



Grid+Storage Final Event

Key Messages on Storage-Related R&I Activities

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Patrick Clerens
EASE Secretary General

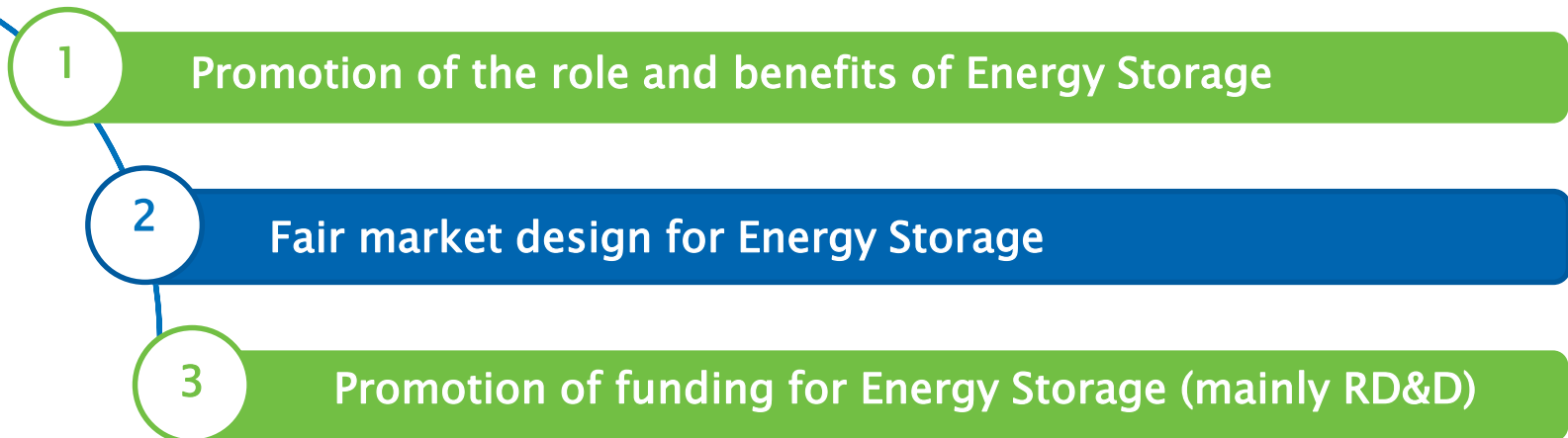


Introduction to EASE

European Association for Storage of Energy...

- ...is the European **voice** of the Energy Storage community
- ...advocates the **role of Energy Storage** as an indispensable instrument for the energy system
- ...supports a **sustainable**, **flexible** and **stable** energy system
- ...**shares** and **disseminates** information

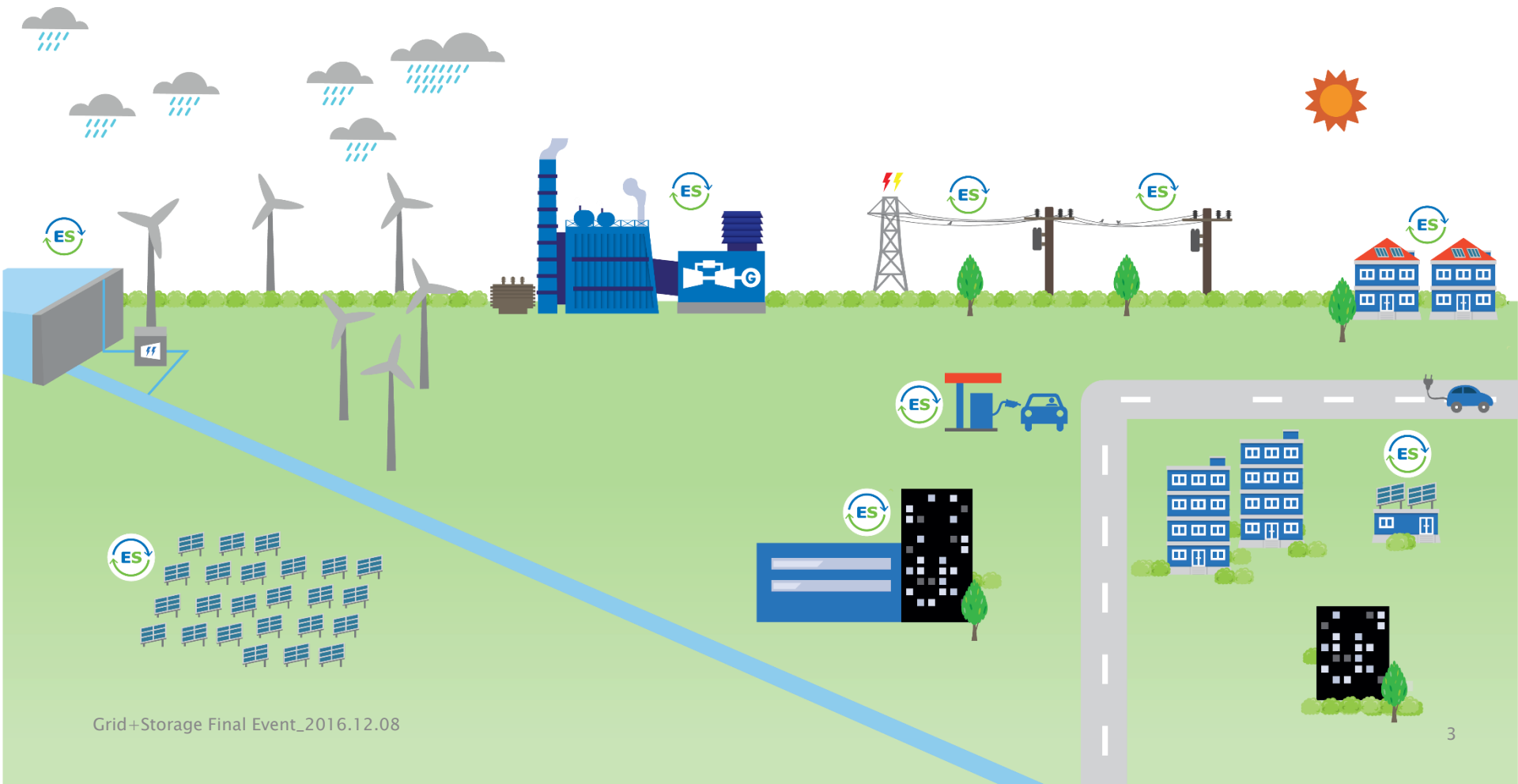
Strategic objectives:





Energy Storage in the Energy System

Energy storage deployments are increasing at all levels of the grid, but significant R&I efforts are still needed.

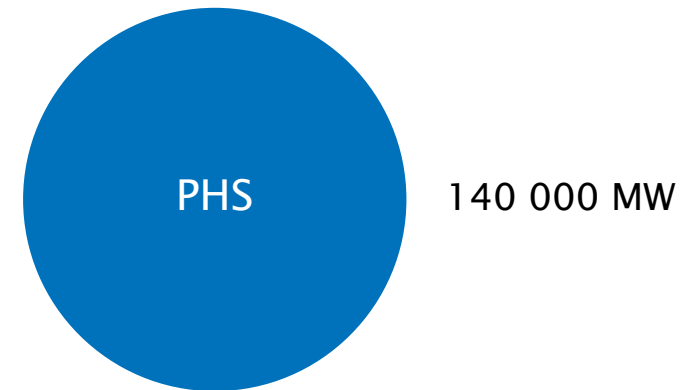




Energy Storage is Already Here

- >140 GW Pumped Hydro Storage (PHS) capacity installed world-wide, including 40 GW installed in Europe + 5 GW under construction
- Growing number of battery installations (esp. Li-ion) over the past 3-4 years
- Technological breakthroughs since 2000:
 - significant improvements in performance
 - rapidly decreasing costs
 - massive research efforts, numerous demonstration projects, and emerging commercial applications
- New markets are appearing, particularly customer side and system services

Global Energy Storage Capacity (2016)



- Li-ion batteries >1GW
- Compressed Air ES – 400 MW
- NaS batteries – 300 MW
- Lead-based batteries – 100 MW
- Nickel Cd batteries – 30 MW
- Flywheels – 40 MW



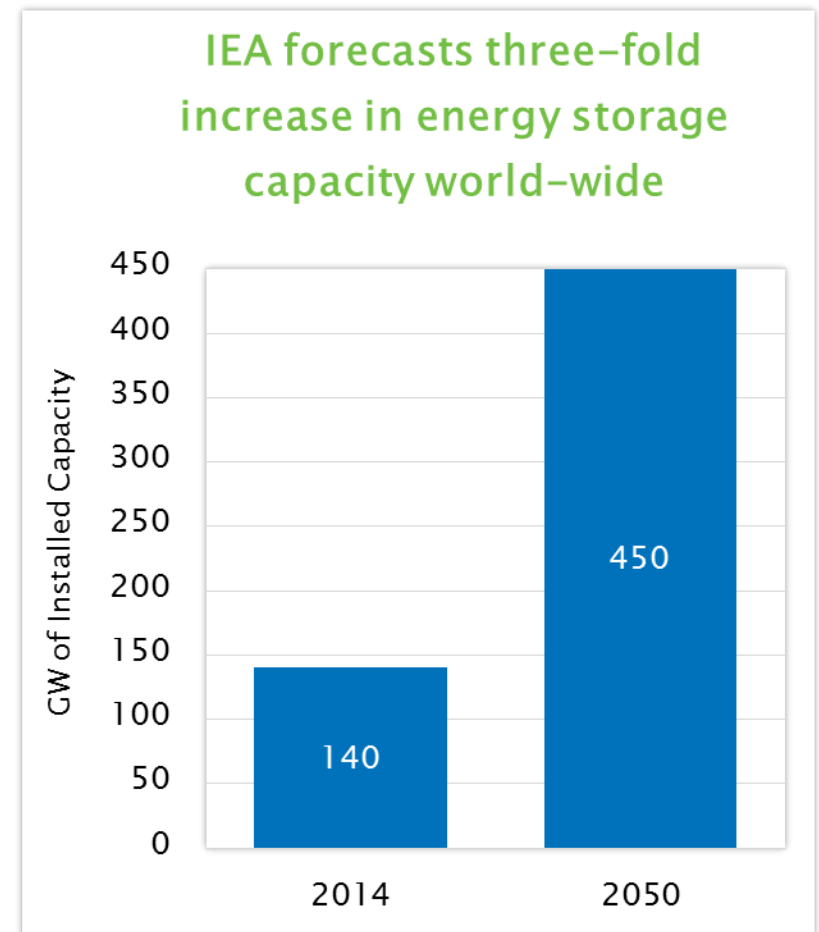
Additional Efforts Required to Meet Projected Energy Storage Demand

To limit global warming to below 2°C, world-wide grid-connected storage capacity should increase significantly by 2050*

Efforts will be needed to increase energy storage capacity by 310 GW:

- ✓ Supportive regulatory and market environment for storage
- ✓ Research & Innovation efforts

* Source: IEA (2014)





Creating an Enabling Regulatory and Market Environment for Storage (1 / 2)

EASE Recommendations

- Including a **definition of energy storage** in the EU regulatory framework
- **Defining a separate asset category** and rules for energy storage systems. Energy storage should be recognised as the **4th element of the energy system** (alongside Generation, Distribution & Transmission and Consumption)
- **Eliminating technical barriers and discriminatory practices** against energy storage in the electricity network codes
- **Removing unwarranted fees and taxes** (e.g. double-taxing for the charging and discharging of energy storage)
- Establishing **clarity on the rules under which energy storage can access markets** – in particular, the perceived inability of TSOs and DSOs to own and operate energy storage





Creating an Enabling Regulatory and Market Environment for Storage (2/2)

EASE Recommendations

- Ensuring that the procurement of all energy and ancillary services is market-based. Energy storage should compete on an equal basis with other providers.
- Ensuring well-designed and properly functioning capacity markets, including eligibility for energy storage.
- Introducing “pay-for-performance” schemes, which value the properties provided by fast-reacting, flexible resources in energy and ancillary service markets.
- Permitting long-term contracts for energy storage (e.g. in the context of primary/frequency control reserves).





R&I for Energy Storage

- Promising signals in EC [Communication on Accelerating Clean Energy Innovation](#): 35% increase in H2020 funding for 4 priorities, including storage; bigger focus on demonstration efforts; and pilot scheme for mission-driven R&I approach.
- **Need for industry and policymaker coordination** to identify energy storage R&I topics and shape effective funding mechanisms to support cost reductions, rapid upscaling, and growth of the European storage industry.
 - Input to be provided through ETIP SNET and EASE-EERA roadmaps

Updated EASE-EERA Energy Storage Technology Development Roadmap

- Outlines the **needs for energy storage R&I in Europe**, describes the **current gaps**, and makes **recommendations for R&I and market design policies** to improve the development of energy storage
- Reflects EASE position that a variety of energy storage technologies are needed to provide a diverse set of applications
- Expected publication: early 2017





Storage Integration in ETIP SNET 10–Year Roadmap (1 / 2)

- Energy storage is addressed from the system integration point of view
- R&I activities are solely focused on these integration aspects
- Storage integration R&I activities have been mainly specified in 2 **dedicated functional objectives** for the transmission and distribution systems respectively:
 1. **Functional objective T10** (Storage integration) in **cluster C3** (Power system flexibility from generation, storage, demand and networks)
 2. **Functional objective D5** (Integration of storage in network management) in **cluster C2** (Integration of decentralised generation, demand, storage and networks)
- Due to the cross-cutting dimension of storage integration, R&I activities have also been defined in other clusters and functional objectives (Table 12 and Table 13 of the Roadmap)



Storage Integration in ETIP SNET 10–Year Roadmap (2/2)

- TSOs and DSOs (and the stakeholders of the power system) have a common view on the use of storage in their different activities:
 - **Planning:** new planning tools should be able to account for the added value brought by the integration of energy storage solutions;
 - **Operations:** storage integration is identified as a key component for coupling the power system with the other energy networks, for automation and control, and possibly defence and restoration plan.
 - **Market:** both TSOs and DSOs (and the stakeholders of the power system) agree that adequate market signals should be promoted so as to ensure an optimised sizing and localisation of storage devices, and studies should be launched so as to determine a fair valuation of ancillary services brought by storage.



Thank you for your attention

EASE – European Association for Storage of Energy
Avenue Adolphe Lacomblé 59/8 | BE – 1030
Brussels
Tel: +32 2 743 29 82
Twitter: [@EASE_ES](https://twitter.com/EASE_ES)
info@ease-storage.eu
www.ease-storage.eu

EASE Secretary General: Patrick Clerens
p.clerens@clerens.eu



Members

