



Smart Grids: from innovation to deployment

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Directorate-General
for Energy



European Commission
DG ENERGY

Smart Grids

A Smart Grid is an electricity network that can cost efficiently integrate the behaviour and actions of **all users** connected to it - generators, consumers and those that do both – in order to ensure efficient, sustainable power system with low losses and high levels of quality and security of supply and safety.



● Policy drivers

● 20-20-20 targets

- Integration of renewables into the grid
- Need to increase grid and consumption efficiency

● Security of supply

- Increase grid robustness and resilience
- Integration of large centralised and small distributed generation

● Market development

- Empowerment of consumers
- Better management of supply (generation, load) and demand
- New market opportunities

These drivers call for the restructuring of the grids, e.g. the structure of generation, market and the use of electricity

● Legal framework

- **Energy Efficiency Directive (2006/32/EC, Annex3)** has identified smart meters as one of the main measures, contributing to the overall energy efficiency improvement.
- **Renewables Directive (2009/28/EC, Art16)** views Smart Grids as an enabler for integration of increasing renewable energy into the grid and obliges the Member States to develop transmission and grid infrastructure towards this aim.
- **3rd package for the internal energy market (Directive 2009/72/EC and Directive 2009/73/EC)**

● **EU activities for development and deployment of Smart Grids**

➤ **Technology push**

- RTD&D projects since 2003, more than €300 Million EU support
- European Technology Platform, launched in 2006
- Strategic Energy Technology Plan – European Electricity Grids Initiative, launched in June 2010

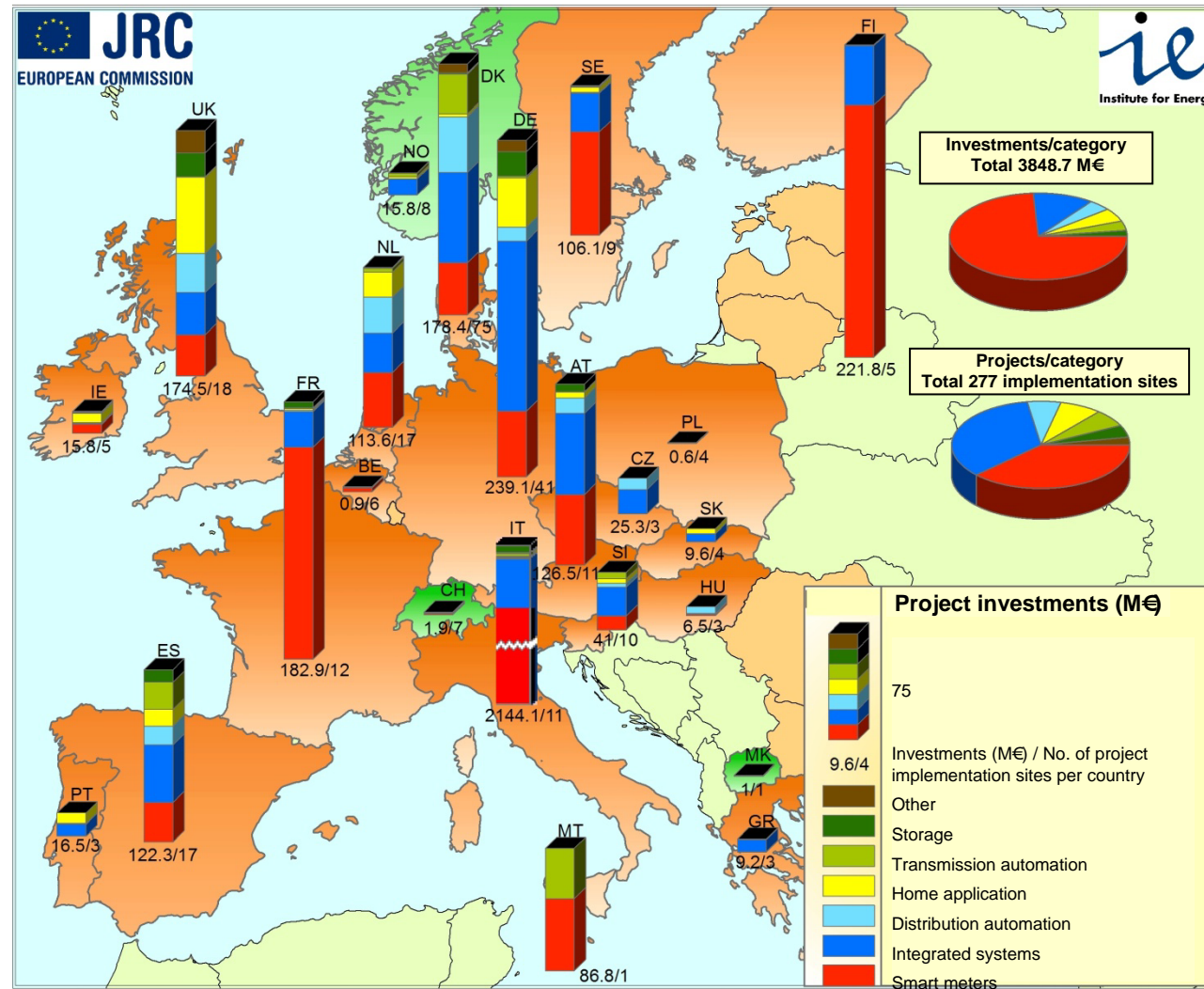
➤ **Market push**

- Market regulation: 3rd energy package, adopted in August 2009
- Task Force for Smart Grids, launched in November 2009
- European Infrastructure Package, planned for November 2010
- Energy Efficiency Action Plan, planned for 2011.

➤ **International cooperation**

- EU-US Energy Council
- International Grid Action Network (ISGAN), under the Clean Energy Ministerial Conference.

Smart Grid projects in Europe



● Challenges

- **Consumer engagement at all levels**
- **Protection, handling and security of data**
- **Standardisation and interoperability**
- **Regulatory framework and incentives**
- **Infrastructure investments and roll out**
- **Demonstration projects to validate solutions**

● COM (2011)202 - Proposed actions

Actions

- 1. Developing Smart Grid standards**
- 2. Addressing data privacy and security issues**
- 3. Developing regulatory incentives for Smart Grids deployment**
- 4. Guaranteeing competitive Smart Grids services to customers**
- 5. Continuing support for innovation and its rapid application**

COM (2011)202 - Proposed actions

Action	Task
Smart Grids Standards	With the help of the Task Force, the EC will monitor the implementation of the work programme established in the mandate with the view to ensure timely adoption of the standards. If in the course of 2011 is not sufficient, the EC will intervene to ensure that the deadline is met and the necessary standards are set.
	The EC will also follow the development of ICT standards at the European and international level to facilitate the implementation of Smart Grids
Data privacy and security of data	The EC will monitor the provisions of national sectoral legislation that might apply to take into account the data protection specificities of Smart Grids
	The ESOs will develop technical standards for Smart Grids taking the “privacy by design” approach
	The EC will continue bringing together the energy and ICT communities within an expert group to assess the network and information security and resilience of Smart Grids as well as to support related international cooperation
Adjust the existing regulatory framework for Smart Grids	The EC will develop regulatory incentives for the deployment of Smart Grids, for example in the application and revision of Energy Services Directive and/or through the development of a network code or implementing act on tariffs
	The EC will establish guidelines to define a methodology for the smart meter implementation plans of Member States, as well as for their (possible) cost-benefit analyses
	Beyond the targets for smart meters in the Third Package, the EC will request Member States to produce action plans with targets for the implementation of Smart Grids
	Through its role in the Regional Initiatives and its involvement in ENTSO-E, the EC will encourage and promote coordinated action towards the deployment of Smart Grids at European and regional level
Guarantee competitive Smart Grids services to customers	The EC will introduce, through revision of the Energy Services Directive, minimum requirements for the format and content of information provision for customers, and for access to information services and demand management (e.g. in-house control of consumption)
	The EC will monitor the implementation of the Third Package requirements needed to create a transparent and competitive retail market for the development of services (e.g. time-of-use and demand response) based on Smart Grids and metering. If the requirements are not implemented or not effective, the EC may take further actions, possible in its review of the Energy Services Directive
Support innovation and rapid application	During 2011, the EC will propose additional new large-scale demonstration initiatives for rapid Smart Grids deployment, taking into account the needs identified in the EEGI. They will include ways to leverage financing, in line with the Energy Infrastructure Package and as requested by the European Council of 4 February 2011
	The EC will also launch the initiative Smart Cities and Communities in 2011

● Smart Grid deployment



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http://ec.europa.eu/energy/gas_electricity/smartgrids/smartgrids_en.htm