

**Initiative on an
ERA-Net Smart Grids Plus
in the framework of Horizon 2020**

**Status of preparation
(prepared by the core working group AT,CH,S,FIN)**

Regional Workshop on Smart Grid Deployment in the Danube Region,
Brussels, 18th of November 2013

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The challenge of modernising the electricity grids in Europe

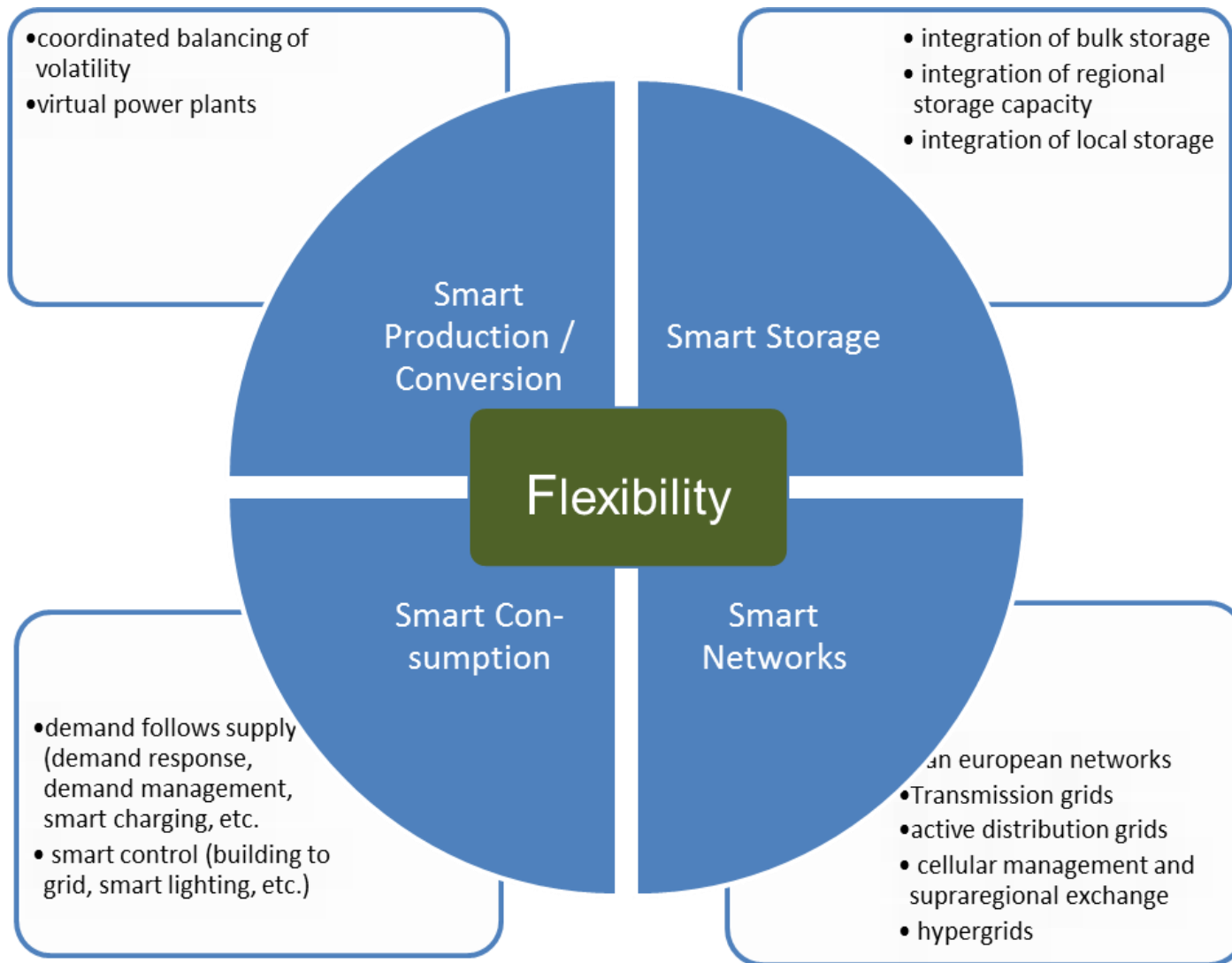
- increased **flexibility** of the power system to cope with the growing share of intermittent and decentralised renewable generation, and managing the complex interactions among millions of energy resources.
- cost-efficiently enhancing available **network capacity** to deliver energy over longer distances, to support increased flows from renewables and those resulting from the integrated energy market.
- providing the information, services, market architectures and privacy guarantees to support **open markets for energy products and services** and to activate the participation of consumers in energy markets.
- The modernisation of energy networks also needs to maintain or enhance service quality, reliability and security and to mitigate capital and operational costs

Smart Grids- key enabler for the low carbon economy

Smart grids contribute to the following objectives:

- Enabling a massive reduction of CO₂ emissions and an increasing share of renewable energy. Smart grids support integration of renewable energy sources (RES) into the energy system, reducing the cost of this integration and making RES more competitive compared to conventional sources of energy.
 - Enabling energy savings: Smart grids lead to increased consumer awareness and energy savings. Studies show that increased awareness can lead to 3%-10% energy savings.
 - Market-based competitive prices for energy: Smart grids increase the possibilities of differentiating commercial propositions and conditions for consumers, contributing to a competitive energy market and consumer choice resulting in reductions in energy prices.
 - Stronger position of European enterprises: Smart grids comprise a huge market for ICT and consumer electronics. Due to the complexity and high-tech nature of the smart grid concept, development is relatively slow. Getting (and staying) in the lead will result in a huge market for European manufacturers selling smart grid technology and smart grid services internationally.
 - Competitive options for renewable energy: Smart grids enable end users to cash their flexibility in the use of energy, maintaining / increasing security of supply and optimising / decreasing grid costs by flattening power demand peaks and increasing consumption when (renewable) energy is readily available. Furthermore, smart grids offer opportunities for new energy-related services.
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System Integration is key



Innovation is needed

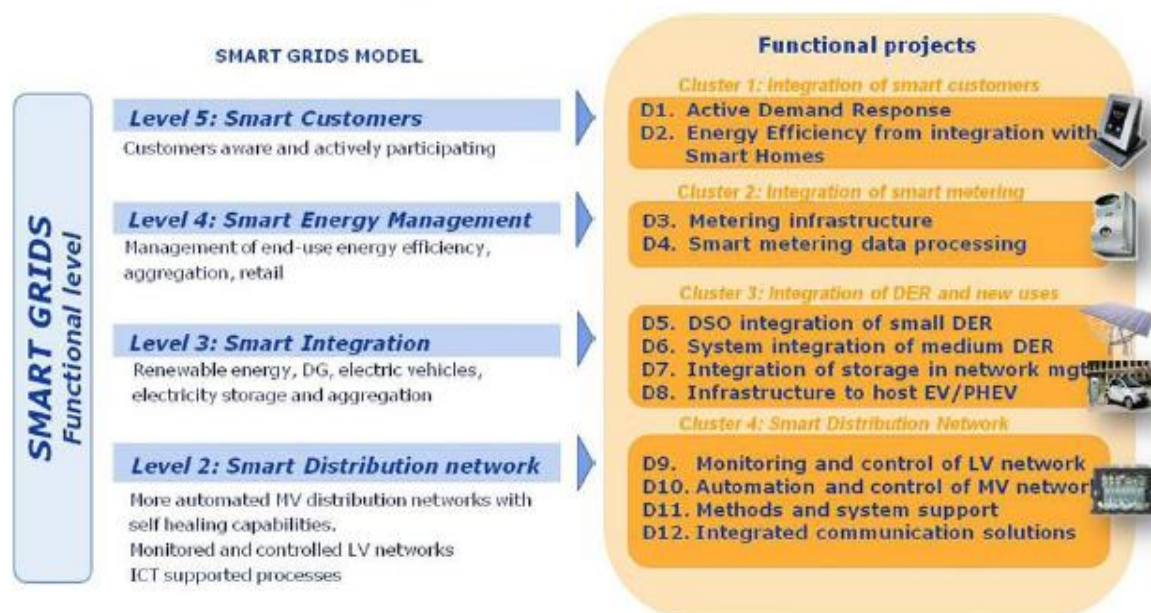
- **to address these challenges, innovation is needed** in system integration, interoperable technologies, services, tools, co-ordination schemes, business processes, market architectures and regulatory regimes to plan, build, monitor, control and safely operate end-to-end networks in an open, competitive, decarbonised, sustainable and climate-change resilient market, under normal and emergency conditions.
 - **potential synergies with different (supply-) infrastructures** (as the built environment, other energy networks, telecommunication networks, water and sewage networks, etc.) **should be taken into account.**
 - Future **convergence of technology- and application areas** should be anticipated.
 - essential **design principles** like security and privacy, system- resilience, energy and resource efficiency of equipment, systems and components shall be integral part of the developed solutions as well as the implementation of future proof technologies and systems with respect to potential risk of lock-in effects of early deployment.
- **interdisciplinary, inter-sectoral, complex innovation process**

EU: SET-Plan Initiative EEGI



European Electricity Grid Initiative

A common Research, Development and Demonstration (RD&D) program to accelerate innovation and address the most critical electricity system issues to reach the targets on energy and climate for 2020 and beyond.



+ TSO-Cluster
+ DSO/TSO Cluster

Structure of the EEGI

The EEGI-Team is a structured and targeted body consisting of a program office and a board of experts taking into account the different stakeholders' visions and aiming to provide guidance for an efficient use of resources supporting the EEGI.

PROGRAM MANAGEMENT COMMITTEE EEGI - TEAM

Experts

ETP Smart Grids
•Strategic Research Agenda
•Expert opinion on Implementation Plan

EC – JRC
•High level KPI
•Mapping
•Cost benefit

Stakeholders

EC

MS

EERA

Industry

Grid Operators

(Regulators)

Resources

EC - FP 7, CIP, NER300,
Horizon2020, CEF

MS - funding

Research

Contribute to projects

Contribute to projects

Tariff incentives

Program office

GRID+
•Map/interact
•Plan actions and costs
•Measure progress and results
•Disseminate

EEGI Team

Under the guidance of the Steering Group of the SET Plan, the EEGI team is composed of Industry, European Commission, Member States, and when necessary, other relevant stakeholders. It provides a flexible platform for planning and programming of actions to implement the initiative. Thus, it will develop actions, identify investment needs, put into operation and monitor the activities which compose the initiative. In addition, it will work with other EIT Teams to address cross-cutting issues, synergies, and overlaps.



The European Distribution System Operators for Smart Grids is an international non-profit association committed to the development of Smart Grids in Europe. It aims to be the key reference point in the coordination of all European DSOs efforts.

Its purpose is to structure, lead, and enhance cooperation between European distribution system operators for electricity, as well as assure, manage, represent and promote their common interests, specifically on smart grids development and implementation.



The European Network of Transmission System Operators for Electricity speaks for all electric TSOs in the EU and others connected to their networks, with one voice for all regions, and for all their technical and market issues. The European TSOs agree and have founded ENTSO-E intending to play an active and important role in the European rule setting process and to push network codes and pan-European network planning forward urgently.



The GRID+ project has the aim to implement and support the networking process of the EEGI over the years 2012-2014, both within and beyond the European borders. Furthermore, GRID+ plays an important role in networking national projects and initiatives.

Thanks to Grid+, the EEGI enhance the delivery by the European network operators of the new knowledge needed to deploy Smart Grid solutions in the most effective way. For further information visit its website: www.gridplus.eu



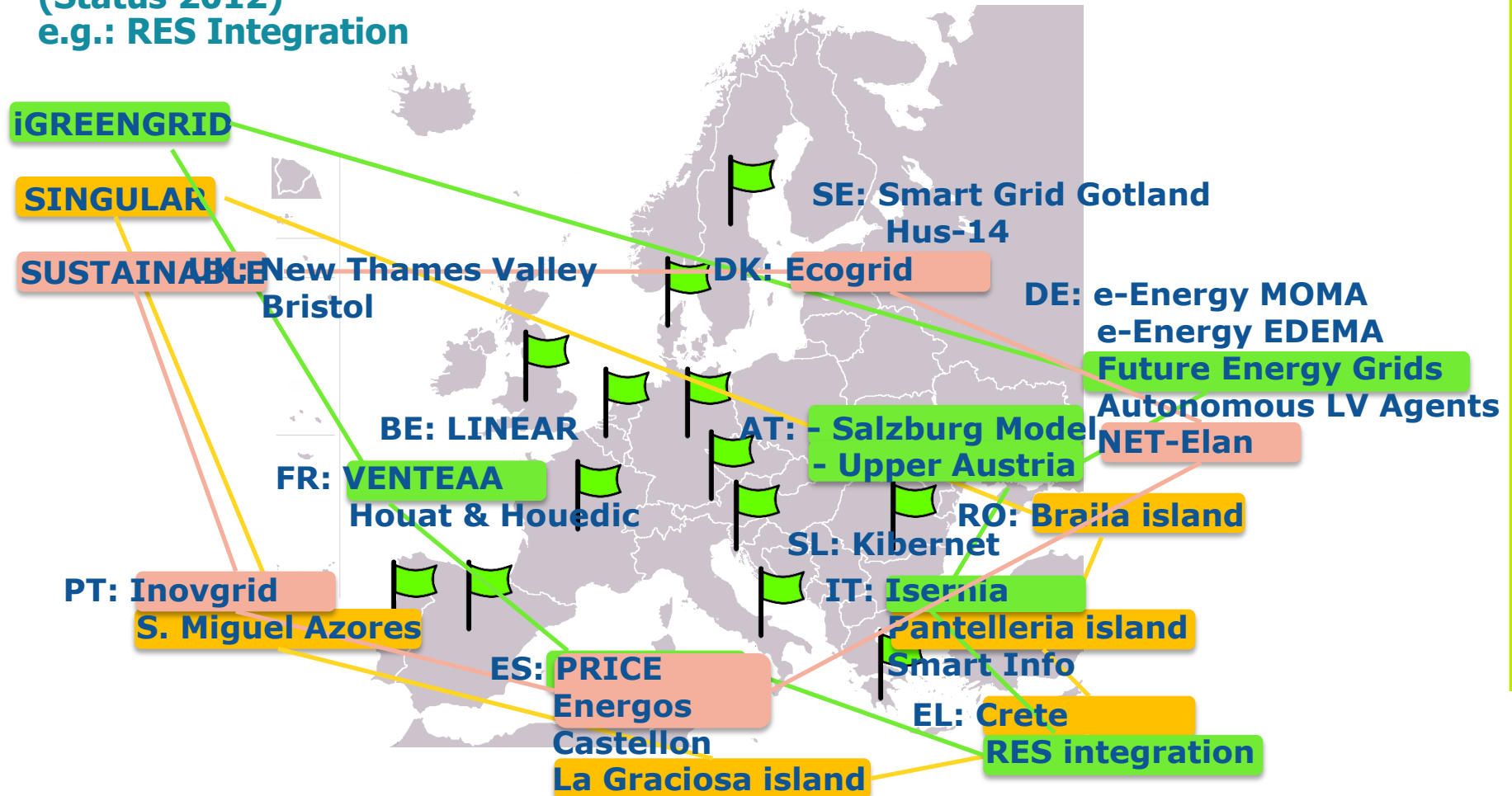
The European Technology Platform for Electricity Networks of the Future (ETP SmartGrids) is the key European forum for the crystallisation of policy and technology R&D pathways for the smart grids sector, as well as the linking glue between EU-level related initiatives. For further information visit the website: www.smartgrids.eu

“Families of Projects” (Example)

EC R&D validated in national demonstration projects

6 projects linking each to 4-9 national demo projects, Completing negotiations
(Status 2012)

e.g.: RES Integration

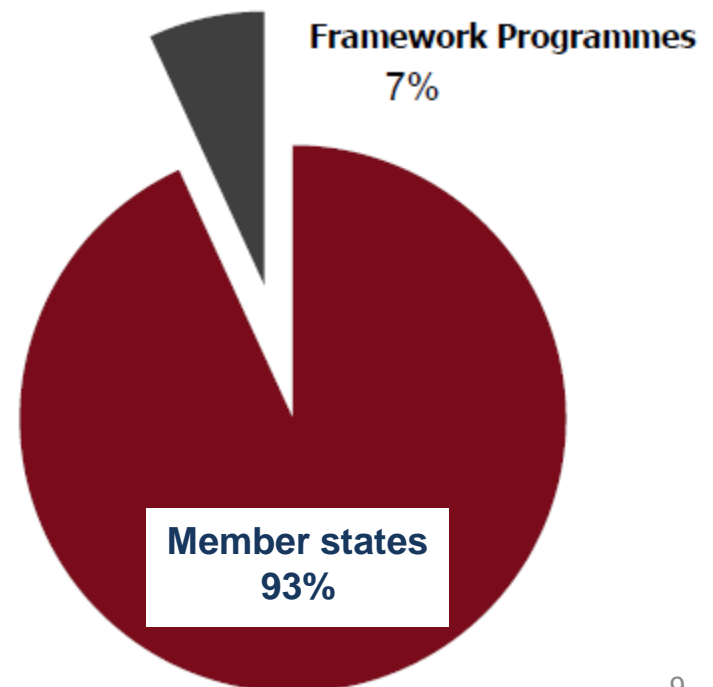


The challenge to overcome the fragmentation

... by knowledge exchange, replicability and transferability, interoperability in order to develop technology and service markets in Europe

Mapping of existing Distribution Grids Projects in Member States and European Framework Programmes, relevant for SET-Plan initiative EEGI

- 189 SG projects on national level
with total cost of € 2.5bn
industry + public funding,
according to JRC smart grids project database
- 15 SG projects EU- funded:
with total cost of € 184m
industry + public funding
according to JRC smart grids project database



JRC Project Catalogue (Version 2011)

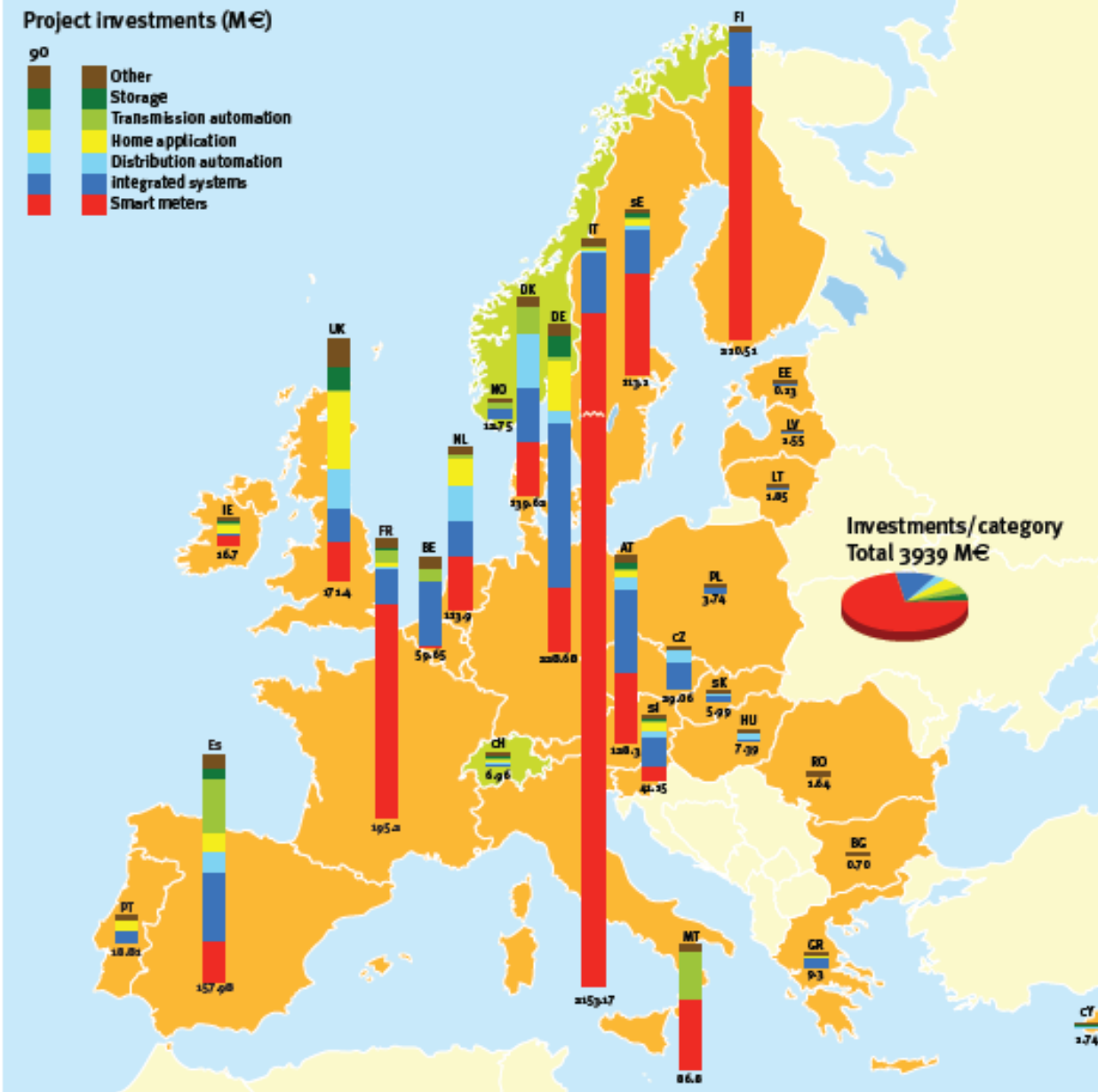
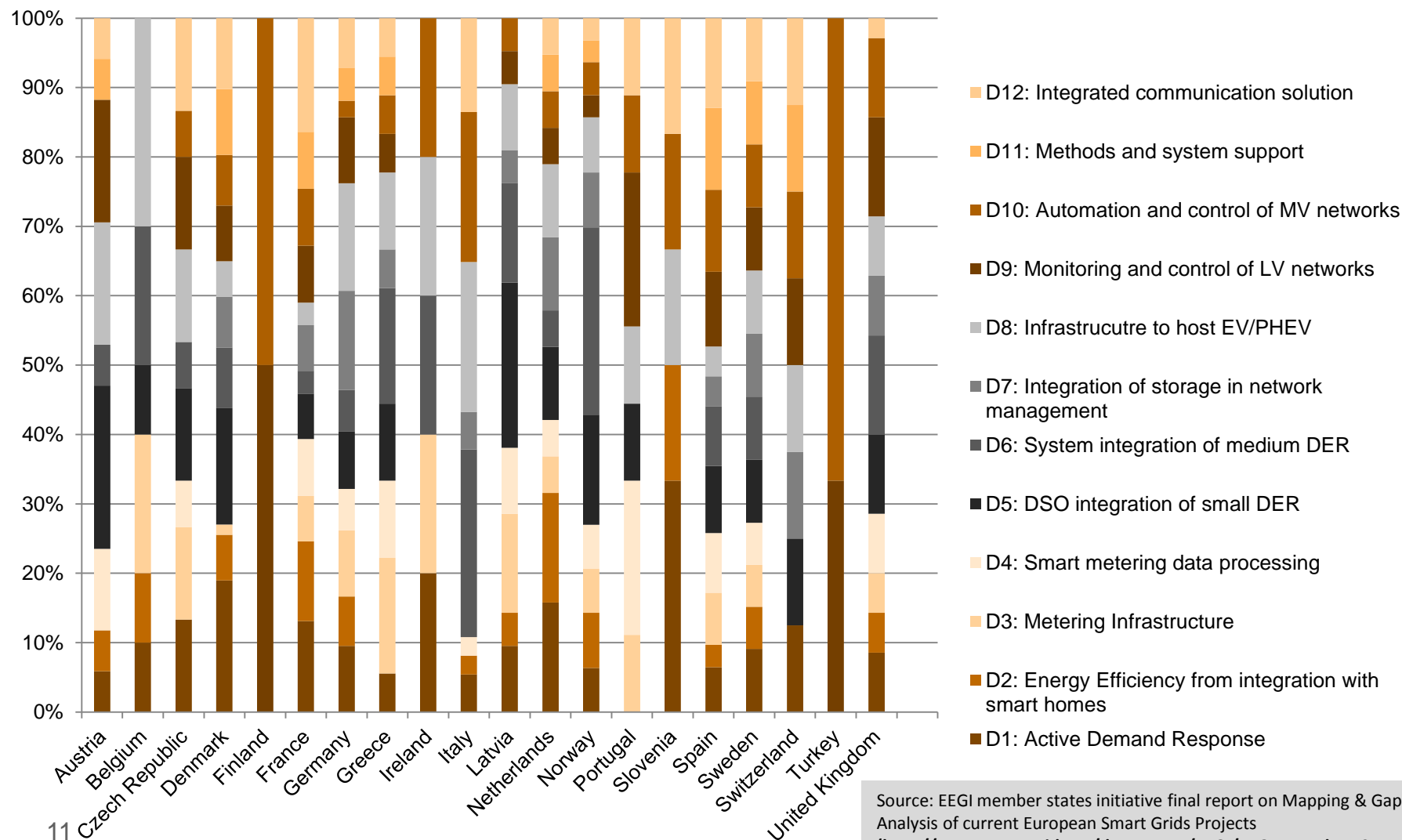


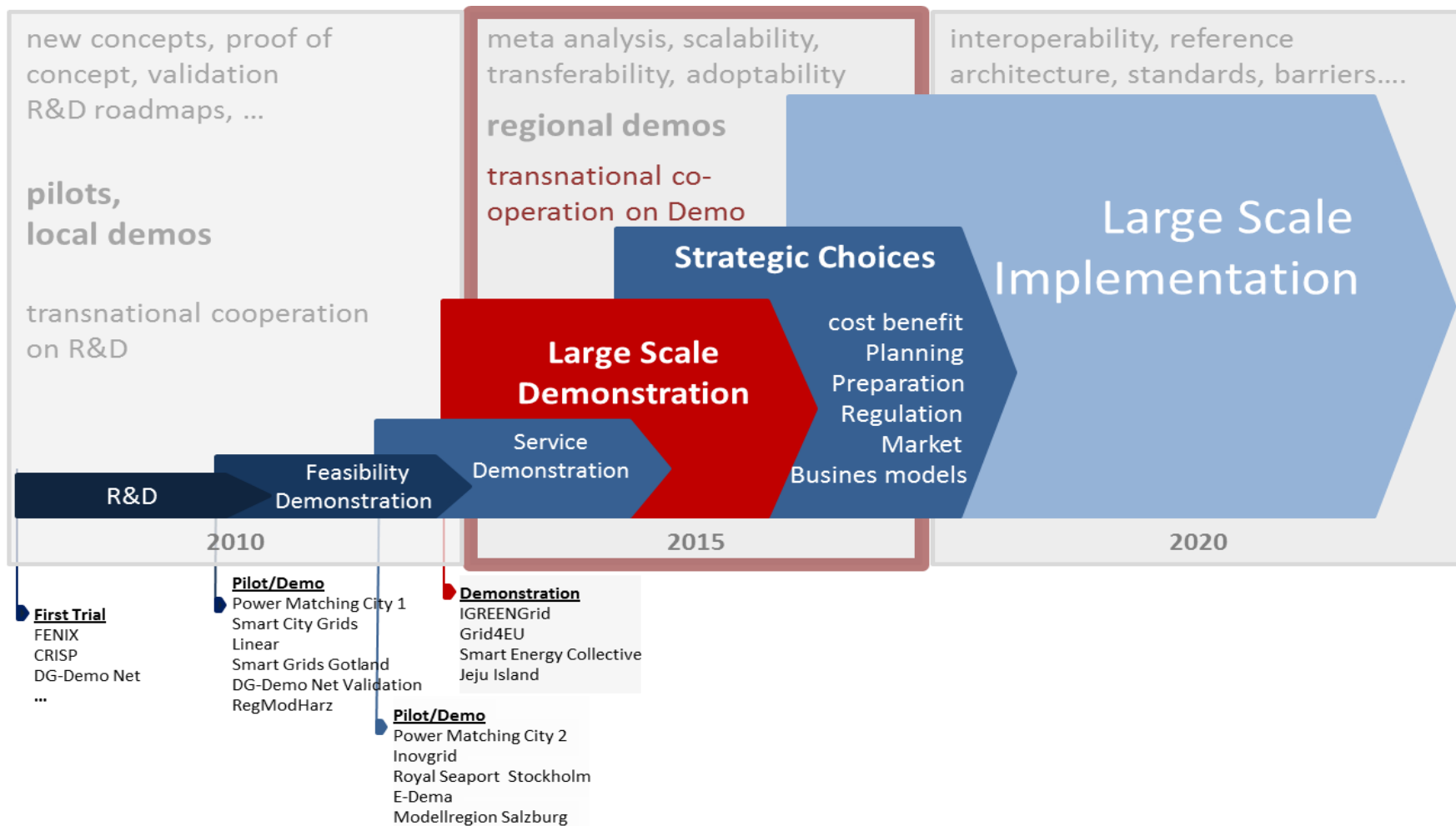
Figure 2. Geographical distribution of investments and project categories⁴

⁴ This figure does not include the total budget of the Swedish smart meter programme (estimated budget €1.5 billion), as not enough details were made available at this stage.

EEGI relevant DSO projects mapped to functional projects per member state



From regional initiatives to European Smart Grids



The ERA-Net Smart Grids Plus Initiative

- An initiative of European Member States, associated states and regions for the **coordination of Smart Grids programs in Europe.**
- Goal: To **support deep knowledge sharing** between regional and European Smart Grids initiatives by promoting and **financing joint projects and joint accompanying activities**, building on the knowledge base, R&D initiatives as well as research and **demonstration facilities already in place at regional, national and European level.**
- focussing on **applied research leading to piloting and demonstration**, including socio-economic and consumer involvement aspects

The process towards ERA-Net Smart Grids Plus



For further information, please contact

<http://www.smartgrids.ch/sgeranetplus>

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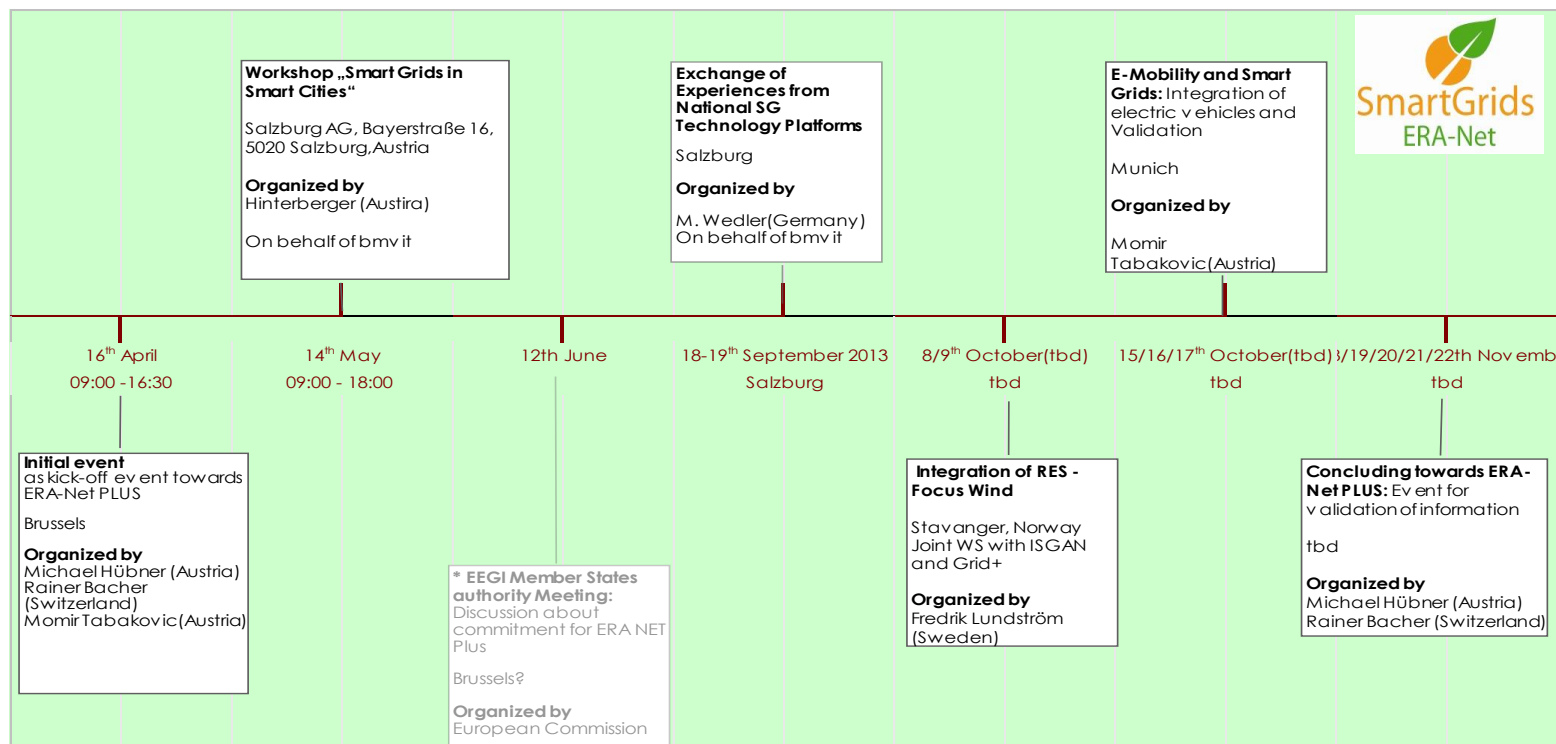
fredrik.lundstrom@swedishenergyagency.se



*Process started in early 2013
First discussions in EII-Team already 2012*

Preparation: Series of Events

Smart Grids ERA-NET Workshops

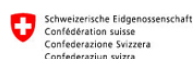


* not as part of the Smart Grid ERA-NET



norden

Nordic Energy Research



The Smart Grids ERA-NET project is supported by the European Commission

Committed Countries and Regions

Committed countries

Switzerland, Sweden, Finland, Austria, Germany, Norway, Turkey, Spain, Romania, Denmark, Latvia, Greece, Belgium-Wallonia, Belgium-Flemish Region, Netherlands, France

Total indicative available public budget from MS/Regions : approx. 32 Mio Euro
+ EU top-up: approx. 16 Mio Euro

~ 48 Mio Euro

additional countries / regions showing interest

Italy, Slovenia, Estland, Baden-Württemberg, Nordic Energy Research Alliance

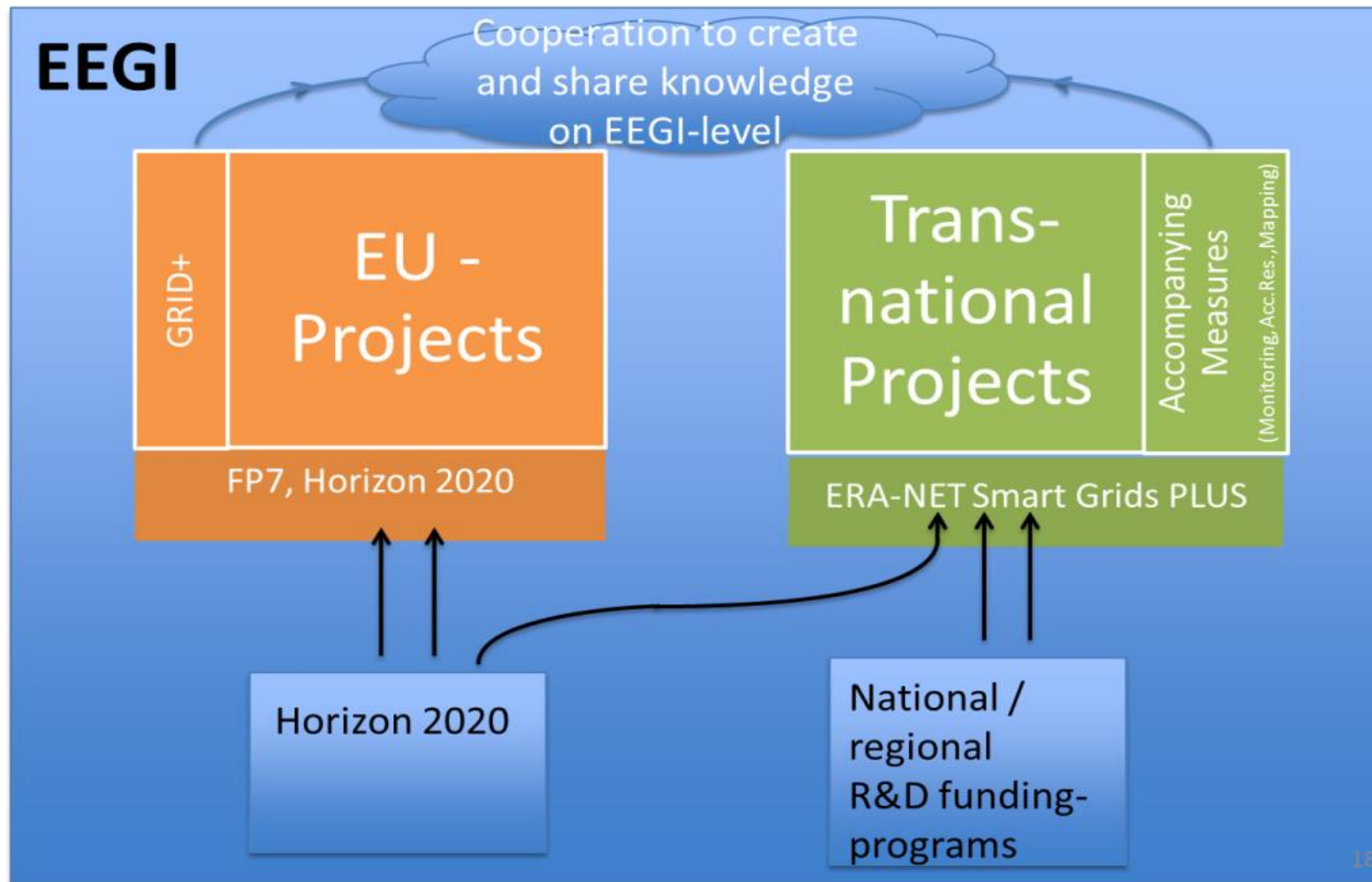
European value the initiative provides

- Help **overcoming the fragmented innovation process** to develop technology and service markets (and interconnections) for energy, power and ancillary services instead of incompatible national/regional solutions
- the **mobilisation and coordination of national R&D funding** for the Development of Smart Grids on a European level, supporting the of **burden sharing in financing smart grids development** in Europe
- the **utilisation of regional demonstration projects and research initiatives** to accelerate smart grids development in Europe
- the support of **deep knowledge sharing** between Smart Grids R&D initiatives in Europe on different levels, share test beds for industry and research
- the additional provision of structures and processes that enable and strengthen the transnational cooperation including regional grid operators and demonstration projects

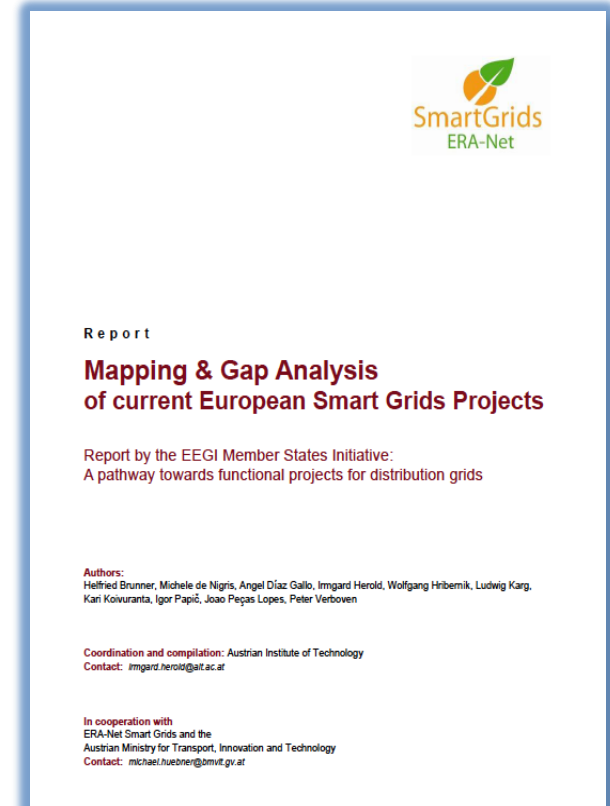
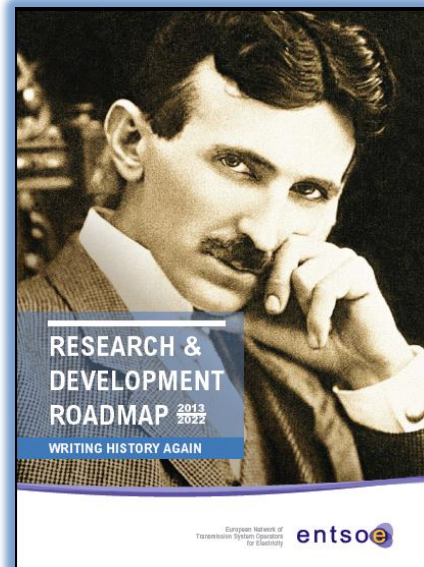
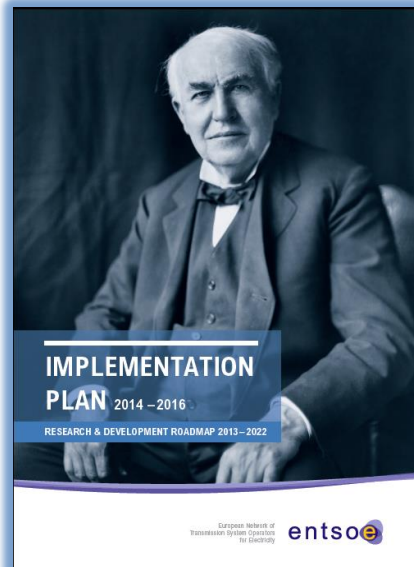
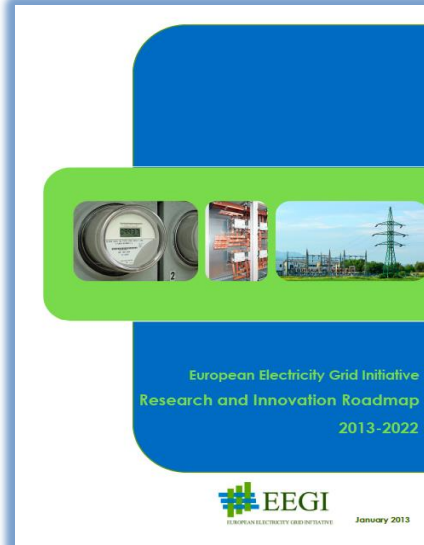
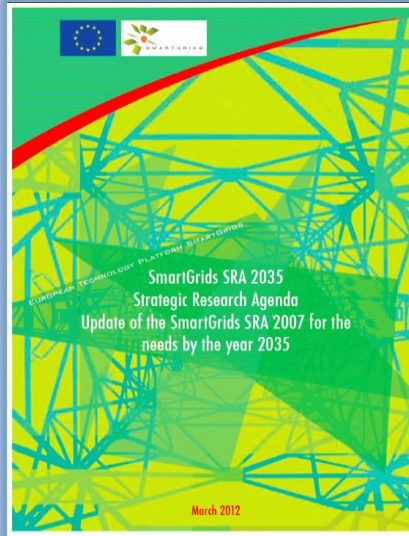
ERA-Net Smart Grids Plus Approach

- **Deep knowledge sharing**, building on the knowledge base of the R&D initiatives as well as research and **demonstration facilities already in place** on national, regional and European level
- **performing joint calls for projects to finance transnational R&D and demonstration projects** (with and without top-up funding of the EC)
- developing **appropriate accompanying measures and activities** like meta- analysis, mappings, workshops and events to support the knowledge sharing on other levels
- complement the work of the EEGI, **in line with and referring to the above mentioned European Agendas in the field of Smart Grids R&D**
- **seeking the close link to the European Electricity Grid Initiative (EEGI)** via the EEGI team and supporting institutions and projects like the JRC and the GRID+ project, as well as the cooperation with the EERA Joint Program on Smart Grids and the ETP SG, and also the IEA-ISGAN
- **actively and substantially involve industry and grid operators** in the projects and activities (including SMEs and regional/local grid operators)
- Develop **interfaces to initiatives in other areas** such as smart cities and e-mobility¹⁸

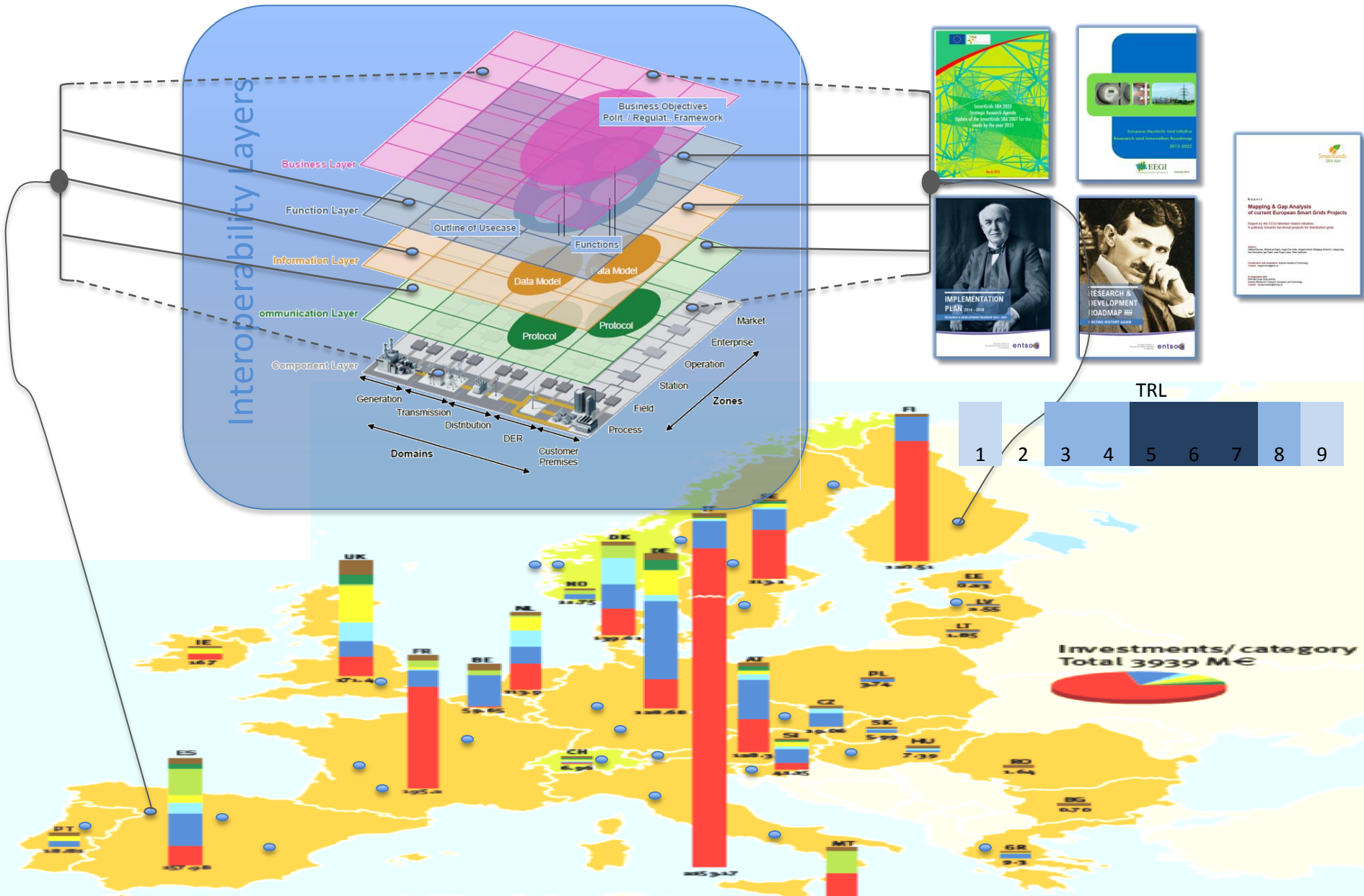
ERA-Net Plus Smart Grids is aiming to be integral part of and contribute to the SET-Plan Initiative



Building on the existing European Agendas, and Mapping and Gap Analysis

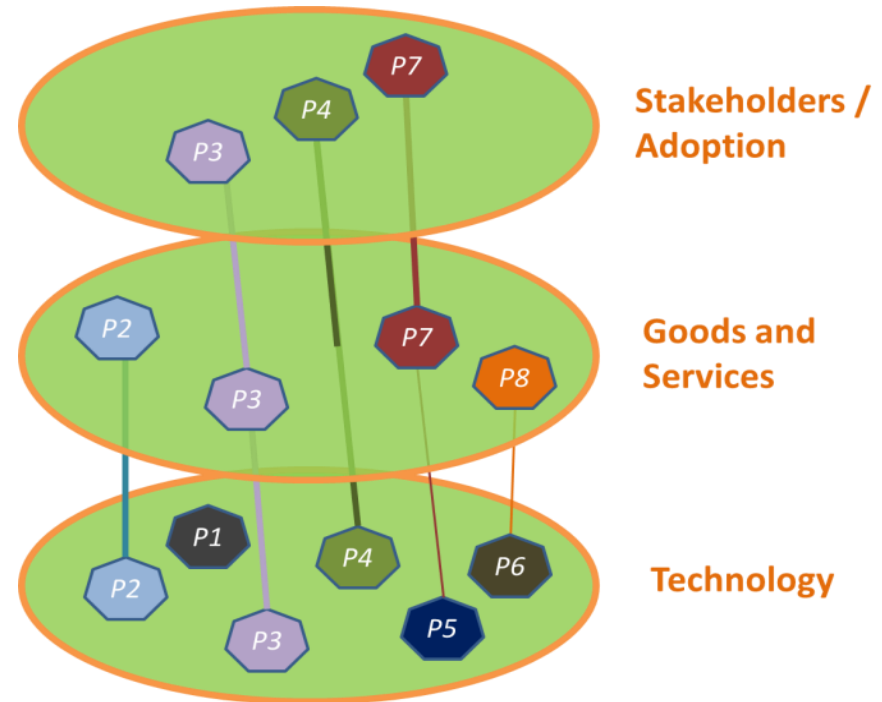


Smart Grids ERA-Net Plus Vision



Integrated Research Model

- **Stakeholders / Adoption** - overcoming; why do we or don't we do it?
(Innovation and Transition, Consumer acceptance, Education, Policy, Retail, Community/Society, European Scope, Social Research, etc.)
- **Goods and Services** - structuring; how do we organize it?
(Business models, regulatory frame, market design, Economic Research, etc.)
- **Technology** - enabling; which technology do we need?



- ***promote projects covering all three levels***
- ***such projects shall be given priority to “technology only” projects***

Intended joint transnational calls for proposals with EU co-funding 2014/2015 (I)

- **First Call, 2014 (~ 25 Mio Euro MS budget):**
 - projects contributing to field demonstration of system integration, up-scaling and replication, including supporting research, responding to the priorities identified in the European R&D agendas, according to the gap analysis
 - implement and validate smart grid solutions to the described challenges, that have already reached TRL 5-6 and bringing them to TRL 6-7
- **Second Call, early 2015 (~ 5 Mio Euro MS budget):**
 - meta-analysis projects to ensure systematic knowledge sharing, meta-analysis and preparation of findings for the EEGI Team
 - projects of the second call interact with and study the transnational projects selected in call one, disseminate general results and stimulate through the interdisciplinary interaction.
 - inclusion of already existing national and regional projects

Upcoming: Preparation Phase **Concluding Workshop**

**„Finalizing the preparation process for an
ERA-Net Smart Grid PLUS within Horizon 2020”**

Mo/Tu, 2/3 December 2013, Mo: 11:00-17:00; Tu: 08:30-15:00

Meeting location: Zürich

Registration for the 2-day event 02-03 Dec. is required for program owners and managers.

Interested industry stakeholders and key experts are very welcome for the 03 December event and the dinner on 02 December. Registration required.

Info: <http://www.smartgrids.ch/sgeranetplus>

Please, register until 20th Nov 2013 by E-mail to momir.tabakovic@technikum-wien.at.

Up-to-date-information on the Initiative for ERA-Net Smart Grids Plus



<http://www.smartgrids.ch/sgeranetplus>

Available Information from ERA-Net Smart Grids on joint calls 1-3, country snapshots, national documents...

- <http://www.eranet-smartgrids.eu/>
- **National Smart Grids Documents and Links in European countries, Online Database:** <http://www.eranet-smartgrids.eu/?q=node/45>
- **Smart Grids Initiatives in Europe- Country Snapshots and Country Fact Sheets (Brochure):**
http://www.eranet-smartgrids.eu/files/22-2011_Smart_Grids_international_final_print.pdf
- **National Smart Grids R&D Initiatives in Europe- Results of the 1st Smart Grids ERA-Net Workshop on 30th March, 2010 (Brochure):**<http://www.eranet-smartgrids.eu/files/Brochure%201st%20SG%20ERA-Net%20WS.pdf>
- **Mapping & Gap Analysis of current European Smart Grids Projects**
http://www.smartgrids.eu/documents/EEGI/EEGI_Member_States_Initiative_-_Final_Report.pdf

