



RESEARCH AND INNOVATION PRIORITIES TO MEET THE GOAL OF GREENER AND MORE ENERGY EFFICIENT BUILDINGS



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December 3rd, 2015, Brindisi



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REFERENCE FRAMEWORK



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Problems

- Buildings use 40 % of total EU energy consumption
- The built environment generates 1/3 of GHG in Europe
- Replacement rate is very small (1 to 2 % per year)
- The renovation of the existing stock is a real challenge
- Energy efficient solutions are still too costly
- The built environment affects life and work of citizens
- Construction sector is highly fragmented, 95% of the enterprises are SMEs





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Potentials

- Construction is the largest EU single activity (€1,2 trillion, 9.6% of GDP) and biggest industrial employer (14,6 million direct jobs)
- Buildings have the second highest potentials in terms of energy savings (after the energy sector)
- Growing attention from Public Authorities to energy efficiency in buildings → funds availability

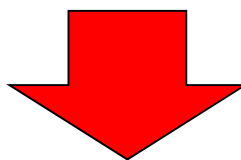




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PROBLEMS + POTENTIALS



OPPORTUNITY

“Turn energy efficiency into a sustainable business”





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2008: European Economic Recovery Plan

EU approach to support economy recovery: sustain innovation in specific strategic sectors



Public-Private Partnership (PPP)

- Public part (EC)
- Private part (private Associations of stakeholders)

PPP basic principles

- Combination of public and private commitment and investment
- Research priorities defined by industry → bottom-up approach
- Multi-annual development plans allow investment planning





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H2020 news: Contractual arrangement



- **Main roles in a contractual PPP**
 - Private sector partners advise the Commission on R&I priorities for the Horizon 2020 work programmes
 - Implementation via Commission WPs for R&I using Horizon 2020 Rules for Participation and with comitology



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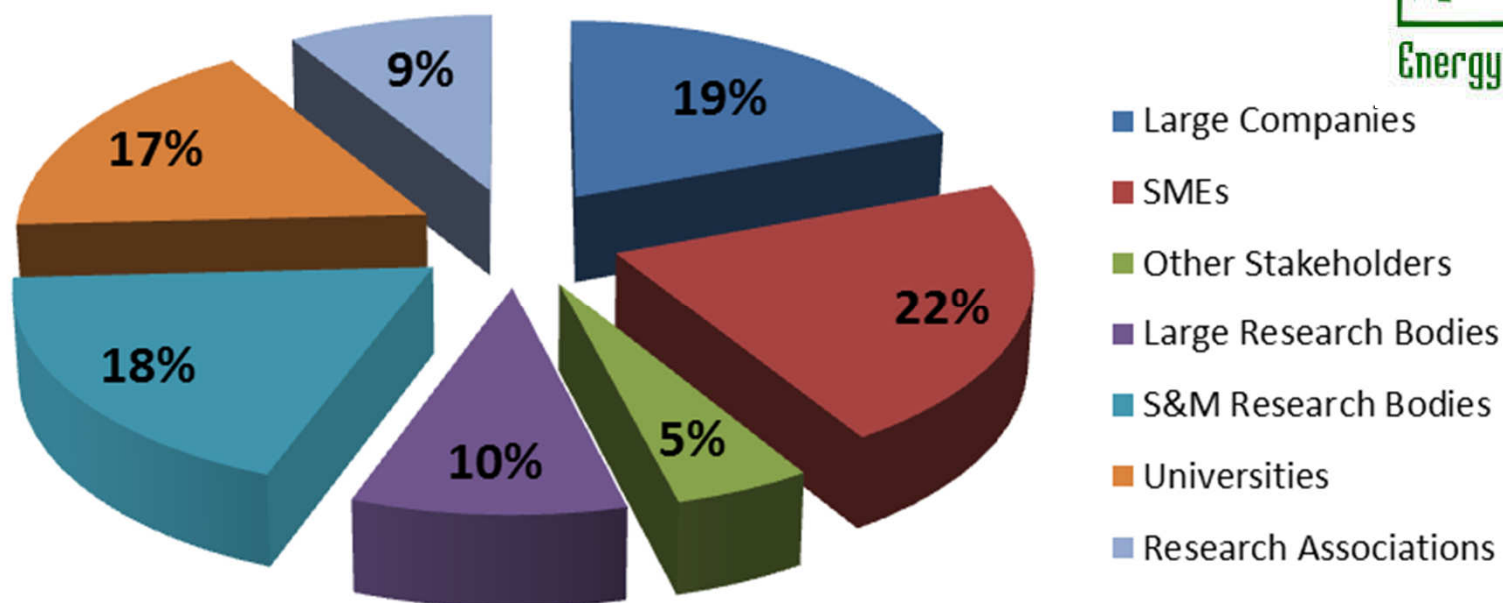


Objectives of the EeB PPP:

- Drive the creation of a high-tech building industry, that turns energy efficiency into a sustainable business
- Promoting innovative technologies, systems and materials to achieve higher levels of energy efficiency and sustainability in Europe's built environment



Energy Efficient Building Association (E2BA): the private side in the EEB cPPP



- Created in 2009
- Non-profit
- 124 Members from 21 countries



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Vision at 2050:

By 2050, most buildings and districts could become energy neutral, and have a zero CO2 emission.

A significant number of buildings would then be energy positive....

*European Initiative on Energy-efficient Buildings, Scope and Vision,
Version 1, January 2009*



Brindisi, December 3°, 2015



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Actions:

- Networking
- Definition of a **strategic roadmap** for R&I activities → contribute to define the R&I program of EU
- “Dedicated” calls for proposal in VII and VIII F.P.
- Projects, investments and results



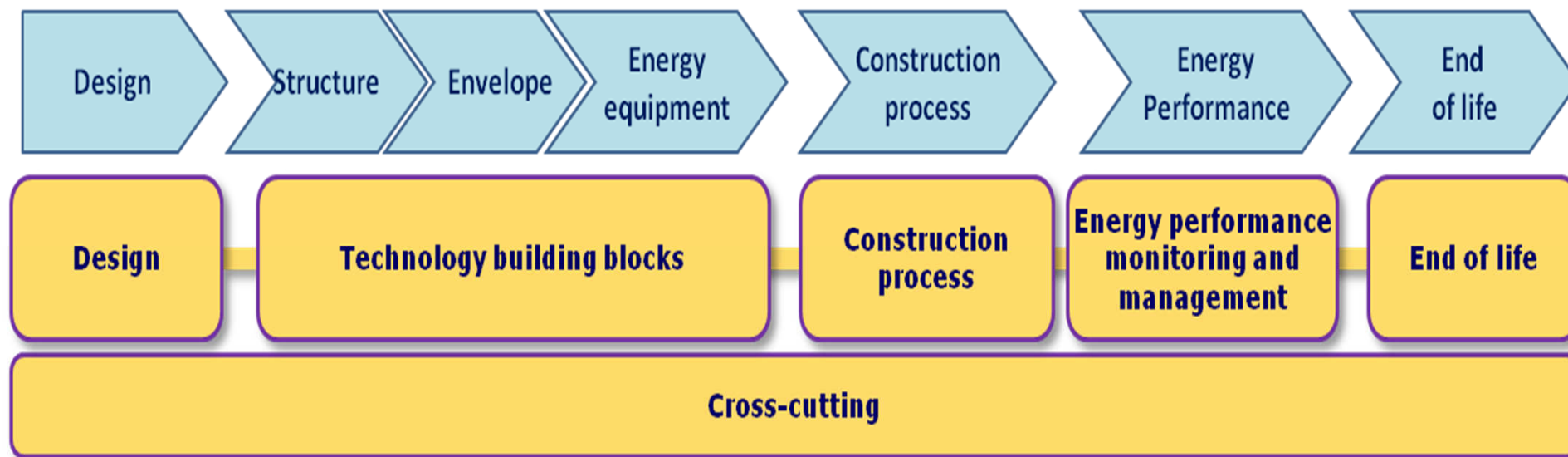
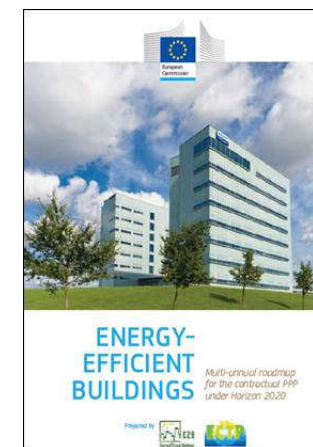


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Multiannual Strategic Roadmap

- Defined by private partners through open consultation
- Roadmap broken down in specific and prioritized development lines
- Approach: cover all the buildings value chain

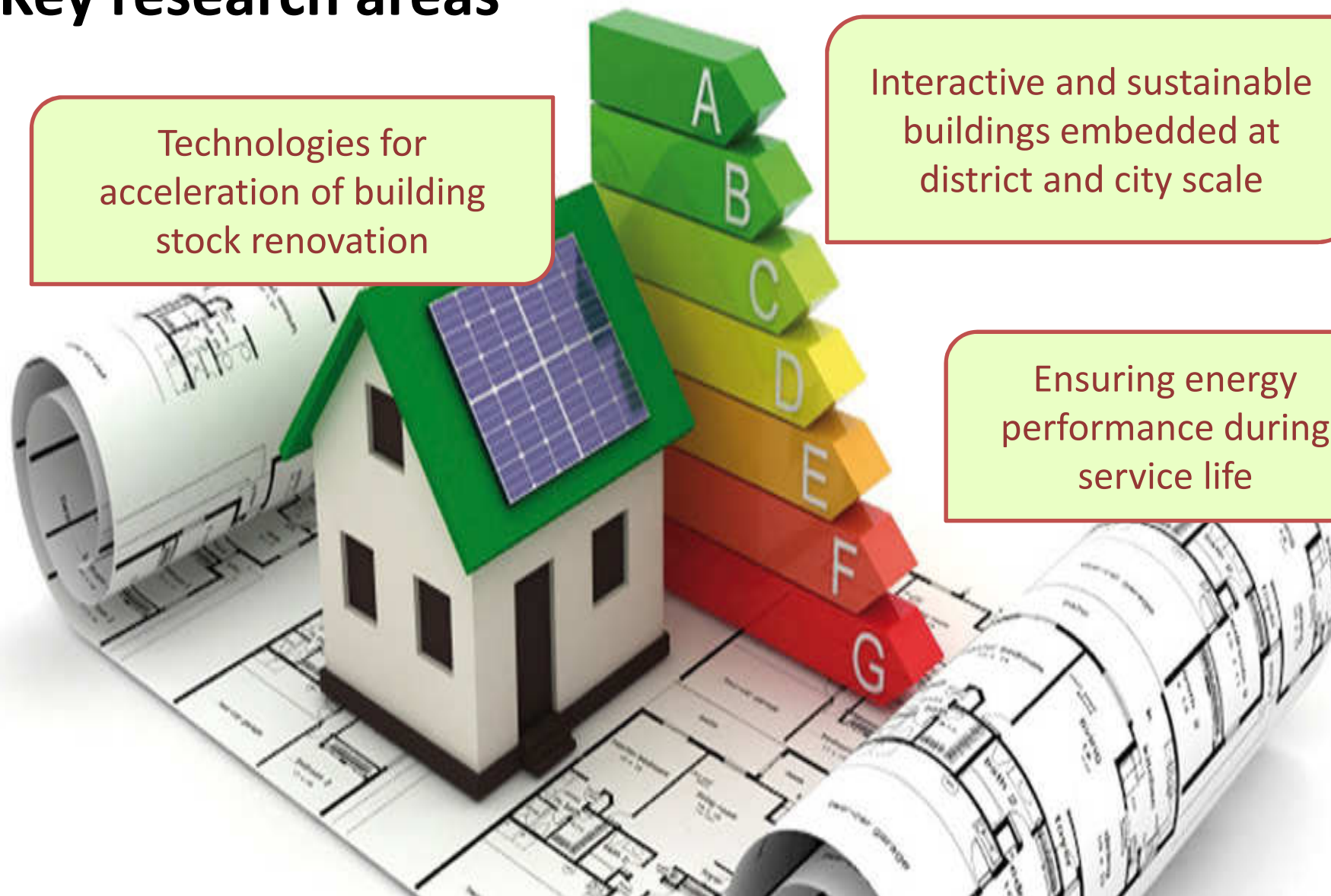


Key research areas

Technologies for
acceleration of building
stock renovation

Interactive and sustainable
buildings embedded at
district and city scale

Ensuring energy
performance during
service life

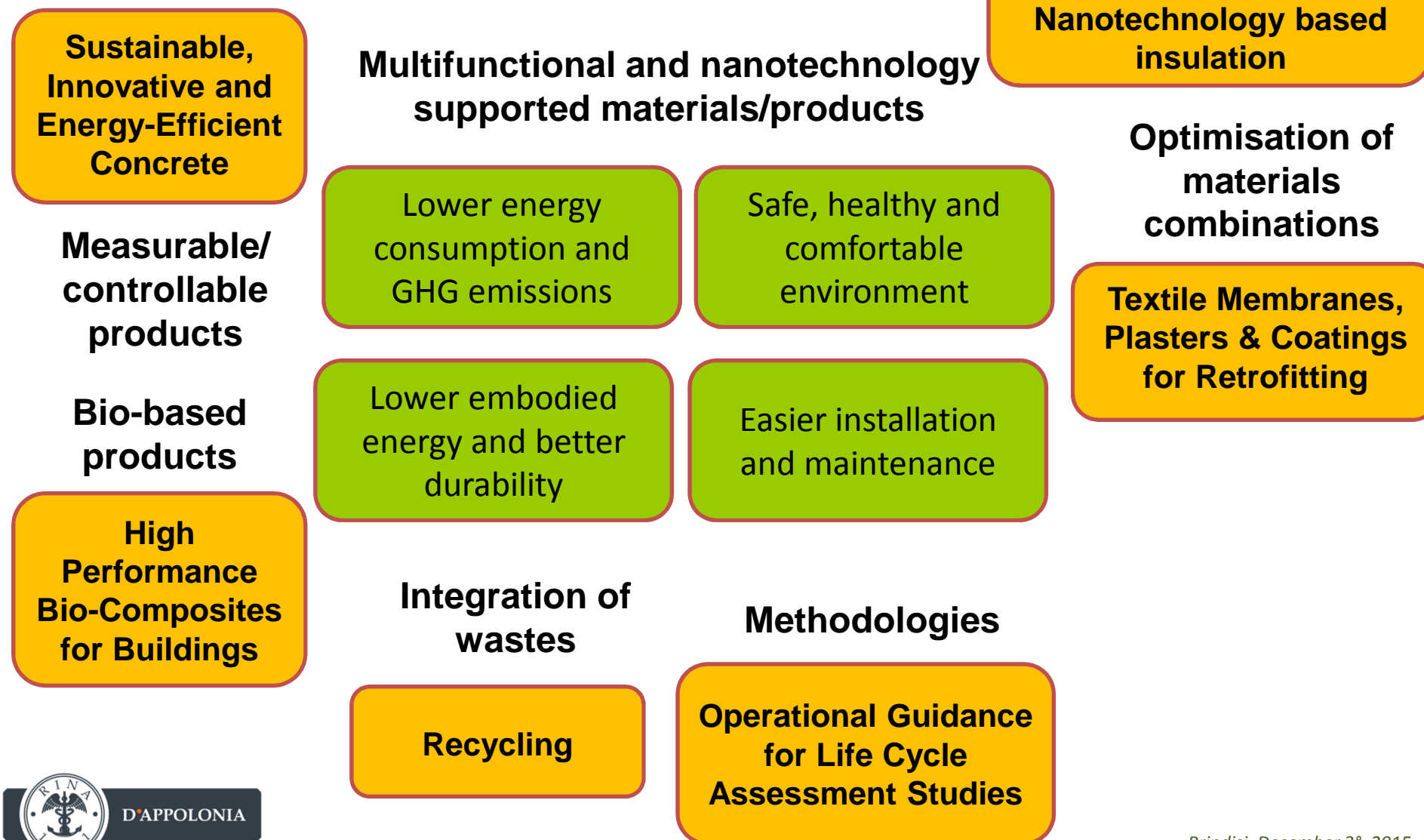




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Development of enabling technologies





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Integration and demonstration of technologies for energy efficiency

**New Processes and
Business models**

**Economic, Organisational
& Social Innovation
Business Performance-
Based Models
Interaction with Real
Flagship Projects**

**Building Interaction
& Integration with
Energy Networks at
District Level**

**Micro-CHP & SOFC
Waste Solutions
Thermo Chemical Storage
External Insulation
Renewable Energies
Matching Supply & Demand
Integrated Concept of
Interconnectivity**

Building Retrofitting

**Systemic Renovation Packages
Prefabricated Elements
Integration Supervision &
Evaluation
SME Friendly Procedures for
selecting Best Solutions**

Demonstration



**Cultural
Heritage**

**Solutions for Specific Issues
Guidelines/Tools for
Analysis & Design**





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Achievements in FP7 *(not final figures)*

- 111 RTD Projects funded
- EU contribution: 515 M€
- Industry investment: 429 M€
- SME participation: 132 SMEs (30% of partners)
- 242 demonstrators located in 24 countries
- Average energy use reduction: 39%
- Annual savings in CO₂ : 4Mt





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Achievements in FP7 *(not final figures)*

Future Impacts

Job Creation

Projects aspire to create over 83,000 jobs

Technology & Patents

Potentially 286 technologies can be taken to market

124 patents may be applied for

Business

Estimated €2.4 billion potential future private investments

An average of 5 – 10 years return on investment.



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Some figures for H2020:

- EU funding for EeB calls in H2020: **600 M€**
- Private investment expected: at least 4 times the EU funding (including industrialization)
- So far (2014-2015 calls):
 - 311 proposal submitted
 - 31 funded (10% success rate...)
 - Total EU contribution 137.6 M€
 - 321 participants
 - Industrial involvement 56%
 - 31% SME partners
- EU funding for EeB calls in the next Work Programme: 57 M€ (2016) + 62 M€ (2017)





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Call topics planned for 2016 and 2017 under the EeB cPPP

Topic code	Topic title	Type of Action	Expected Deadline	Budget (M€)
EeB 1 -2016	<u>Highly efficient insulation materials</u> with improved properties	IA	21 January 2016	49
EeB 2 -2016	Performance indicators and monitoring techniques for energy-efficiency and environmental quality at building and district level	CSA		
EeB 3 -2016	Integration of advanced technologies for <u>heating and cooling</u> at building and district level	IA		
EeB 4 -2016	New technologies and strategies for the development of <u>pre-fabricated elements through the reuse and recycling of construction materials and structures</u>	RIA		
EE 10 - 2016	Supporting accelerated and cost-effective <u>deep renovation of buildings</u>	IA		8
EeB 5 -2017	Development of <u>near zero energy building renovation</u>	IA	19 January 2017	54
EeB 6 -2017	Highly efficient hybrid storage solutions for power and heat in residential buildings and district areas, balancing the supply and demand conditions	RIA		
EeB 7 -2017	<u>Integration of energy harvesting</u> at building and district level	IA		
EeB 8 -2017	New business models for energy-efficient buildings through adaptable refurbishment solutions	CSA		
EE 12 - 2017	Integration of Demand Response in Energy Management Systems while ensuring interoperability	IA		8



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CONCLUSIONS

- ✓ Energy efficiency of districts and buildings is a big economic and social problem but, at the same time, an invaluable opportunity for sustainable business
- ✓ UE highlighted this sector as strongly strategic
- ✓ EeB PPP to drive the **creation of a high-tech building industry** and to **promote innovative technologies, systems and materials** to achieve higher levels of energy efficiency and sustainability
- ✓ Combination of public and private commitment and investment
- ✓ Research priorities defined by industry
- ✓ Definition of a multi-annual strategic roadmap
- ✓ “Dedicated” calls for proposal in H2020 for roadmap implementation



Thanks for your attention!



Contact details:

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