

20 Φεβρουαρίου | Βόλος

HORIZON 2020

THE FRAMEWORK PROGRAMME FOR RESEARCH AND INNOVATION

Energy >>>
Secure, clean & efficient

Δρ. Ηρακλής Αγιοβλασίτης

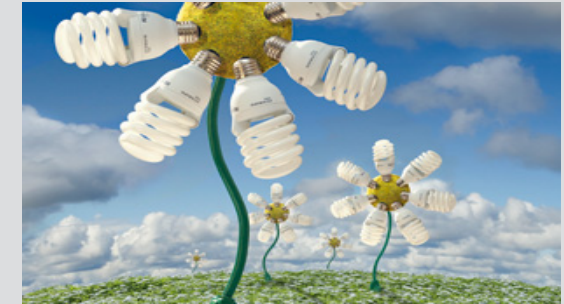
Εθνικό Κέντρο Τεκμηρίωσης - Enterprise Europe Network



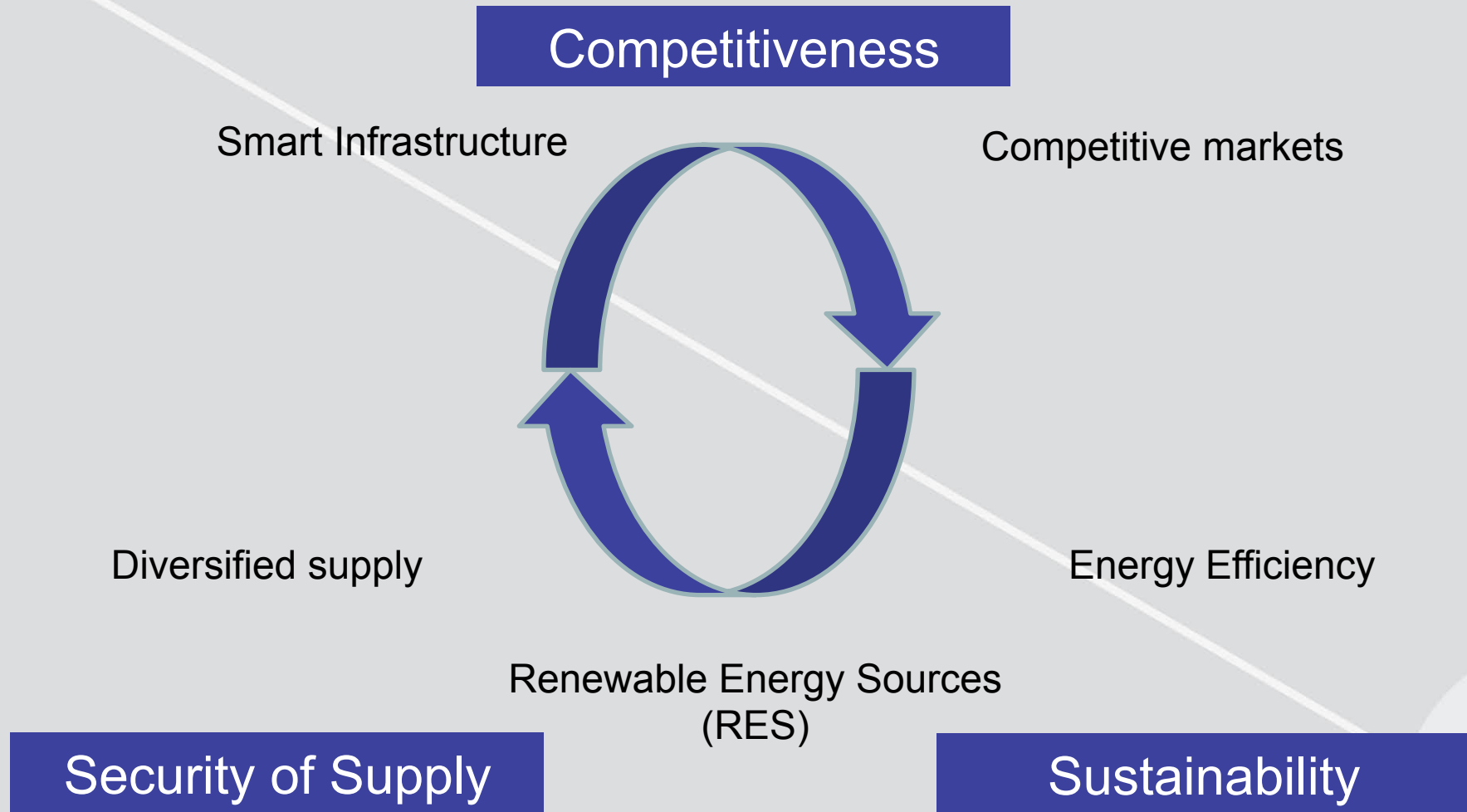
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Current EU Energy Policy and Achievements

- ✧ Clear EU framework and support by **SET** (Strategic Energy Technology)–**Plan**;
- ✧ Three **headline targets 20/20/20** + specific transport targets;
- ✧ **2011 GHG** (Greenhouse Gas) emissions estimated at 16% below 1990 – EU on track;
- ✧ Progress: **2010 EU renewables share 12.7% vs. 8.5%** in 2005 - new measures needed for most MS to achieve their 2020 targets;
- ✧ **Energy savings target** not legally binding but significant progress made – but current policy targets likely to be missed.



Energy in Horizon 2020: Philosophy



Energy in Horizon 2020: Scope [1/3]

The Energy Challenge is designed to support the transition to a **reliable, sustainable and competitive energy system.**



- ✧ Reducing **energy consumption and carbon footprint** by smart and sustainable use \Rightarrow ...*new concepts, non-technological solutions, technology components and systems for buildings, cities/districts, industry and individuals;*
- ✧ **Low-cost, low-carbon** electricity supply \Rightarrow ...*innovative renewables, efficient and flexible fossil fuel power plants and carbon capture and storage, or CO₂ re-use technologies;*

Energy in Horizon 2020: Scope [2/3]

The Energy Challenge is designed to support the transition to a **reliable, sustainable and competitive energy system.**



- ✧ **Alternative fuels** and mobile energy sources ⇒ ... *bio-energy; power and heat; surface, maritime and air transport; hydrogen and fuel cells; new options;*
- ✧ A single, **smart European electricity grid** ⇒ ... *smart energy grid technologies, including storage; systems and market designs to plan, monitor, control and safely operate interoperable networks; standardisation issues; emergency conditions;*

Energy in Horizon 2020: Scope [3/3]

*The Energy Challenge is designed to support the transition to a **reliable, sustainable and competitive energy system.***



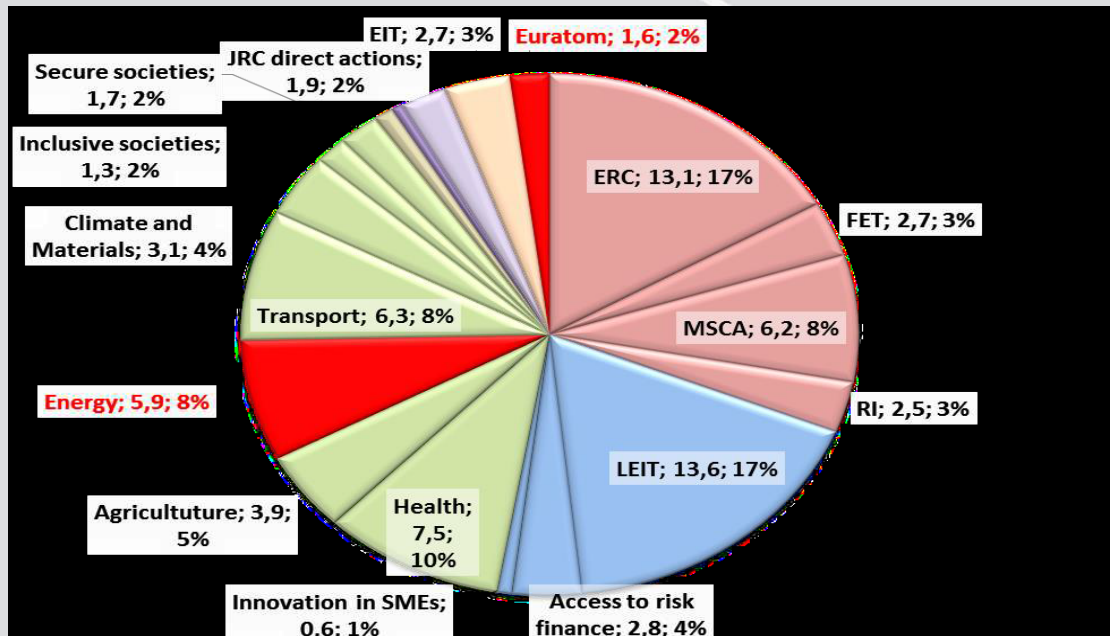
- ✧ **New knowledge and technologies** ⇒ ...*multi-disciplinary research for energy technologies (including visionary actions);*
- ✧ **Robust decision making and public engagement** ⇒ ...*tools, methods, models and perspective scenarios for a robust and transparent policy support;*
- ✧ **Market uptake of energy innovation** ⇒ ...*applied innovation; promotion of standards; non-technological barriers; smart and sustainable use of existing technologies*

Energy in Horizon 2020: Calls

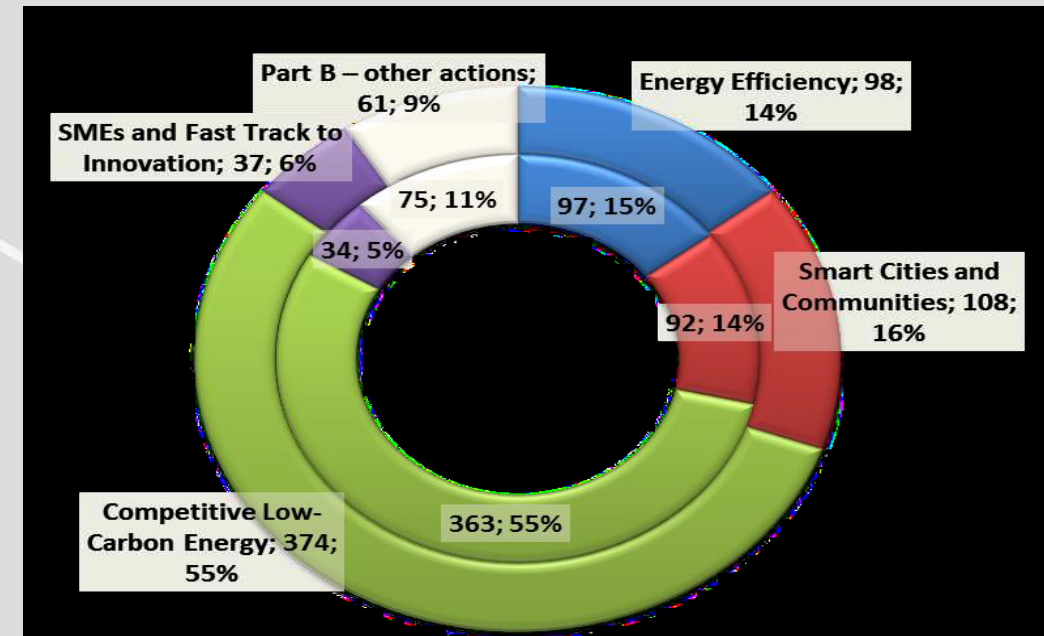
1. **Energy efficiency** ⇒ ...about 40% of the EU's final energy consumption is in buildings and around 25% in industry...
2. **Smart cities & Communities** ⇒ ...two thirds of the EU population live in urban areas, using 70% of the overall energy consumption...
3. **Competitive Low-Carbon Energy** ⇒ ...the share of renewable energy in the EU electricity sector would increase from 21% today to at least 45% in 2030....
4. **SME's and Fast Track to Innovation for Energy** ⇒ ... the more than 20 million SMEs in the EU represent 99% of businesses, and are a key driver for economic growth, innovation, employment.....
5. **Euratom Fission.**

Horizon 2020 – Budget Allocation [1/2]

Total Budget 78,6 b EUR



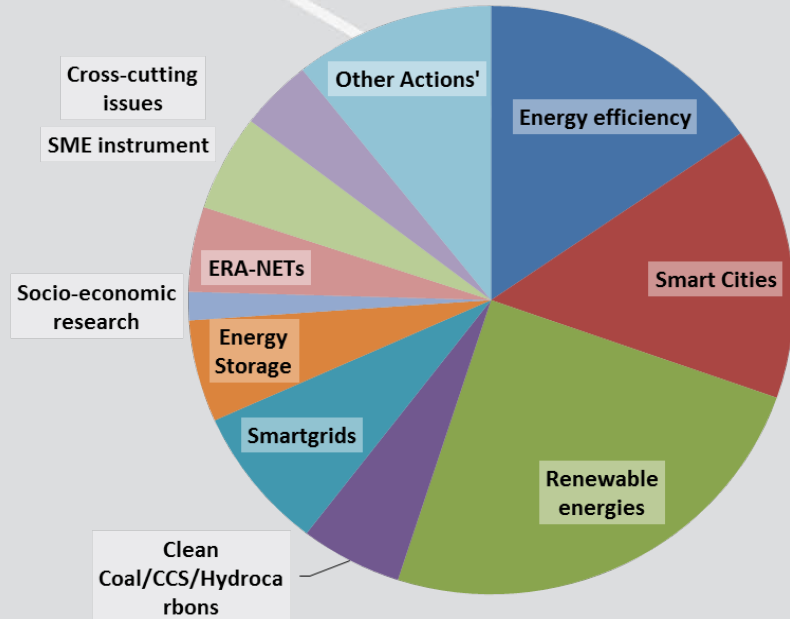
Energy WP 2014-15 (m EUR)



Horizon 2020 – Budget Allocation [2/2]

Calls	2014 (M€)	2015 (M€)
Energy Efficiency	97,5	98,15
Smart Cities and Communities	92,32	108,18
Competitive Low-Carbon Energy	359,1	372,33
SMEs and Fast Track to Innovation	33,95	37,26
<i>Part B – other actions</i>	75	61
Euratom Fission	48,3	39,6
<i>Part B – other actions</i>	0,3	15,0

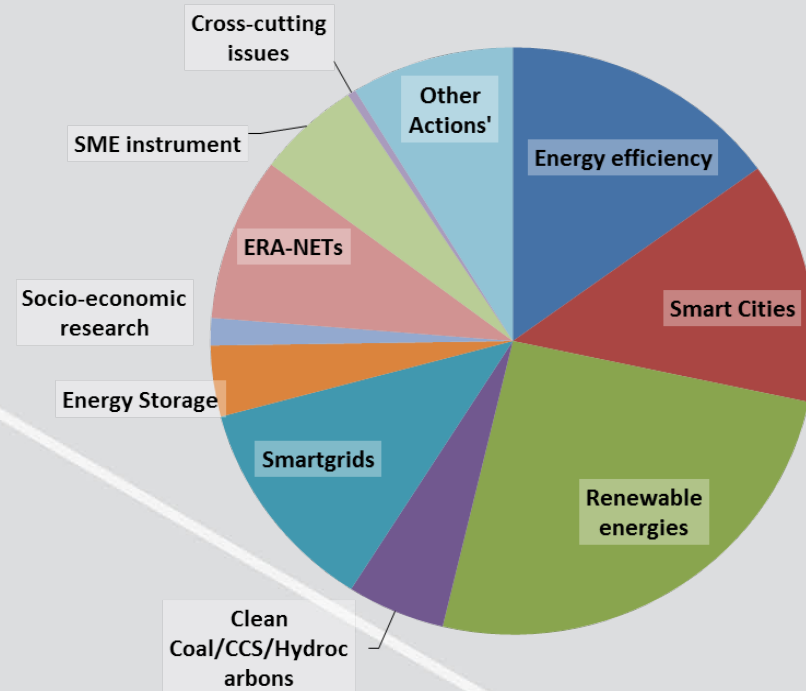
Budget allocation of the Energy WP (2014)



Συνολικός προϋπολογισμός για το 2014:
607 εκατ. ευρώ

+ Contribution to JTI Fuel Cells and Hydrogen in 2014: **60 εκατ. ευρώ**

Budget allocation of the Energy WP (2015)



Συνολικός προϋπολογισμός για το 2015:
647 εκατ. ευρώ

+ Contribution to JTI Fuel Cells and Hydrogen in 2014: **70.5 εκατ. ευρώ**

ENERGY CHALLENGE (2014-2015)

Low Carbon Energy



Smart Cities & Communities



Energy Efficiency



SMEs and Fast Track to Innovation

Competitive Low- Carbon Energy

.....photovoltaics, concentrated solar power, wind energy, ocean energy, hydro power, geothermal energy, Renewable Heating and Cooling, energy storage, biofuels and alternative fuels, carbon capture and storage.....

- ✧ New knowledge and technologies;
- ✧ Renewable electricity and heating/cooling;
- ✧ Modernising the single European electricity grid;
- ✧ Providing the energy system with flexibility through enhanced energy storage technologies;
- ✧ Sustainable biofuels and alternative fuels for the European transport fuel mix;
- ✧ Enabling the decarbonisation of the use of fossil fuels;
- ✧ Supporting the development of a European Research Area;
- ✧ Social, environmental and economic aspects of the energy system;
- ✧ Cross-cutting issues.



To bring more
efficient and cost-
competitive energy
conversion
technologies out of
the lab



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Low Carbon Energy

	AREA	TRL	TYPE
LCE 1	New knowledge and technologies	2 > 3-4	RIA
Renewable electricity and heating/cooling			
LCE 2	Developing the next generation technologies of renewable electricity and heating/cooling	3-4 > 4-5	RIA
LCE 3	Demonstration of renewable electricity and heating/cooling	5-6 > 6-7	IA
LCE 4	Market uptake of existing and emerging renewable electricity, heating and cooling technologies	7-9	CSA





Low Carbon Energy

	AREA	TRL	TYPE
Modernising the European electricity grid			
LCE 5	Innovation and technologies for the deployment of meshed offshore grids	6-7 > 8	IA
LCE 6	Transmission grid and wholesale market		IA, RIA
LCE 7	Distribution grid and retail market		IA, CSA
Energy storage technologies			
LCE 8	Local/small scale storage	5 > 6	IA
LCE 9	Large scale storage	5 > 6-7	IA
LCE 10	Next generation technologies for energy storage	2 > 5	RIA

Low Carbon Energy



	AREA	TRL	TYPE
Sustainable biofuels and alternative fuels for transport			
LCE 11	Developing next generation technologies for biofuels and sustainable alternative fuels	3-4 > 4-5	RIA
LCE 12	Demonstrating advanced biofuel technologies	5-7 > 6-7	IA
LCE 13	Partnering with Brazil on advanced biofuels	5-7 > 6-7	IA
LCE 14	Market uptake of existing and emerging sustainable bioenergy	7-9	CSA



Low Carbon Energy



	AREA	TRL	TYPE
Enabling the decarbonisation of the use of fossil fuels			
LCE 15	Enabling decarbonisation of the fossil fuel-based power sector and energy intensive industry through CCS	4-5 > 6	RIA
LCE 16	Understanding, preventing and mitigating the potential environmental impacts and risks of shale gas exploration and extraction		RIA
LCE 17	Highly flexible and efficient fossil fuel power plants	3 > 4-6	RIA
Supporting the development of a European Research Area in the field of Energy			
LCE 18	Supporting Joint Actions on demonstration and validation of innovative energy solutions	5-6 > 6-7	ERA-NET
LCE 19	Supporting coordination of national R&D activities	2 > 5	CSA



Low Carbon Energy



	AREA	TYPE
Social, environmental and economic aspects of the energy system		
LCE 20	The human factor in the energy system	RIA, CSA
LCE 21	Modelling and analysing the energy system, its transformation and impacts	RIA
Cross-cutting issues		
LCE 22	Fostering the network of National Contact Points	CSA



ENERGY CHALLENGE (2014-2015)

Low Carbon Energy



Smart Cities & Communities



Energy Efficiency



SMEs and Fast Track to Innovation

SMEs & Fast Track to Innovation

SME Instrument

- **SIE-01-2014-1:** Stimulating the innovation potential of SMEs for a low carbon energy system
- **SC5-20-2014-1:** Boosting the potential of small businesses for eco-innovation and a sustainable supply of raw materials



Fast Track to Innovation – Pilot

- Covering all fields across LEITs (Leadership in enabling and industrial technologies) and Societal Challenges
- Maximum of 5 partners/ maximum €3 M per project
- Continuously open call / Time to grant not exceeding 6 months



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ENERGY CHALLENGE (2014-2015)

Low Carbon Energy



Smart Cities & Communities



Energy Efficiency



SMEs and Fast Track to Innovation

Energy Efficiency

.....buildings, industry, heating and cooling, SMEs and energy-related products and services, integration of ICT and cooperation with the telecom sector.....

- 1) Buildings and consumers
- 2) Heating and cooling
- 3) Industry and products
- 4) Finance for sustainable energy

1. Buildings and Consumers

- *Prefab. modules*
- *Historic buildings*
- *New EE buildings*
- *Demand response in building blocks*
- *ICT for EE*
- *Socio-eco. research*
- *Construction skills*
- *Organisational innovation*
- *Capacity-building for public authorities and other stakeholders*
- *Public procurement*
- *Consumer engagement*

2. Heating and cooling

Technology for district heating and cooling

Removing market barriers to the uptake of EE solutions

3. Industry and Products

- Innovation through large buyer groups
- Heat recovery

- Market surveillance
- Organisational innovation in industry

4. Finance for Sustainable Energy

- *Making investments more attractive*
- *Innovative financing and energy services*
- *Project development assistance including Other actions*



Energy Efficiency [1/5]

Call	Deadline
EE 1 – 2014: Manufacturing of prefabricated modules for renovation of building	20/3/2014
EE3 – 2014: Energy strategies and solutions for deep renovation of historic buildings	20/3/2014
EE 18 2014/2015: New technologies for utilization of heat recovery in large industrial systems, considering the whole energy cycle from heat production to transformation, delivery and end use	20/3/2014
EE 4 – 2014: Construction skills	5/6/2014
EE 5 – 2014/2015: Increasing energy performance of existing buildings through process and organisation innovations and creating a market for deep renovation	5/6/2014



Energy Efficiency [2/5]

Call	Deadline
EE 7 – 2014/2015: Enhancing the capacity of public authorities to plan and implement sustainable energy policies and measures	5/6/2014
EE 8 – 2014: Public procurement of innovative sustainable energy solutions	5/6/2014
EE 9– 2014/2015: Empowering stakeholders to assist public authorities in the definition and implementation of sustainable energy policies and measures	5/6/2014
EE 10 – 2014/2015: Consumer engagement for sustainable energy	5/6/2014
EE 11 – 2014/2015- New ICT-based solutions for energy efficiency	5/6/2014

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Energy Efficiency [3/5]

Call	Deadline
EE 12 – 2014: Socioeconomic research on energy efficiency	5/6/2014
EE 13 – 2014/2015: Technology for district heating and cooling	5/6/2014
EE 14 - 2014/2015: Removing market barriers to the uptake of efficient heating and cooling solutions	5/6/2014
EE 15 – 2014/2015: Ensuring effective implementation of EU product efficiency legislation	5/6/2014
EE 16 – 2014/2015: Organisational innovation to increase energy efficiency in industry	5/6/2014





Energy Efficiency: Open Calls [4/5]

Call	Deadline
EE 19 – 2014/2015: Improving the financeability and attractiveness of sustainable energy investments	5/6/2014
EE 20 – 2014/2015: Project development assistance for innovative bankable and aggregated sustainable energy investment schemes and projects	5/6/2014
EE 21 – 2014/2015: Development and market roll-out of innovative energy services and financial schemes for sustainable energy	5/6/2014





Energy Efficiency: Open Calls [5/5]

Call	Deadline
EE 2 – 2015: Buildings design for new highly energy performing buildings	9/12/2014
EE 18 2014/2015: New technologies for utilization of heat recovery in large industrial systems, considering the whole energy cycle from heat production to transformation, delivery and end use	9/12/2014





Energy-Efficient Buildings

Call	Deadline
EeB 1–2014: Materials for building envelope	20/3/2014
EeB 2–2014: Adaptable envelopes integrated in building refurbishment projects	20/3/2014
EeB 3–2014: Development of new self-inspection techniques and quality check measures for efficient construction processes	20/3/2014
EeB 4–2014: Support for the enhancement of the impact of EeB PPP projects	20/3/2014





Energy-Efficient Buildings

Call	Deadline
EeB 5–2015: Innovative design tools for refurbishment at building and district level	9/12/2014
EeB 6–2015: Integrated solutions of thermal energy storage for building applications	9/12/2014
EeB 7–2015: New tools and methodologies to reduce the gap between predicted and actual energy performances at the level of buildings and blocks of buildings	9/12/2014
EeB 8–2015: Integrated approach to retrofitting of residential buildings	9/12/2014



ENERGY CHALLENGE (2014-2015)

Low Carbon Energy



Smart Cities & Communities

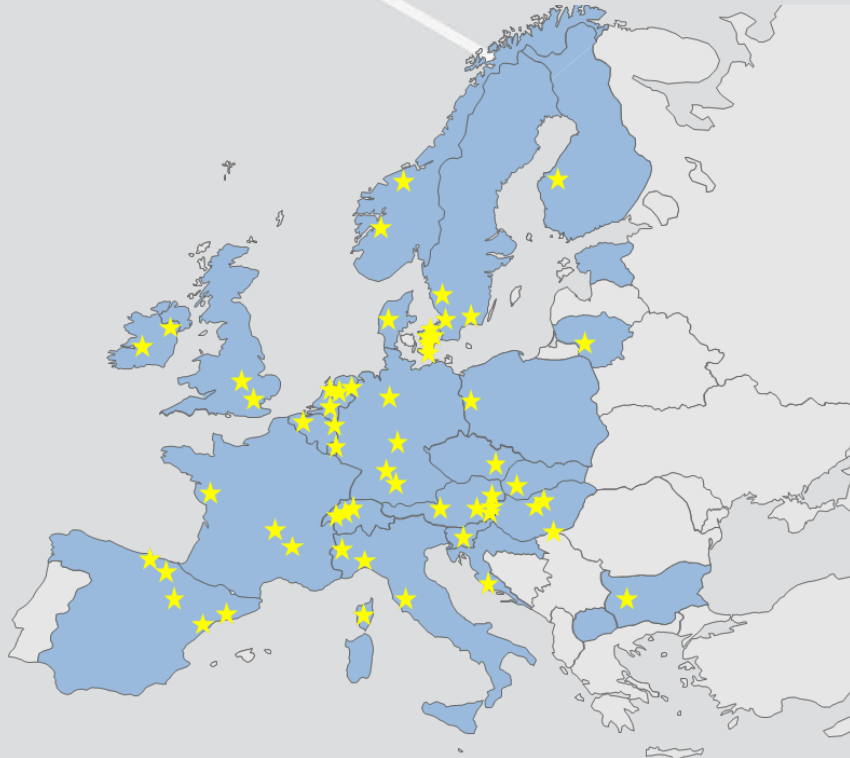


Energy Efficiency



SMEs and Fast Track to Innovation

Innovate: Go beyond what exists



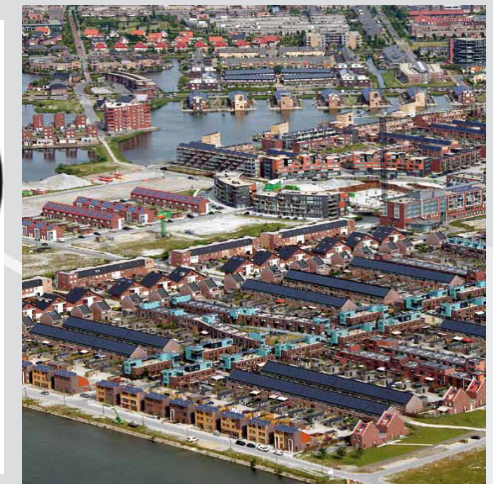
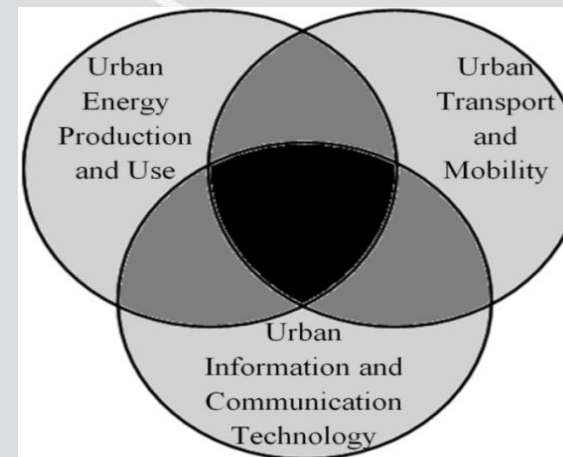
- *Concerto =22 projects, 58 communities*
- *Take to the next level*
- www.concerto.eu

Smart Cities & Communities

- ✦ New, efficient, and user-friendly technologies and services, in the areas of energy, transport and ICT;
- ✦ Need integrated approaches, both in terms of R&D of advanced technological solutions, as well as deployment;
- ✦ Will result in commercial-scale solutions with a high market potential.



- ✦ **2-3 Lighthouse cities;**
- ✦ **2-3 Follower cities;**
- ✦ **Multi-sector input;**
- ✦ **Embedded in urban plans.**



Smart cities and communities demo projects:

- Innovative **lighthouse** projects
 - (Nearly zero) or Low energy districts
 - Integrated infrastructures
 - Sustainable urban mobility
- High **replication** potential
- Exhaustive **monitoring** of operation/performance efficiency
- **Cost effective** measures
- Communication/exchange of information
Between users / inhabitants
Decision makers / city authorities



Smart Cities & Communities

Call	Deadline
SCC 1 – 2014/2015: Smart Cities and Communities solutions integrating energy, transport, ICT sectors through lighthouse (large scale demonstration - first of the kind) projects	7/5/2014
SCC 2 – 2014: Developing a framework for common, transparent data collection and performance measurement to allow comparability and replication between solutions and best-practice identification	7/5/2014
SCC 4 – 2014: Establishing networks of public procurers in local administrations on smart city solutions	7/5/2014

Άλλες δράσεις

- Support to policy development and implementation
- Support to Technology Platforms
- IEA Implementing Agreements
- etc.



Χρήσιμοι σύνδεσμοι

- Secure, Clean & Efficient Energy Work Programme 2014-2015:
http://ec.europa.eu/research/participants/data/ref/h2020/wp/2014_2015/main/h2020-wp1415-energy_en.pdf
- Προκηρύξεις 2014-2015:
<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/index.html>



ΕΠΙΚΟΙΝΩΝΙΑ

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