos diretos + 25% custos indiretos Investigação básica e aplicada; Desenvolvimento de tecnologia e de integração;

Teste e validação de um protótipo em pequena escala, em laboratório ou ambiente simulado

Innovation Action [IA] → 70% custos diretos + 25% custos indiretos, mas instituições sem fins lucrativos (e.g., universidades, organismos públicos) podem receber a 100%.

Protótipos, testes, demonstradores, pilotos; Validação do produto em grande escala e replicação no mercado

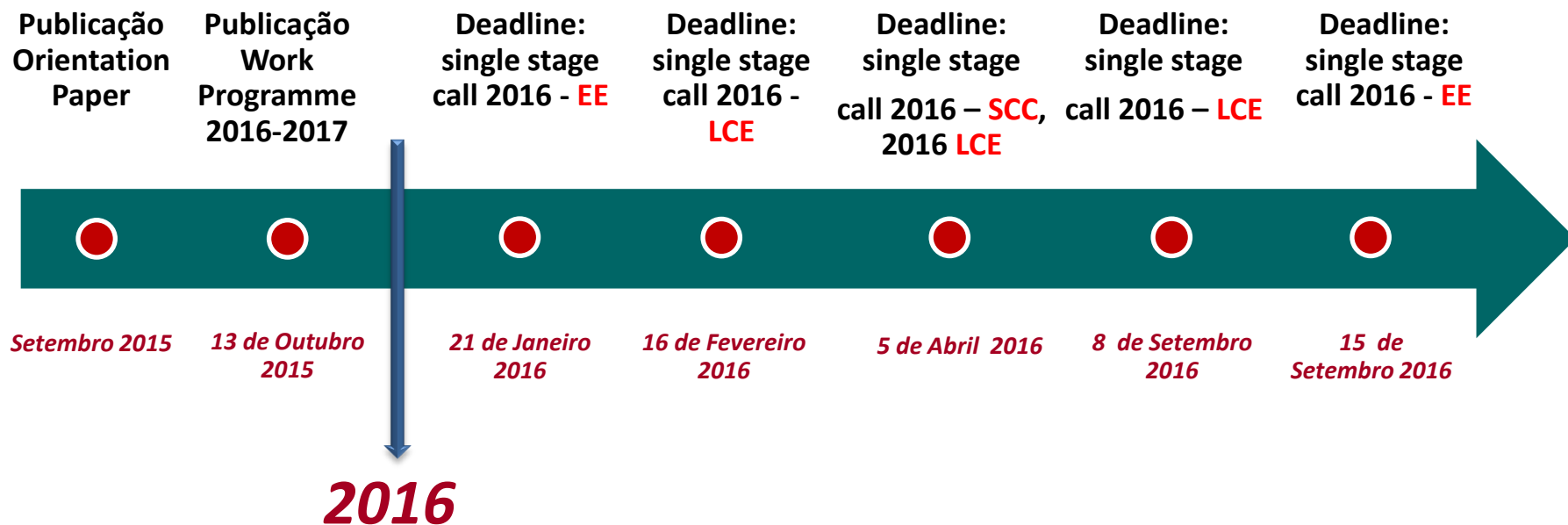
Coordination and Supporting Action [CSA] → 100% custos diretos + 25% custos indiretos

Criação de redes de coordenação ou de apoio; Diálogo político e exercícios mútuos de aprendizagem incluindo os estudos de conceção de novas infraestruturas;

Uniformização, divulgação, sensibilização e comunicação

Pela 1ª vez , o IVA não recuperável é um custo elegível

Calendário WP Energia 2016



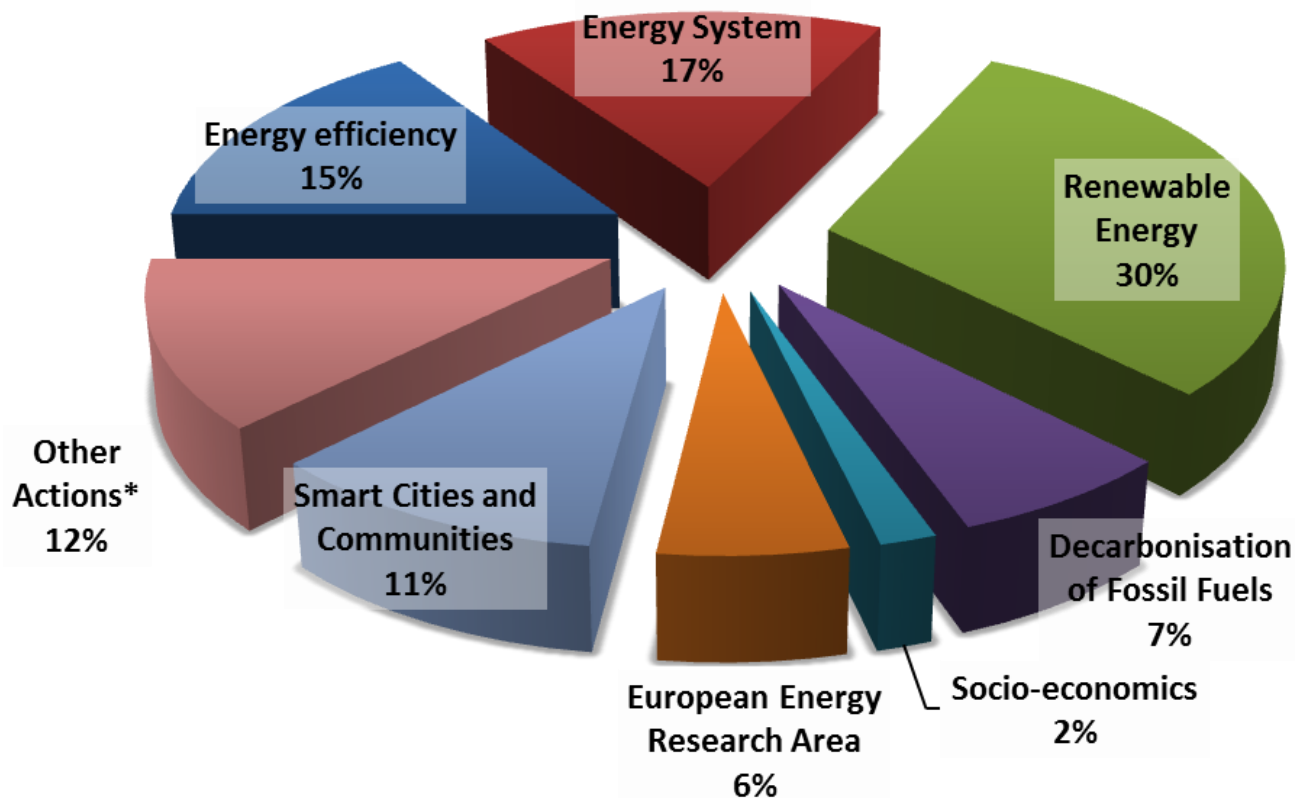
Concursos do Programa de Trabalhos Energia 2016-2017



Secure, clean and efficient energy

Call	2016 (M€)	2017 (M€)
Energy Efficiency	93	101
Smart Cities and Communities	60,5	71,5
Competitive Low-Carbon Energy	351,54	368,62
SME Instrument	46	50
Fast Track to Innovation	13,7	
<i>Other actions (e.g. tenders; ELENA; Concerted Actions)</i>	<i>107,91</i>	<i>79,13</i>

Distribuição do orçamento dos Concursos de Energia 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)

Contexto Político – Estratégias e Iniciativas Europeias de apoio ao desafio Energia no Horizonte 2020

2030 Climate-Energy Package

- 40% redução dos GEE
- 27% aumento de energias renováveis
- 27% eficiência energética

União da Energia

- Segurança no abastecimento energético
- Mercado de energia integrado
- Eficiência Energética
- Descarbonização do Sistema Energético
- Investigação, Inovação e Competitividade



SET-Plan

- Integrated Roadmap
- Communication on Integrated SET-Plan (COM[2015]6317)



<https://setis.ec.europa.eu/>

Programa de Trabalhos de Energia 2016-2017

ENERGY EFFICIENCY – 25 TÓPICOS



SMART CITIES AND COMMUNITIES – 1 TÓPICO



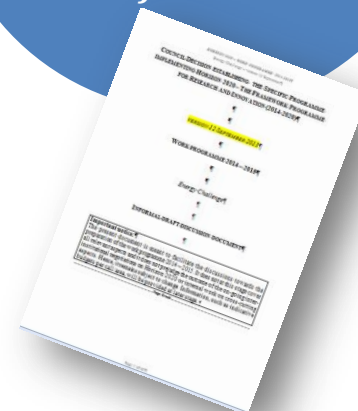
COMPETITIVE LOW CARBON ENERGY – 37 TÓPICOS



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



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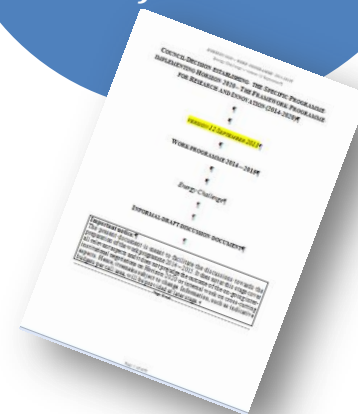
http://ec.europa.eu/research/participants/data/ref/h2020/wp/2016_2017/main/h2020-wp1617-energy_en.pdf

Programa de Trabalhos de Energia 2016-2017

ENERGY EFFICIENCY – 25 TÓPICOS



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Desafio Societal Energia – Concursos 2016/2017 – Eficiência Energética

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	EC Contribution
EE 3 – 2016	Standardised installation packages integrating renewable and energy efficiency solutions for heating, cooling and/or hot water preparation	IA (TRL 6-8)	3-4M€
EE 4 – 2016/2017	New heating and cooling solutions using low grade sources of thermal energy	RIA (TRL4-6)	3-4M€
EE 5 – 2016/2017	Models and tools for heating and cooling mapping and planning	IA (TRL5-7)	2,5-3M€

Keywords: combine energy sources, energy storage, smart controls, integration in buildings

*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 **very low and low** (moderate) temperature resources by upgrading them*

Keywords: administrative practices of public authorities, planning tools to describe the energy system and development of all relevant supply and demand elements (energy resources, infrastructures, buildings)



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 8 – 2016	Socio-economic research on consumer's behaviour related to energy efficiency	RIA	1-1,5M€
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Keywords: consumer's decision making on energy efficient investments, impacts of energy efficiency policy

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 10 – 2016	Supporting accelerated and cost-effective deep renovation of buildings	IA (TRL 6-8)	3-4M€
EE 11 – 2016/2017	Overcoming market barriers and promoting deep renovation of buildings	CSA	1-2M€
EE 13 – 2016	Cost reduction of new Nearly Zero-Energy buildings	CSA	1-2M€
EE 14 – 2016/2017	Construction skills	CSA	1-2M€

Keywords: more cost effective, higher quality, faster deep renovation, increase rate of renovation, pre-fabricated mass manufactured components

Keywords: remove regulatory barriers and non-regulatory barriers, at least 60% of energy savings, financial mechanisms, instruments and business models

Keywords: market ready cost reductions, integration of RES in NZEB, measurable nearly zero energy consumption and LCA in buildings

Keywords: upgrading or setting up qualification and training schemes to increase the number of skilled building professionals/blue collar workers



Indústria, Serviços e Produtos

Industry, Services, products	TOPIC	Type of scheme	EC Contribution
EE 16 – 2016/2017	Effective implementation of EU product efficiency legislation	CSA	1-2M€

Keywords: Energy efficient products regulations: market “push” and market “pull”

EE 17 – 2016/2017	Valorisation of waste heat in industrial systems	RIA (TRL5-7)	4-5M€
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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



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 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

EE 25 – 2016	Development and roll-out of innovative energy efficiency services	CSA	1-2M€
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Keywords: new types of energy efficiency services and business models for industrial and services companies

Prazos de submissão – Concurso Eficiência Energética 2016

Concurso	Tópico	Prazo de Submissão
H2020-EE-2016-RIA/IA	EE-03, 04, 05, 07, 08,	Single stage 21/01/2016
H2020-EE-2016-PPP	EE-10, 17	Single stage 21/01/2016
H2020-EE-2016-CSA	EE-06, 09, 11, 13, 14, 22, 24, 25	Single stage 15/09/2016

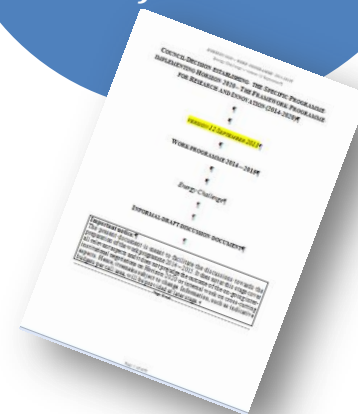
Programa de Trabalhos de Energia 2016-2017



COMPETITIVE LOW CARBON ENERGY – 37 TÓPICOS



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Desafio Societal Energia – Concursos 2016/2017 – Low Carbon Energy

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

1. Towards an Integrated Energy System



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€
LCE 2	Demonstration of smart grid, storage and system integration technologies with increasing share of renewables: distribution system	IA	5-8	12-15 M€
LCE 3	Support to R&I strategy for smart grid and storage	CSA		4 M€

Keywords: solutions beyond the state of the art; Areas for 2016: storage (EV) or synergies between energy networks

Keywords: demand response, smartening the distribution grid, energy storage, connections between networks, smart integration of grid users from transport, large scale pilots, real life conditions validation

Keywords: new challenges -> novel approach to R&I strategy in the field smart grid and storage

2. Renewable Energies Technologies

Contexto

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

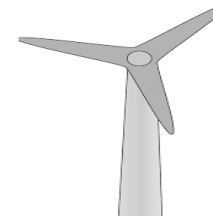


Investigação
Básica

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-23-2016	LCE-21-2017
		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	

2. Renewable Energies Technologies



Developing the next generation of renewable energy technologies (Research)

Renewable Energy Technologies	TOPIC	Type of scheme	TRL	EC Contribution
LCE7 – 2016/2017	Developing the next generation technologies of renewable electricity and heating/cooling	RIA	4-5	2-5 M€

Keywords: *c-Si PV cells, CSP, Solar Heating & Cooling, wind energy, ocean energy, hydropower, shallow geothermal, Combined heat & power, RES integration*

LCE 8 – 2016/2017	Development of next generation biofuel technologies	RIA	3-4 (final:4-5)	3-6 M€
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Keywords: *Paraffinic biofuels, biofuels from pyrolysis or hydrothermal liquefaction, synthetic biofuels/hydrocarbons through biomass gasification*

2. Renewable Energies Technologies



Demonstrating innovative renewable energy technologies (demonstration activities)

Renewable Energy Technologies	TOPIC	Type of scheme	TRL	EC Contribution
LCE 9-2016	Increasing the competitiveness of the EU PV manufacturing industry	IA	5-6 (to 6-7)	10-15 M€
LCE 13 - 2016	Solutions for reduced maintenance, increased reliability and extended life-time of wind turbines/farms	IA	Final: 7	7-10 M€
LCE 15-2016	Scaling up in the ocean energy sector to arrays	IA	Final: 7	10-15 M€

Keywords: *PV manufacturing innovation and scale-up, GW scale, new investments in PV industry, pilot lines*

Keywords: *O&M costs reduction, offshore wind turbines, measures of life-time extension, substructure, soil conditions*

Keywords: *previous technology demonstration in real conditions connected to the grid; engineering, business and implementation plans*

2. Renewable Energies Technologies



Demonstrating innovative renewable energy technologies (demonstration activities)

Renewable Energy Technologies	TOPIC	Type of scheme	TRL	EC Contribution
LCE 19-2016	Demonstration of the most promising advanced biofuel pathways	IA	5-6 (to 6-7)	10-15 M€
<p>Keywords: liquid biofuel production pathways; Biomass gasification to synthesis gas; Biomass pyrolysis and torrefaction to intermediate bioenergy carriers; Biochemical conversion of lignocellulosic biomass sugars to diesel</p>				
LCE 20 - 2016	Enabling pre-commercial production of advanced aviation biofuel	IA	5-6 (to 6-7)	5-15 M€
<p>Keywords: EU Biofuel FlightPath targets, industrial demonstration projects, production target: several tens of thousand tonnes per year</p>				

2. Renewable Energies Technologies

Fostering international cooperation in the area of renewable energy

Renewable Energy Technologies	TOPIC	Type of scheme	TRL	EC Contribution
LCE 22	International Cooperation with Brazil on advanced lignocellulosic biofuels	RIA	3-4 (to 4-5)	3-5 M€

Keywords: *gasification of bagasse to syngas; biomass production logistics; new fermentation and separation techs*

LCE 23	International Cooperation with Mexico on geothermal energy	RIA	3-4 (to 4-5)	10 M€
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Keywords: *enhanced geothermal systems, scientific challenges*

3. Enabling the decarbonisation of the use of fossil fuels during the transition to a low-carbon economy

Decarbonisation of the use of fossil fuels	TOPIC	Type of scheme	TRL	EC Contribution
LCE 24	International Cooperation with South Korea on new generation high-efficiency capture processes	RIA	2-3 (to 4-5)	2-5 M€

Keywords: *post- and/or pre-combustion CO2 capture, prototype testing*

LCE 25	Utilisation of captured CO2 as feedstock for the process industry	RIA	5-6 (to 6-7)	6-10 M€
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Keywords: *capture and purification of CO2, demonstration, decrease cost of CCU vs. CCS*

4. Social, economic and human aspects of the energy system

Social, economic and human aspects	TOPIC	Type of scheme	TRL	EC Contribution
LCE 31 – 2016/2017	Social Sciences and Humanities Support for the Energy Union	RIA		2-4 M€
Keywords: comparative perspective with case studies or data, factors driving energy choices and energy-related behaviour (individual, collective or a combination of both)				
LCE 32 - 2016	European Platform for energy-related Social Sciences and Humanities research	CSA		1-2 M€
Keywords: structure and enhance the energy-related dialogue at EU level among the different SSH stakeholders, energy research related SSH communities in Europe, interdisciplinary dialogue, key policy processes, advice to EU policymakers, social innovation, social dialogue				

Prazos de submissão – Concurso Eficiência Energética 2016

Concurso	Tópico	Prazo de Submissão
H2020-LCE-2016-2017	LCE 7, 8, 23, 24, 25, 31	Single stage 16/02/2016
	LCE 1, 2, 3, 26, 32, 33, 34, 36, 37	Single stage 05/04/2016
	LCE 9, 13, 15, 19, 20, 22, 35	Single stage 08/09/2016

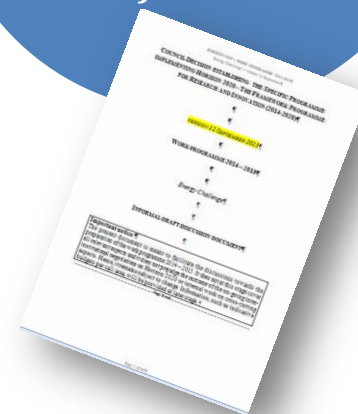
Programa de Trabalhos de Energia 2016-2017



SMART CITIES AND COMMUNITIES – 1 TÓPICO



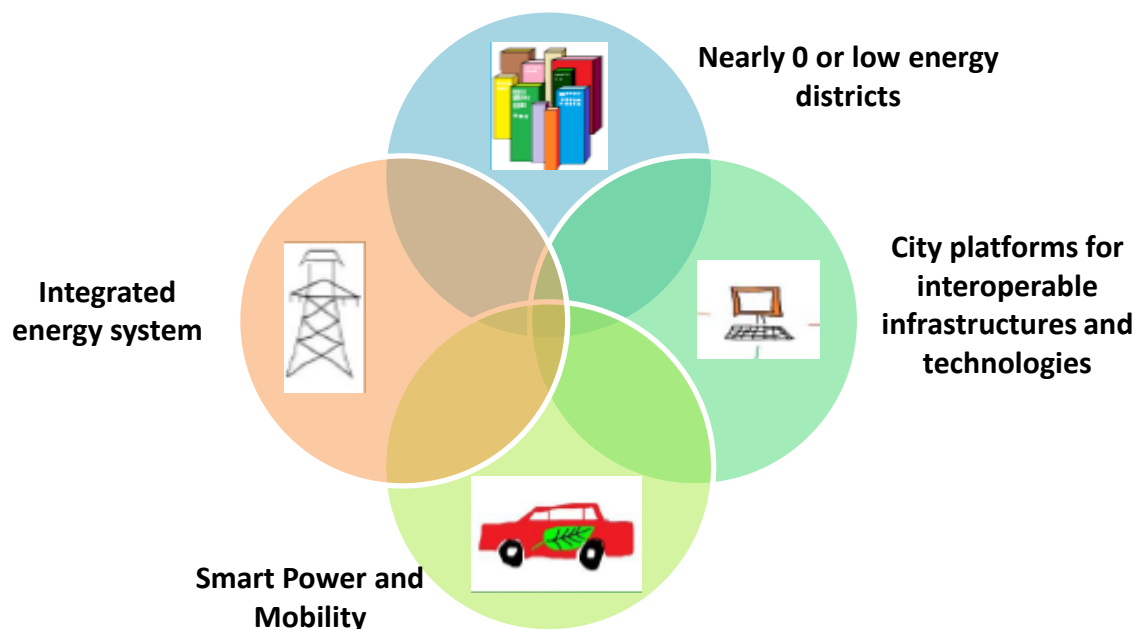
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Desafio Societal Energia – Concursos Cidades e Comunidades Inteligentes

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€

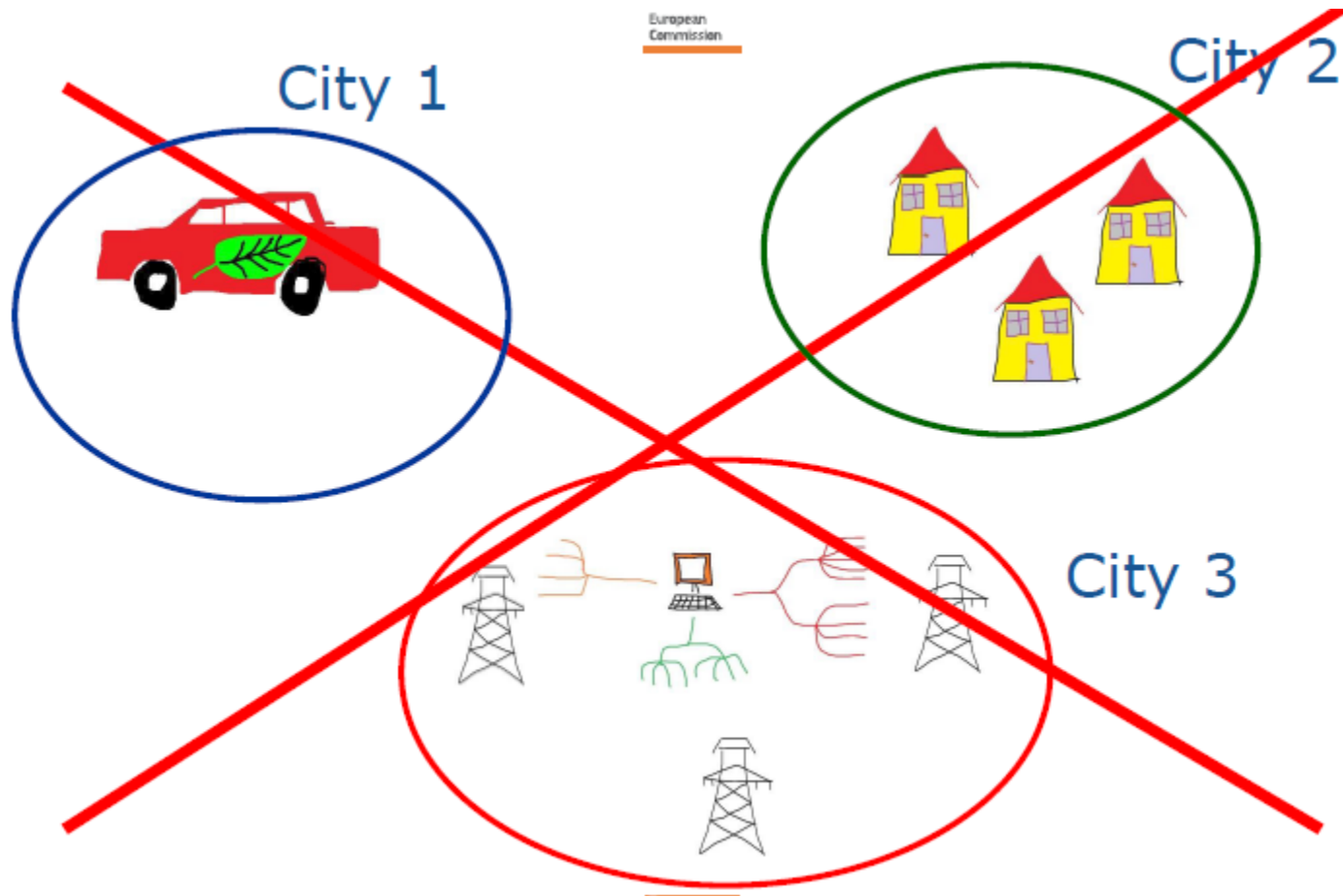
Keywords: smart homes, smart energy, ICT systems and electric vehicles, integration, replication of solutions



Desafio Societal Energia – Concursos Cidades e Comunidades Inteligentes

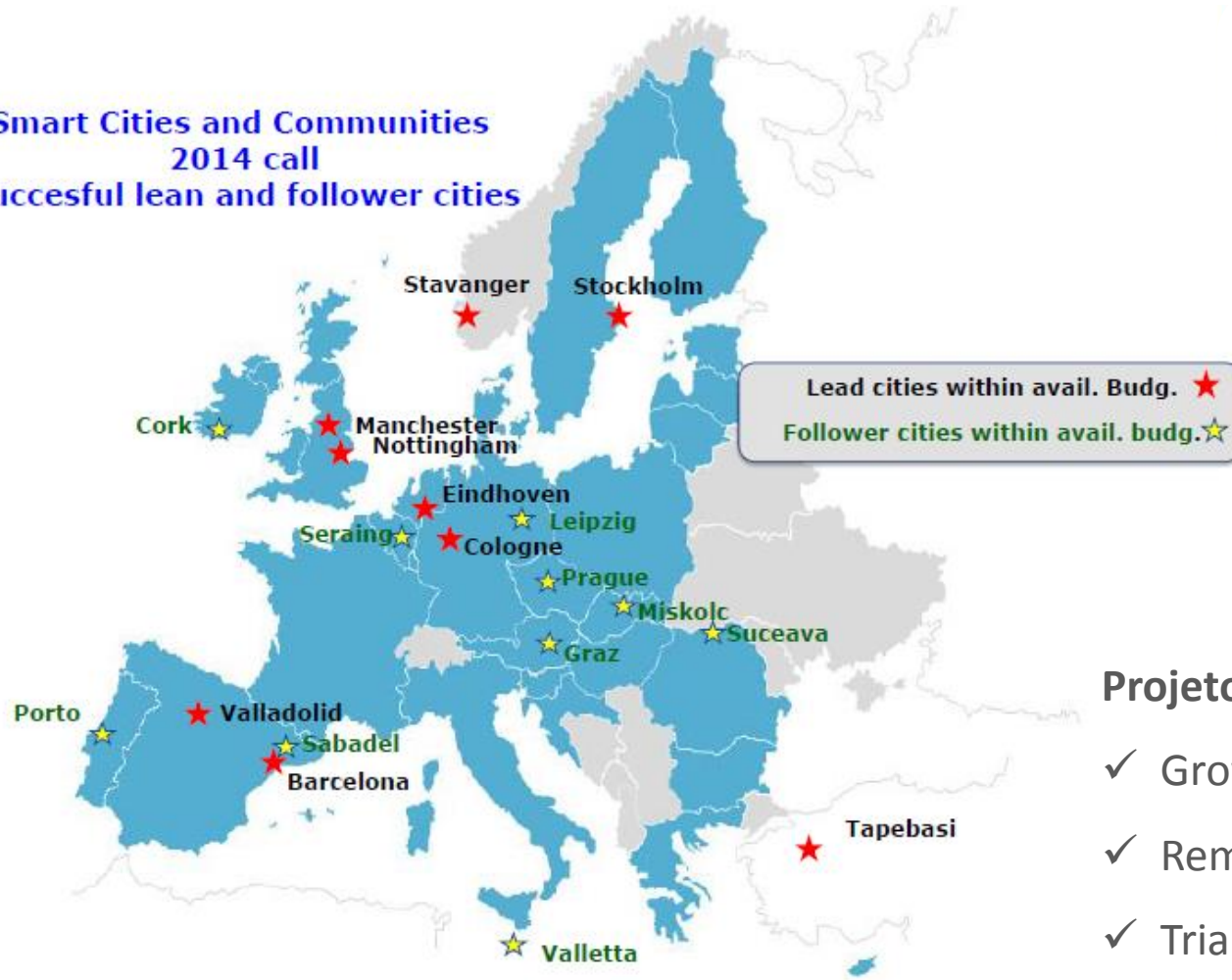


Desafio Societal Energia – Concursos Cidades e Comunidades Inteligentes



Desafio Societal Energia – Concursos Cidades e Comunidades Inteligentes

Smart Cities and Communities
2014 call
Successful lean and follower cities



Projetos SCC 2014

- ✓ GrowSmarter
- ✓ Remourban
- ✓ Triangulum

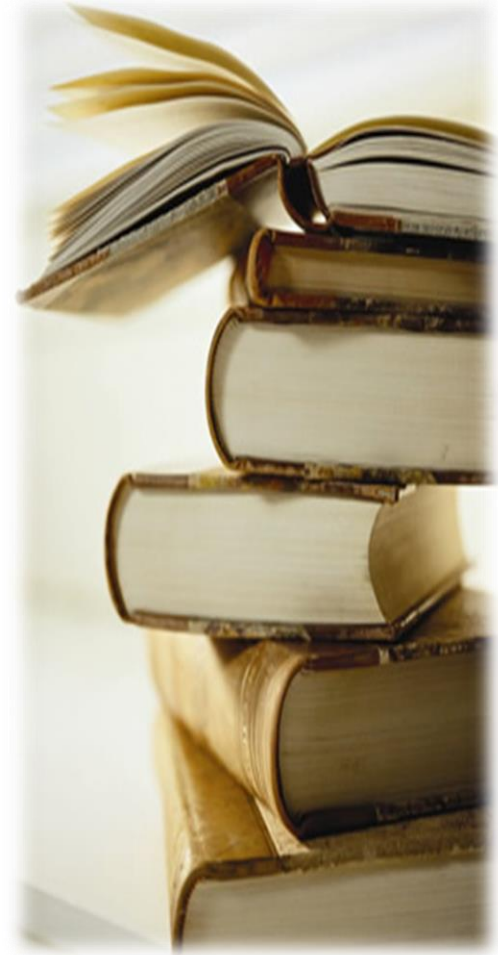
Prazos de submissão – Concurso Smart Cities 2016

Concurso	Tópico	Prazo de Submissão
H2020-SCC-2016	SCC1	Single stage 5/04/2016

Antes de começar – Documentos chave

<http://ec.europa.eu/research/participants/portal/>

- **“Desafio Societal Energia” - Programa de Trabalhos** – enquadramento, tópicos e orçamento
- **Anexos gerais aos programas de trabalho** – lista de países, elegibilidade e condições, critérios de avaliação, procedimento e classificação.
- **Formulários de Submissão e Templates** – formulários essenciais e guias para escrever e submeter a proposta
- **Guia de Submissão e processo de avaliação**



Publicações & Websites

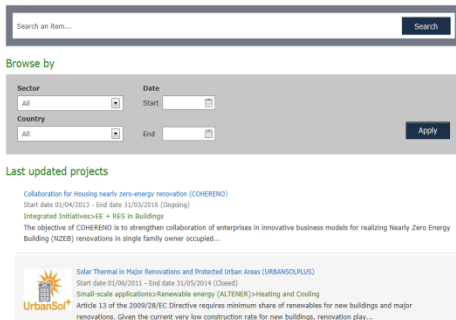


SETIS
<https://setis.ec.europa.eu/>



BUILD UP - The portal for buildings

Projects database



IEE Project database
<http://ec.europa.eu/energy/intelligent/projects/>



C-ENERGY 2020 -
<http://www.c-energy2020.eu/>

Eventos

- **Sessões Horizonte 2020** promovidas pelo GPPQ – consulte o nosso calendário de eventos - www.gppq.pt
- **Infoday Energia & BE** – Bruxelas, 14-16 de Setembro de 2015 - <http://ec.europa.eu/research/index.cfm?pg=events&eventcode=0B56FA95-AFE0-D63B-DD0527FE301EC26C>
- **Infoday Smart and Sustainable Cities**- Bruxelas, 6 de Novembro de 2015 - <http://ec.europa.eu/research/index.cfm?pg=events&eventcode=8BDC94AA-B603-4E55-36835522D7C0CD08>
- **Infoday Eficiencia Energética** – Bruxelas, 8 de Dezembro de 2015 - <https://ec.europa.eu/easme/en/horizon-2020-energy-efficiency-information-day>



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