

EcoGrid EU

A Prototype for European Smart Grids

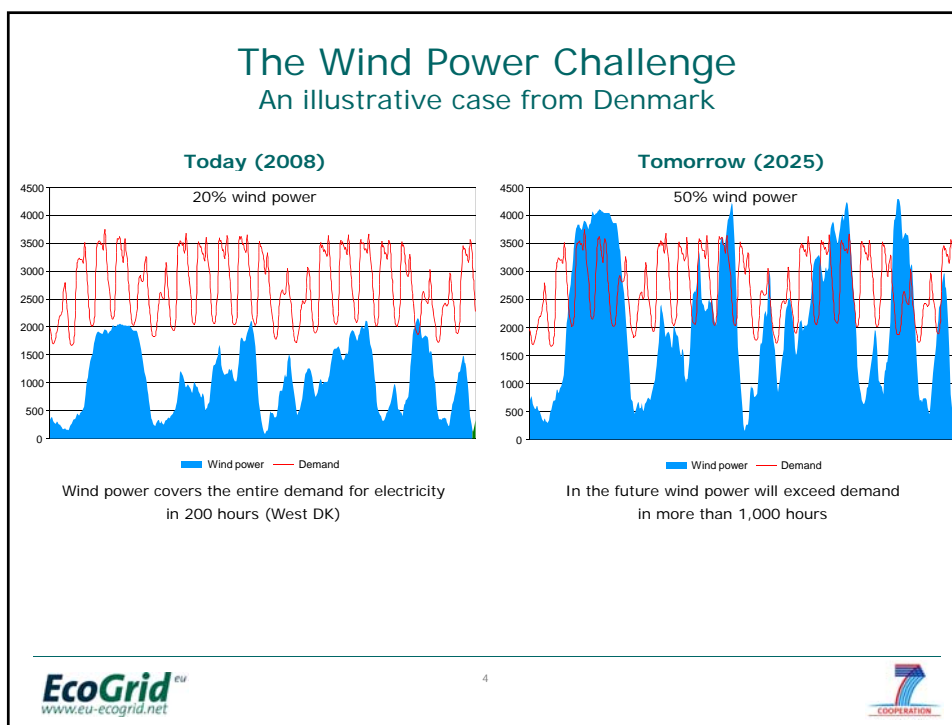
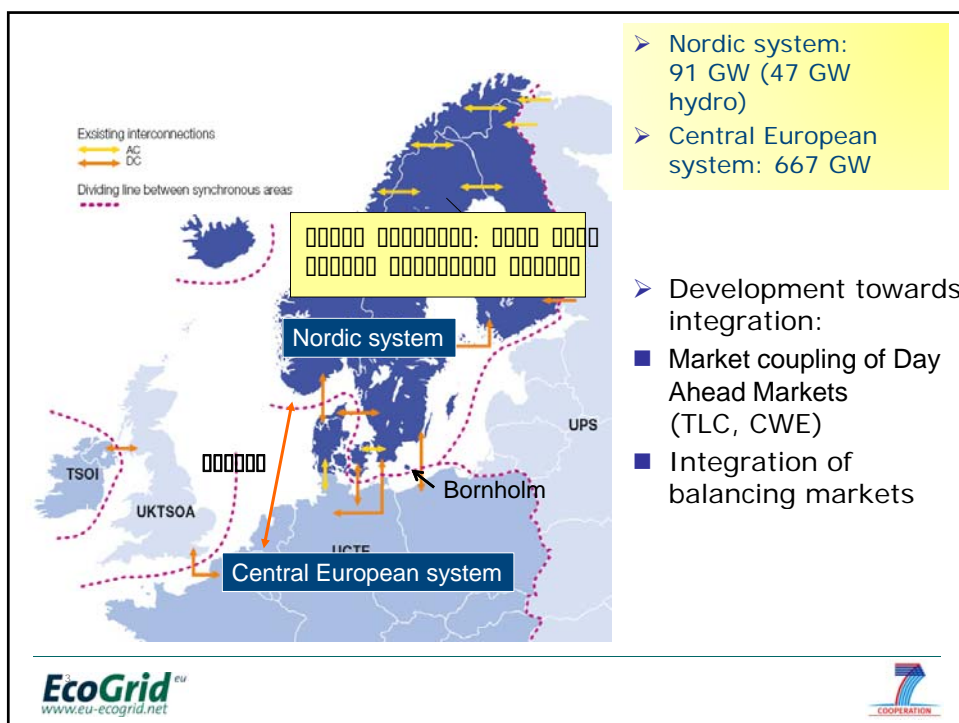


Presentation at: Workshop on
European Smart Grid projects
Brussels, 17 October 11

Presentation by:
Ove S. Grande, SINTEF ER

Content

- Background - The Challenges of Tomorrow
- The Real-time Market Approach
- Bornholm – a Unique Demonstration Site
- Project organisation
- Impacts



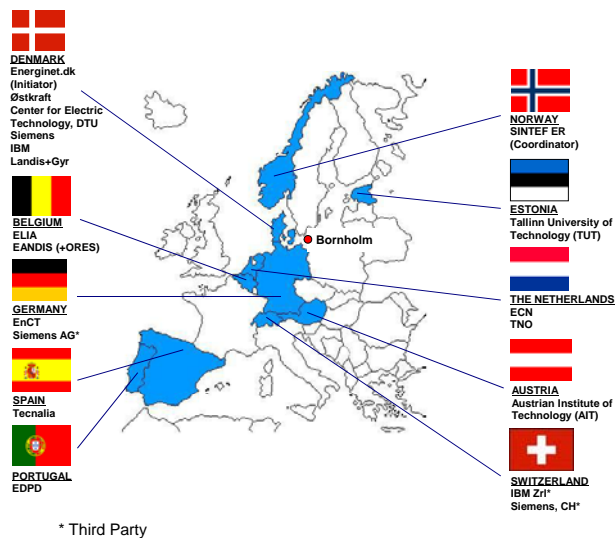
*EcoGrid EU meets
the increasing need for balancing services*

- Increased need for regulation power due to growing share of RES
- EcoGrid EU provides an efficient market based solution for near to real time reserves from smaller customers (prosumers)

EcoGrid EU in Brief

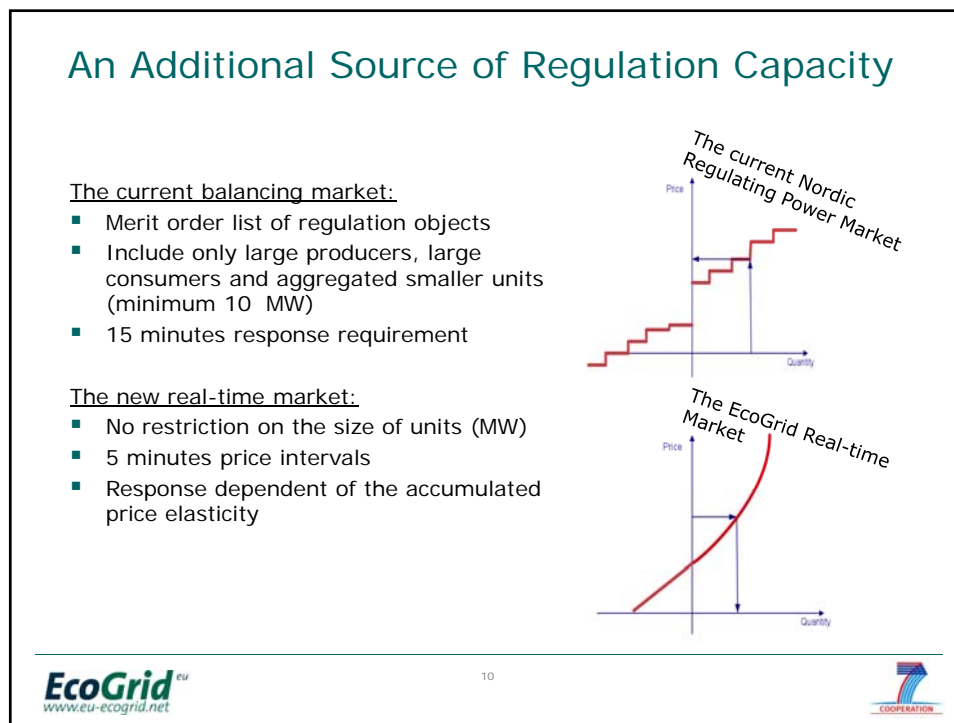
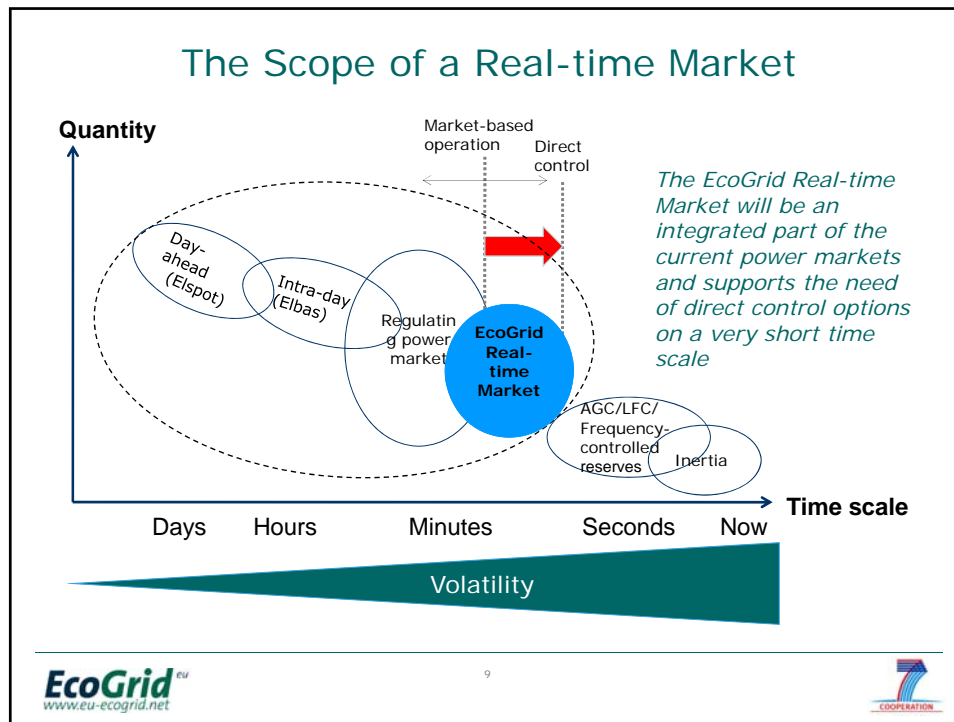
- A proposal under EU's FP7-Energy-2010-2.1.1
- Total budget: 21 million Euro (EU: 12,7 million Euro)
- Project period: 1 March 2011 -28 February 2015
- A large scale demonstration of a real-time market place for distributed energy resources
- A demonstration of a *real* power system with more than 50 % renewable energy

EcoGrid EU Partners

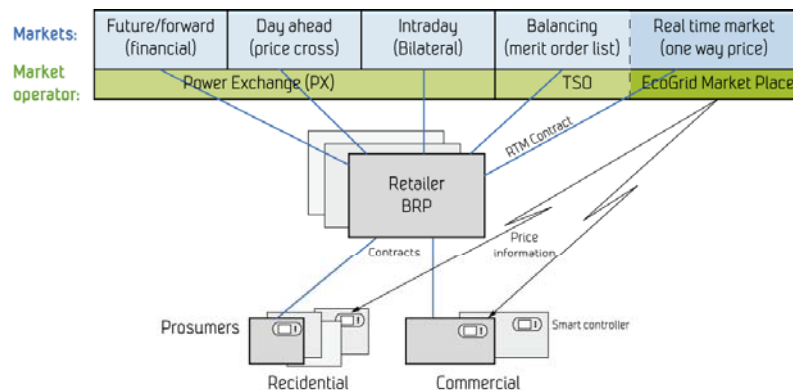


Roles of the Partners





Example of business model

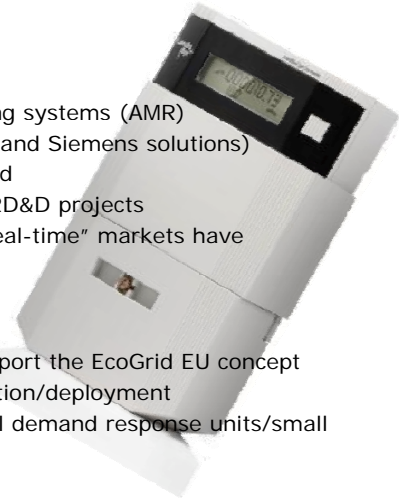


How does the Real-time Price Signal Work?

- Broadcasted price signals:
 - Step 1: Day-ahead Elspot market is sent to the end-user - soon after clearing
 - Step 2: Real-time five minutes prices updated – to reflect the need for up or down regulation
- The Real-Time Market Operator sets the price on the basis of the need for balancing resources
- The Real-Time Market Operator could be the TSO(s)

Development of a New ICT platform

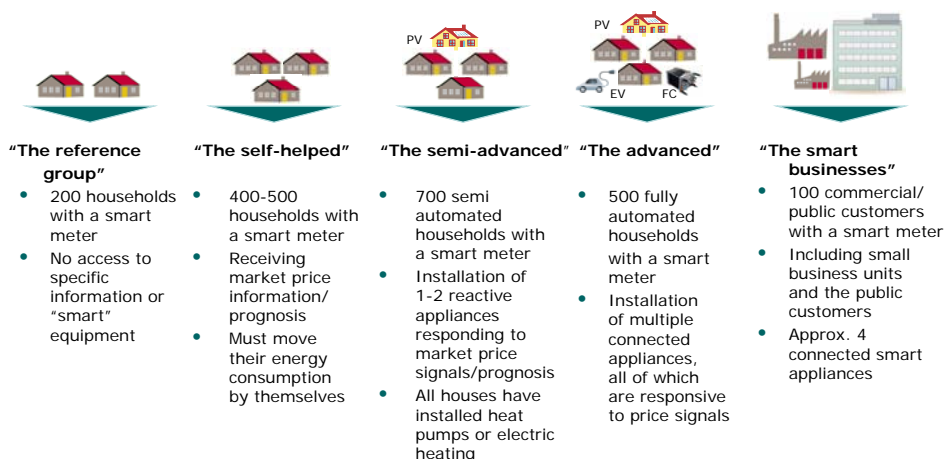
- Build on proven solutions where available:
 - Use of modern automatic meter reading systems (AMR)
 - Smart controllers (based on ECN/TNO and Siemens solutions)
 - End-user devices/appliances - equipped with solutions demonstrated in other RD&D projects
 - Demonstration of other concepts of "real-time" markets have been done successfully outside Europe
- New ICT challenges include:
 - Development of architectures that support the EcoGrid EU concept
 - Management of large scale demonstration/deployment
 - Management of a multiple mix of small demand response units/small scale production/storage capabilities



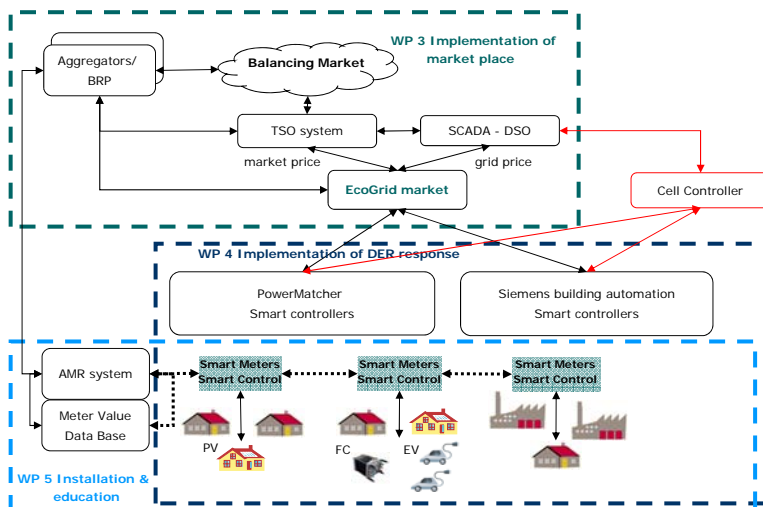
End-user Involvement

- Response to real time price only, every 5 minutes
- Automation necessary
- Customer segmentation
- Customer recruitment challenges:
 - Information and understanding of the potential benefits of participation (economical/energy savings/security/environment)
 - Acceptance of technology and automation
 - Contractual issues

2000 Participating Customers in the Demonstration



Technology Involved



Projects Synergies and Added Value

Projects	Description	Technical R&D	Market Design	Technical Demo	Market Demo
FENIX	Identification of technical capabilities of DER to provide system service through aggregation (VPP-concept). Small-scale demonstration.	***	*	***	
More Micro Grids	Integration of small-scale DER through micro grid approach. Design of alternative control strategy to enable autonomous operation. Small-scale demo.	***		***	
EU DEEP	Development of innovative business models for integration of DER into current system/market operation.	**	**		**
DISPOWER	Survey on present power supply systems, including ICT technologies. Laboratory facilities for development/test.	**	*	**	
ADDRESS	New Active Distribution Networks to balance in real-time power generation and demand. 3 test field planned	***	**	**	*
GridWise (US)	Demonstration of real-time market with each participant submitting bids and offers every 5 minutes		**		***
EcoGrid EU	Demonstration of large-scale real-time market participation for DER/flexible demand	**	***	**	***

Overall Impact of EcoGrid EU





Bornholm - a unique test site

Thank you
for your Attention