



# Smart Grids Plus

## ERA-Net

**Scoping Workshop, Malmö 2015**

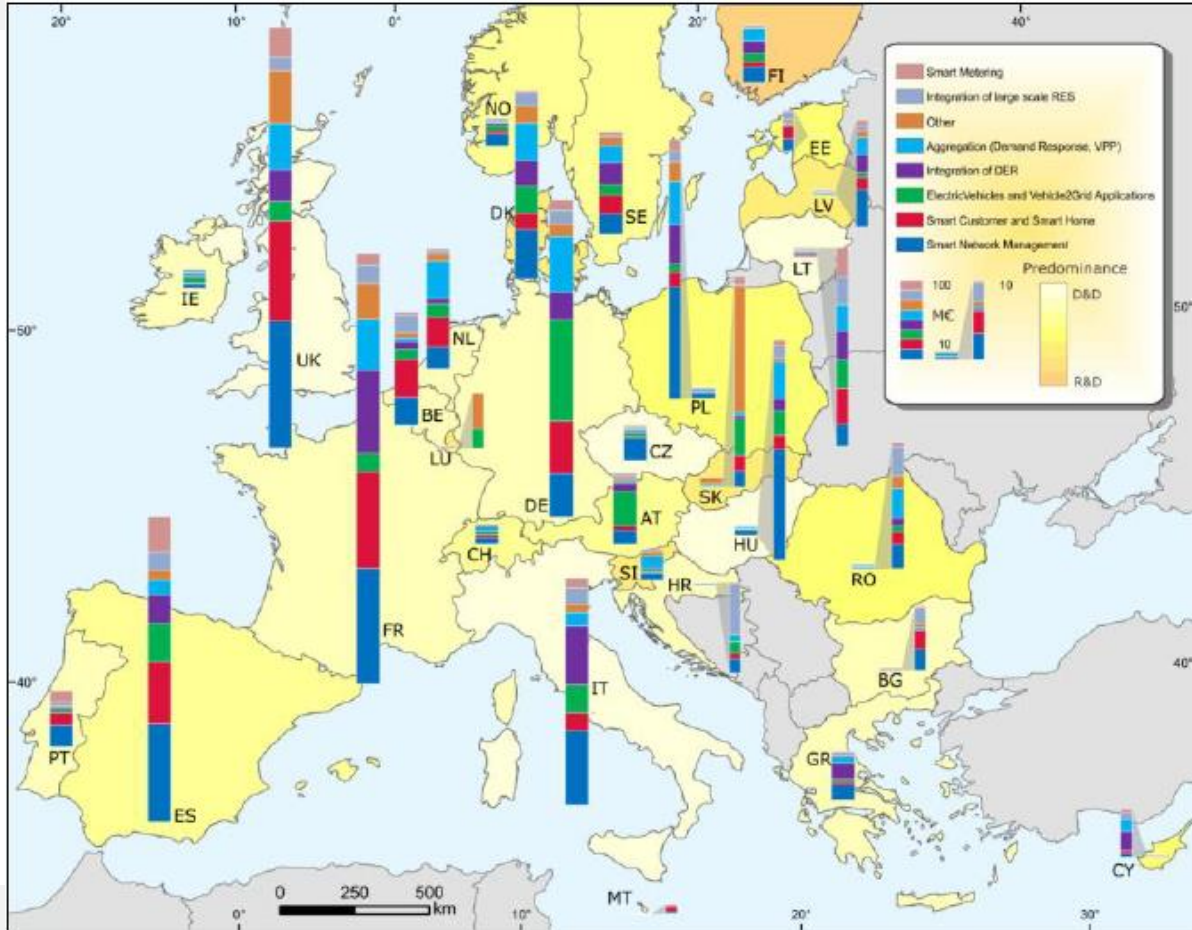
**European research on Storage and Cross Energy  
Carrier Synergies**

Michele de Nigris – RSE - Italy



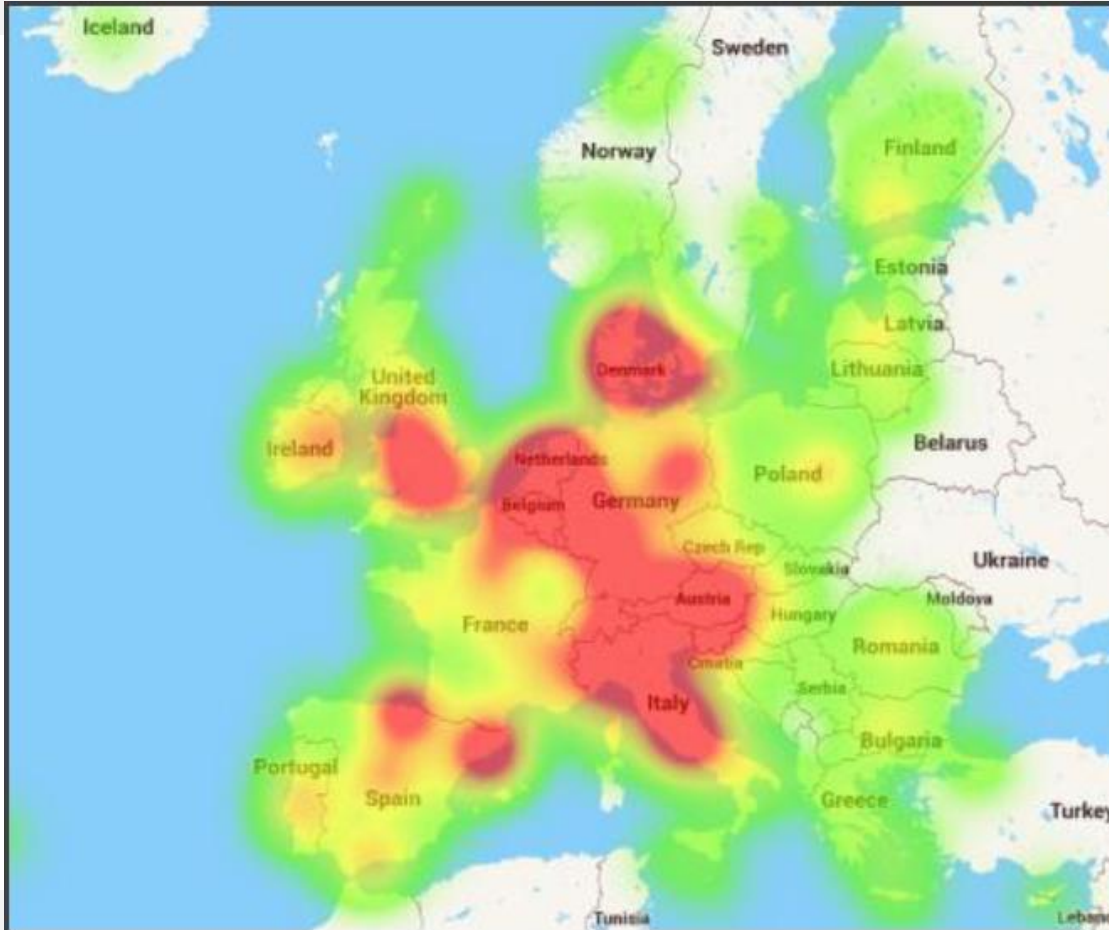
- Head of Sustainability Department of RSE S.p.A. Milano
- Chairman of ISGAN (International Smart Grids Action Network)
- Coordinator of GRID+ (Fp7 CSA)
- Partner in GRID+STORAGE (EC Consultation Tender)
- Deputy Coordinator of Smart Grids Plus Support Project
- Etc.

# SMART GRIDS RESEARCH IN EUROPE



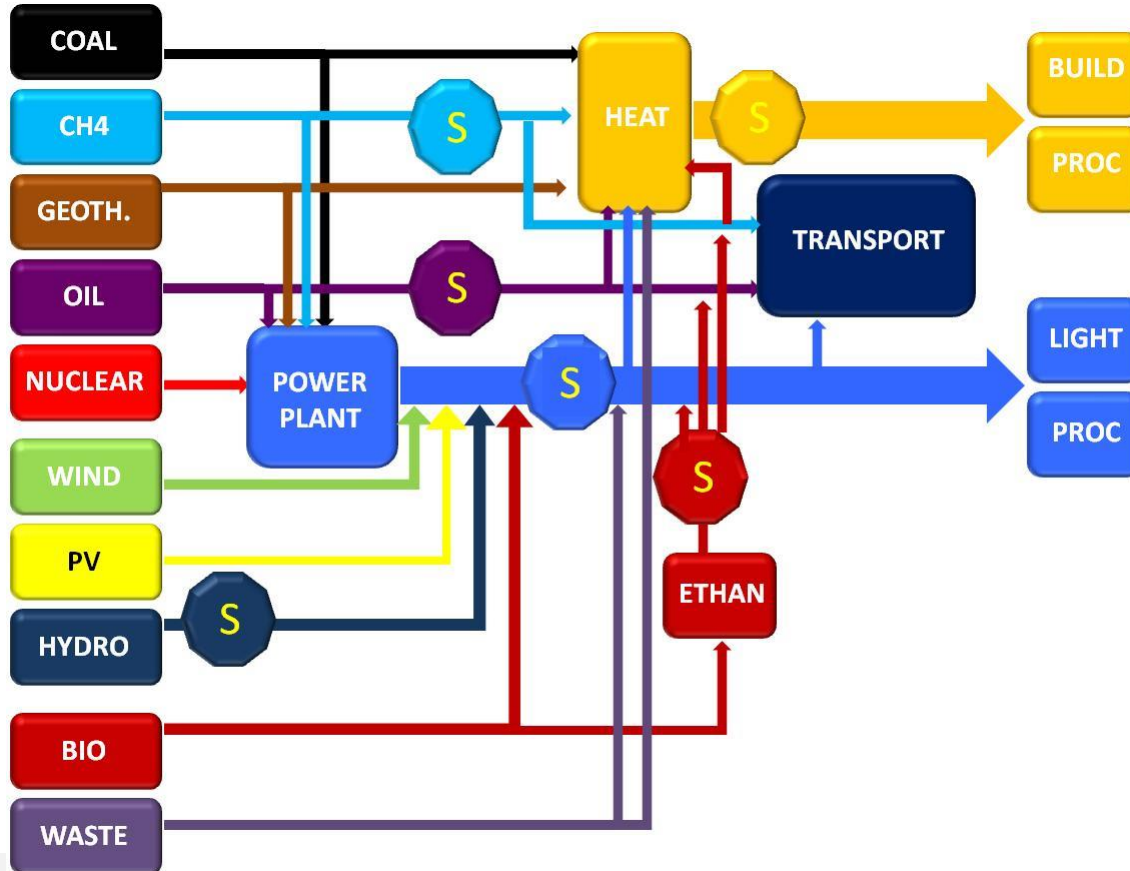
- **DIVERSITY**
- **1° NETWORK MANAGEMENT**
- **2° SMART CONSUMERS**
- **DISTRIBUTED SERVICES (ICT, FLEXIBILITY)**
- **AUTOMATION IS CONSOLIDATED**

# HOT SPOTS OF EXCELLENCE



- **EU 15 MOST ACTIVE COUNTRIES**
- INITIAL ACTIVITIES IN EAST EUROPEAN COUNTRIES
- DATA CONFIRMED IF WEIGHED BY BUDGET
- LEVARAGE **REGIONAL INTEREST**

# ENERGY SYSTEM IS CHANGING



# FOCUS ON STORAGE

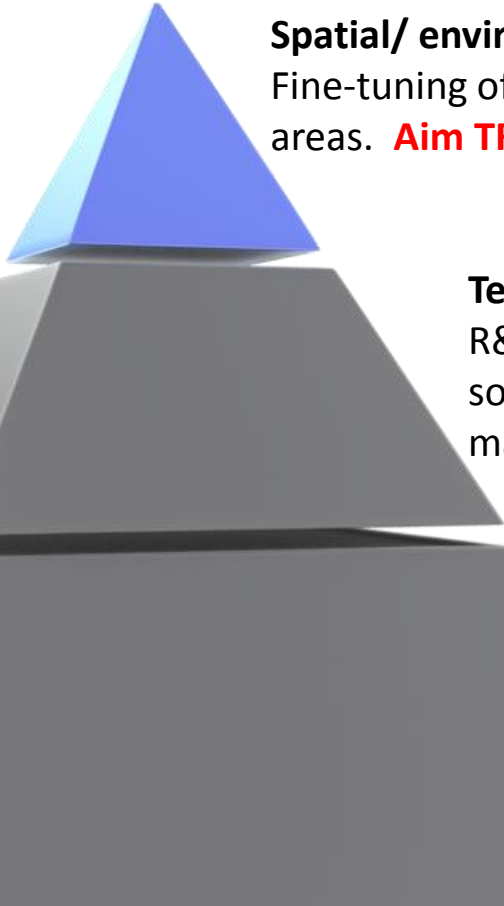
**FLEXIBILITY**

**FROM**

**STORAGE-**

**INTEGRATED**

**SOLUTIONS**

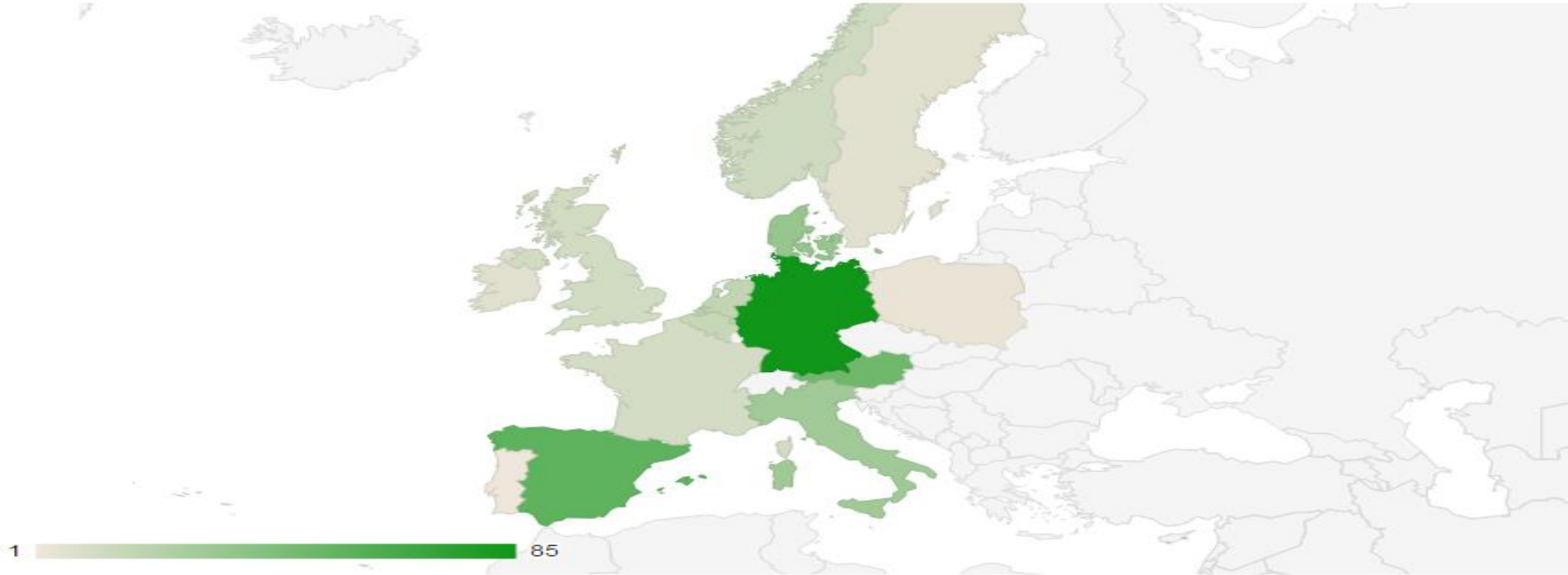


**Spatial/ environmental integration of storage-based solutions**  
Fine-tuning of optimal scale, adjustment to local climates and to specific areas. **Aim TRL 9.**

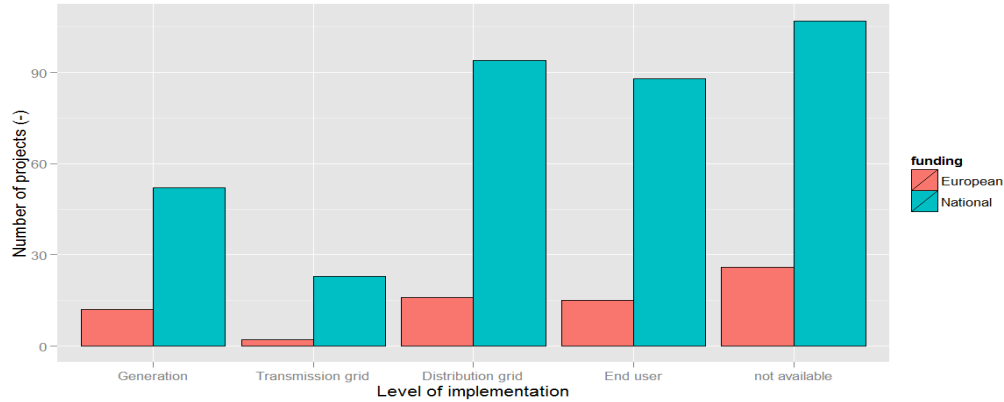
**Temporal integration of storage-based solutions**  
R&D activities to shape the life cycle cost of integrated solutions (reliability, techno-economic performances, manufacturability). **Aim TRL: 6-8**

**Functional integration of storage-based solutions into the system**  
Optimal mix, interfaces, experimental data and simulations to validate end-to-end functionalities.  
**aim TRL (op): 5-7**

# STORAGE PROJECTS ON-GOING ACTIVITIES MAPPING

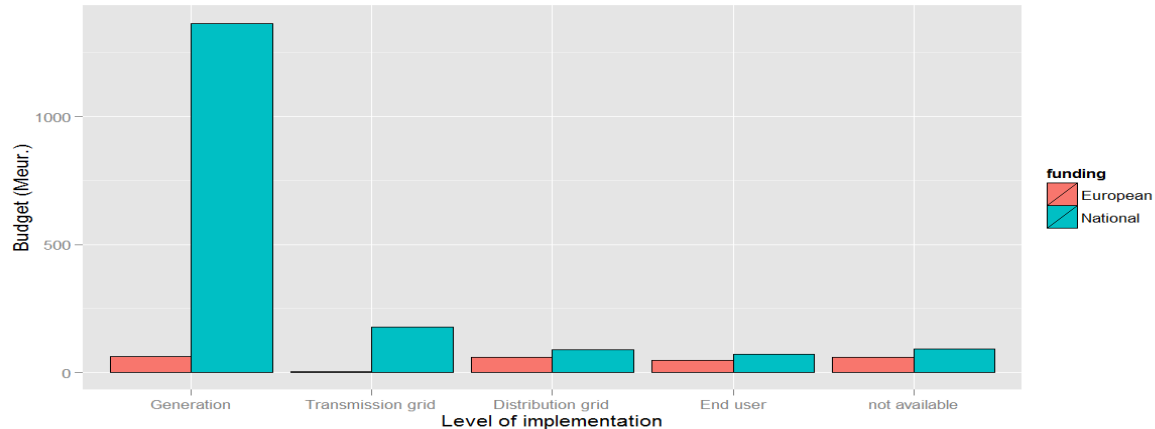


# STORAGE PROJECTS: NUMBER AND BUDGET BY LEVEL OF IMPLEMENTATION



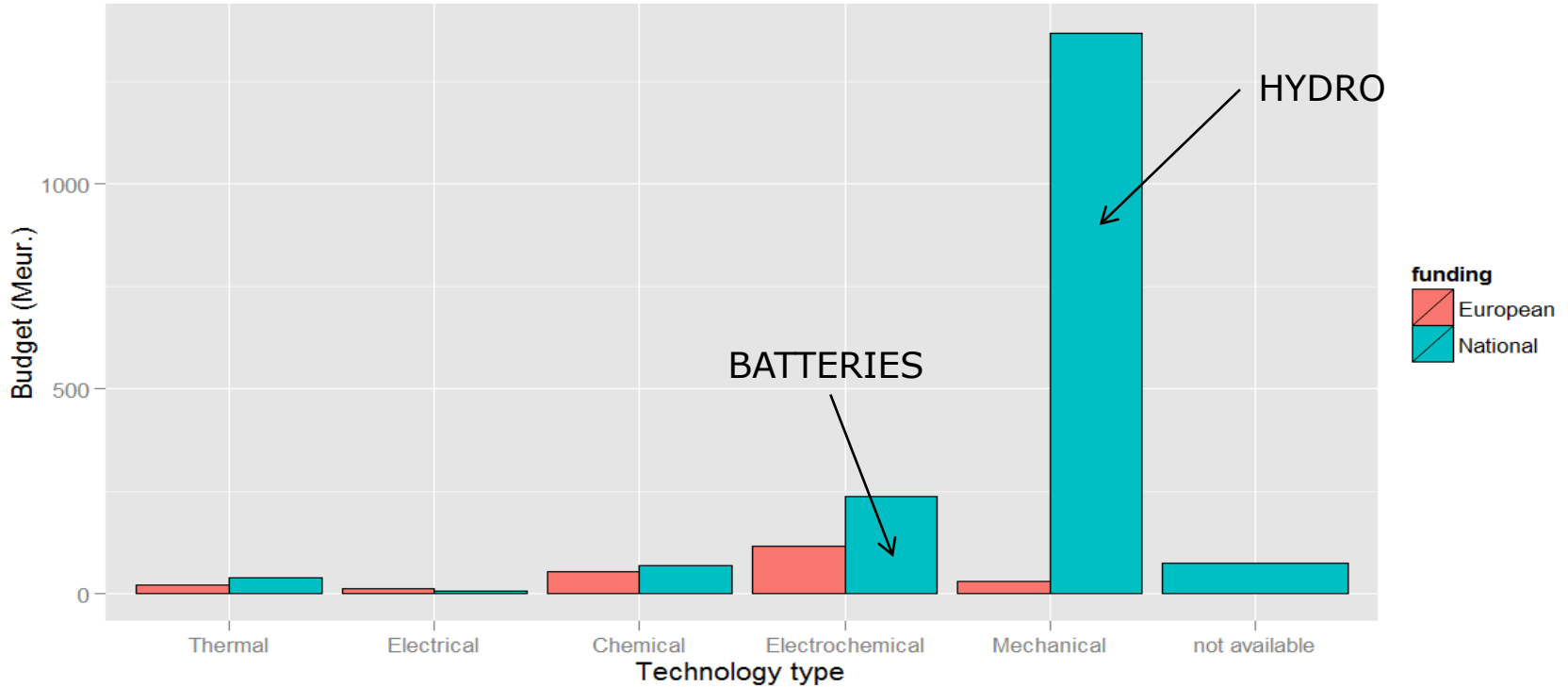
- Importance of National fundings
- Number of projects in DISTRIBUTION and END USE
- European attention on end use

- In terms of BUDGET, most investments are NATIONAL and address the GENERATION SIDE (hydro) – bias in the analysis





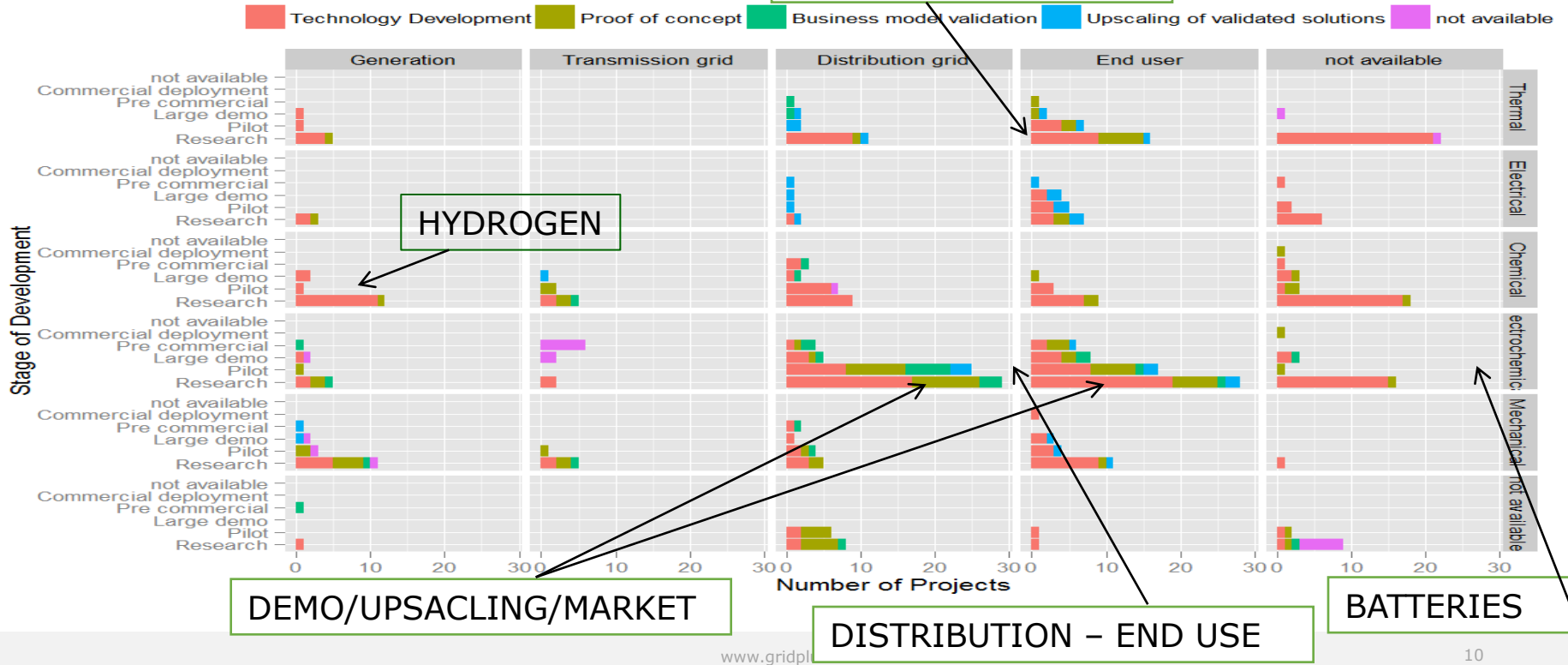
# STORAGE PROJECTS: BUDGET BY TECHNOLOGY



# STORAGE PROJECTS: NUMBER BY STAGE OF DEVELOPMENT

EXCLUDING HYDRO STORAGE PLANTS

HEAT AND DISTRICT HEATING



- To investigate the contribution of **storage solution and active demand in defence plans**;
- To investigate the role of storage solution for **system restoration** and its contribution to immediate system reserves;
- To develop long-term **network planning tools involving storage**
- To propose operational procedures to **involve DSOs in control zones with high share of DER (including storage)**, e.g. by investigating the role that **microgrids and islanding** capabilities could play.



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