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# **European Policy Framework for Research and Innovation on Energy Storage**

**ELSA Stakeholder Workshop  
2<sup>nd</sup> May 2016, Aachen DE**



# The way towards: **The Energy Union**

## **Where** we want to go:

A secure, sustainable, competitive, affordable energy for every European

## **What** this means:

Energy security, solidarity and trust

A fully integrated internal energy market

Energy efficiency first

Transition to a long-lasting low-carbon society

An Energy Union for Research, Innovation and Competitiveness

## **How** we want to reach it:



# The **Energy Union's** 5<sup>th</sup> dimension

## Research & Innovation

Developing **EU technological leadership** in low carbon technologies by

- reducing energy **consumption**,
- developing **renewable** sources,
- empowering **consumers** and
- boosting growth and jobs.

# The **Energy Union's** 5<sup>th</sup> dimension in practise



The diagram features a blue globe with a white network of lines connecting various points, representing a global energy grid. A large green circular arrow with a white outline is positioned in the center, pointing clockwise. Three white rounded rectangular boxes with grey borders are placed around the arrow, each containing text. The background is a gradient of blue and white.

Initiative on EU  
global technology  
and innovation  
**leadership**

Integrated **SET Plan**,  
including **Smart  
Cities** and smart  
financing

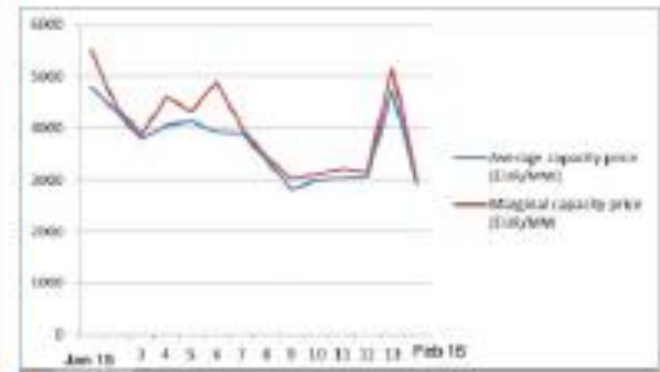
Strategic **transport**  
research and  
innovation R&I  
agenda



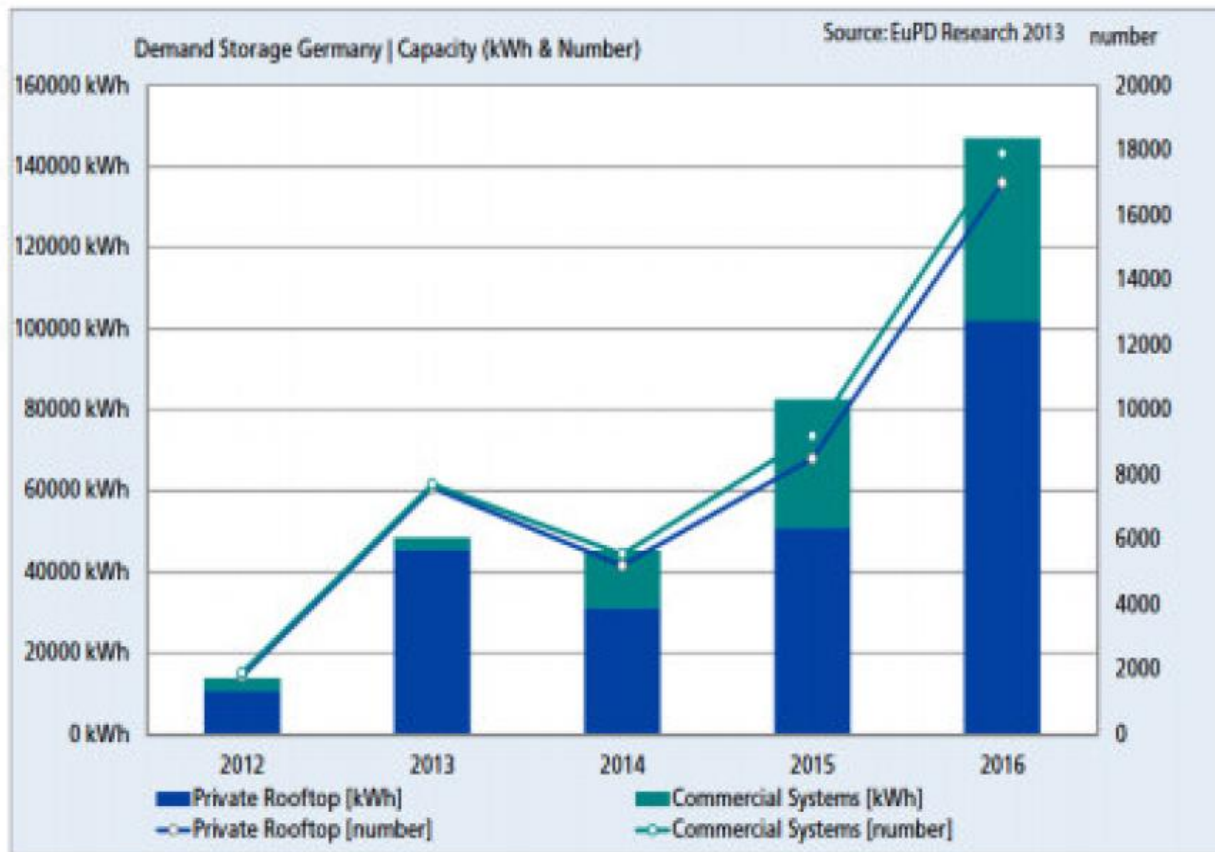
# Large scale storage based on Li-Ion



- **1MW/ ½ MWh li-ion system (no VO&M costs included)**
- **Investment costs:**
  - 200k EUR for ½ MWh storage system
  - 150k EUR for 1MW power electronics
- **Net revenue: 3000 EUR/week**
- **Payback period: 2.3 year**



# High growth rates for stationary storage



**Historical and forecasted sales of residential battery systems in Germany**

## Consumer at the centre of the future energy system

3) Smart homes, smart cities

4) Resilience, security and smartness of the energy system



## Efficient energy systems

- 5) New materials and technologies for energy efficiency solutions for buildings
- 6) Continue efforts to make EU industry less energy intensive and more competitive

## Sustainable transport

- 7) Become competitive in the global battery sector
- 8) Renewable fuels needed for sustainable transport solutions





# SET Plan Action 7: Become competitive in the global battery sector



- *E-mobility need batteries with longer range, lower weight and lower cost*
- *E-mobility must be integrated component of the energy system.*
- *A European R&I strategy for batteries must consider for both stationary and EV applications*

# SET Plan Action 7: Elements for batteries R&I strategy



- ***Whole innovation chain – basic research-materials technology - manufacturing processes***
- ***Batteries in a systems approach***
  - Battery management system
  - Power electronics
  - Systems for safety
- ***Stakeholder consultation: 2030 Targets for Stationary Batteries:***
  - €150/kWh (ref 100 kW system)
  - >90 system based energy efficiency
  - Lifetime: "thousands of cycles"
- ***Support: [WWW.BATSTORM-Project.eu](http://WWW.BATSTORM-Project.eu)***

# H2020 Energy: Grid & Storage



**2016-2017**

Towards an integrated EU energy system

**2014-2015**

Modernising the European electricity grid  
Providing the energy system with enhanced energy storage technologies

# H2020 Energy Workprogramme 2016-17 LCE 1-5 Overview

Topic	Focus	Instrument	TRL	MEur per Project	Funding for 2016 MEur	Funding for 2017 MEur
LCE 1	Grid&Storage: Distribution	Research (RIA)	3-6	2-4	20.0	18.0
LCE 2	Grid&Storage: Distribution	Demo (IA)	5-8	12-15	73.5	0.0
LCE 3	R&I Strategy	CSA		4	4.0	0.0
LCE 4	Grid&Storage: Transmission	Demo (IA)	5-8	15-20	0.0	65.1
LCE 5	Tools for Integration	Research (RIA)		2-4	0.0	28.0
					<b>97.5</b>	<b>111.1</b>

All single stage

Deadlines for submission: 2016: 5<sup>th</sup> April

2017: 14<sup>th</sup> February

! 2017: potential revision of topics and budget

(coverage of 2015 projects on transmission and large-scale storage + potential ERA-NET action relevant to 'Towards an integrated EU energy system' in call 2017)



Technological development for Hydrogen production and storage for the energy system:



**FUEL CELLS AND HYDROGEN**  
JOINT UNDERTAKING



# Thank you

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[www.batstorm-project.eu](http://www.batstorm-project.eu)

<http://www.smartgrids.eu/>

[http://ec.europa.eu/research/energy/index\\_en.cfm](http://ec.europa.eu/research/energy/index_en.cfm)

<http://ses.jrc.ec.europa.eu/project-maps>

[http://ec.europa.eu/energy/index\\_en.htm](http://ec.europa.eu/energy/index_en.htm)