

# ENTSO-E activities on Cost Benefit Analysis: from the TYNDP to 2050 perspectives

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ENTSO-E workshop “Assessing the future projects of European  
Interest - Cost Benefit Analysis Methodology”

Brussels, 19 November 2012

# TSOs' and ENTSO-E's significant role for European energy and climate change objectives

## Regulation 714/2009 mandates ENTSO-E to:

- Deliver **network codes** binding to all network users (through 'Comitology')
- Deliver **network plans** European / regional view of system needs ("TYNDP")
- Deliver crucial aspects of **market integration** ("market coupling")
- **R&D Plan** (including the just approved E-Highways 2050 study)

## New draft regulation mandates ENTSO-E to:

- Deliver the **CBA methodology**
- **TYNDP the basis for the projects of common interest(PCIs)**

**41 TSOs** from **34 countries**;  
**530 million people**; **910 GW gen.**; **300 000 km**  
transm.

# Ten-Year Network Development Plan – July 2012

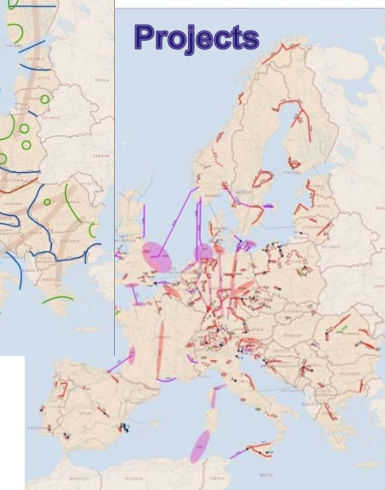
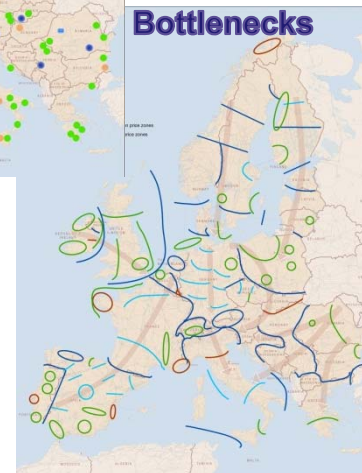
Regulation (EC) 714/2009 – “In order to ensure greater transparency regarding the entire electricity transmission network in the [Union], the ENTSO for Electricity should draw up, publish and regularly update a non-binding [Union]-wide ten-year network development plan”

**Transparency**

**TSO cooperation platform**

**Stakeholder involvement**

**Inform EU policy and investment decisions**



# TYNDP 2012 main findings

**> 100 projects, 52 300 km, approx. €104 bn of investments**

- Notwithstanding non pan-European significance projects

**+1.3% per year grid length development despite a major upcoming shift in generation mix to accommodate wider, stronger, more volatile power flows**

- One third of the present generation capacity to be built in the coming decade (i.e. +3% per year) and peak growth +1,7% per year

**Social acceptance is still the major challenge!**

- 1 in TYNDP 2010 investment projects are delayed because of longer than expected authorization procedures



# A dense 2-year long study process for project assessment

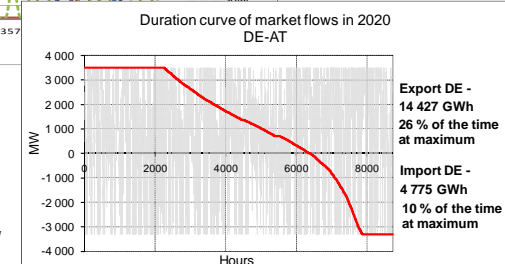
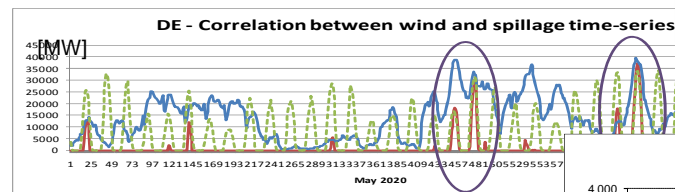
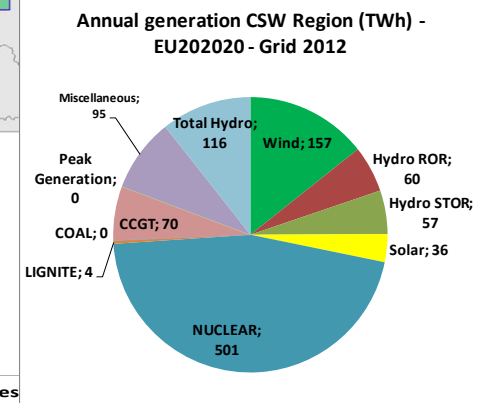
- Scenario elaboration & validation
- Market studies
- Network studies
- Project identification & valuation
- Reports compilation

↪ at stake

**timely** delivery

**consistent** results

**limited** resources



Presently being investigated

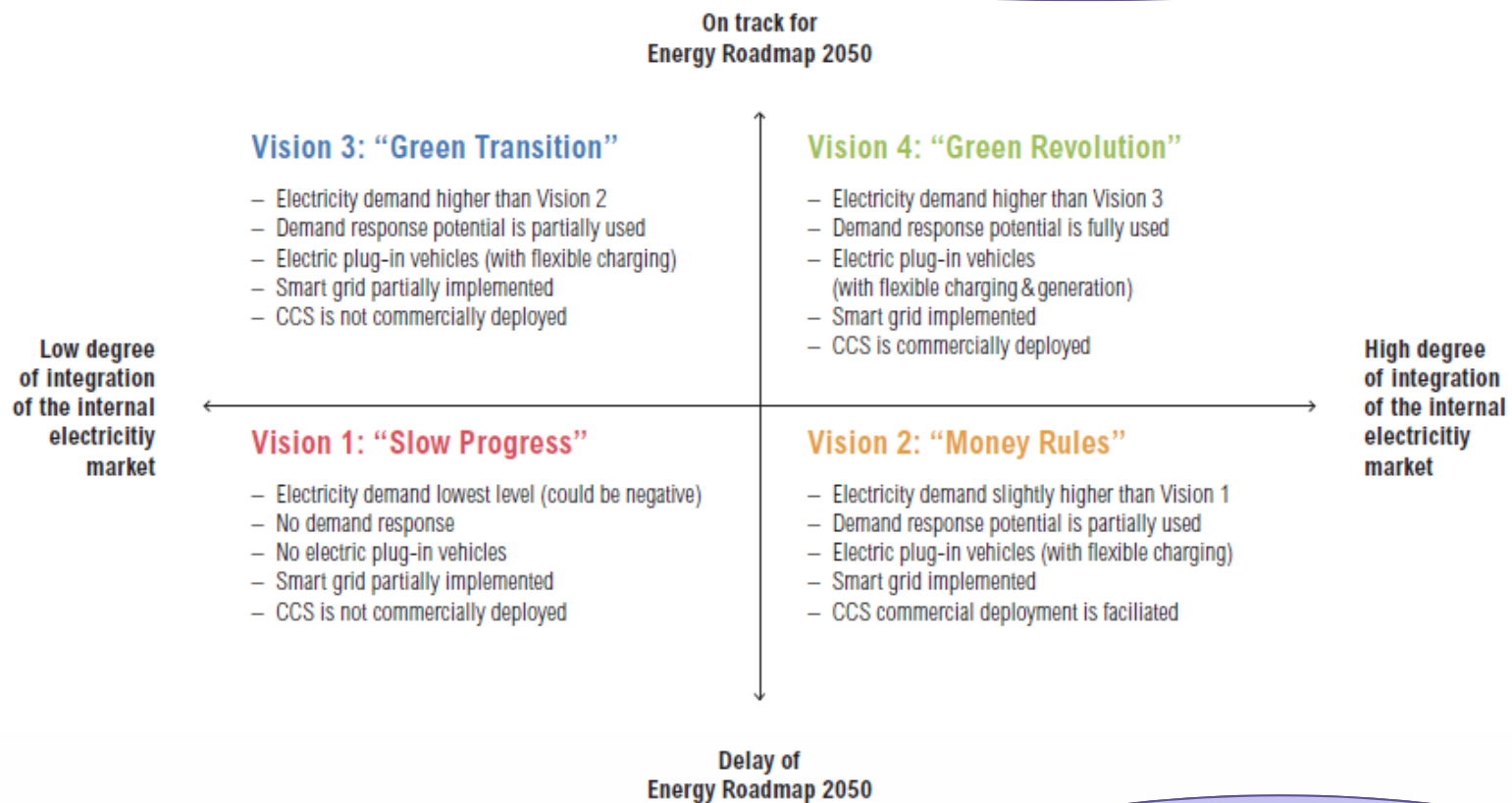
↪ Subject to adaptations &/o changes

# TYNDP 2012 – first ENTSO-E multi-criteria CBA methodology

Grid transfer capability increase	Social and economic welfare	RES integration	Improved security of supply	Losses variation	CO2 emissions variation	Technical resilience	Flexibility	Social & environmental impact	Costs
+ ... MW									

Present the benefits that each Project of European relevance will bring

# TYNDP 2014 introduces the 2030 timeframe



2nd ENTSO-E workshop  
Brussels 22 November 2012  
[www.entsoe.eu](http://www.entsoe.eu)

# e-Highway2050 Project - Socio economic profitability

**Project Objective:** To develop methods and tools to support the planning of electricity highways, and develop options for a pan-European grid architecture under different scenarios, taking into account benefits, costs and risks. It addresses transition planning between now, 2020, 2030, 2040 and 2050.

## WP6 Objective:

- ✓ To provide a new **multi-criteria methodology** for assessing the socio-economic impacts of new or expanded transmission lines, based on **costs, risks and benefits** for society and stakeholders;
- ✓ To provide a cost-benefit ranking of the pan-European grid architectures for each scenario elaborated in the WP2;

**WP6 applies its cost-benefit analysis to all the grid architectures of each scenario on Grid architecture for 2050**

### Cost-benefit analysis of grid architectures and modular plan 2030-2050

- ✓ To provide a validation framework for the theoretical cost-benefit approach;
- ✓ To apply the toolbox to rank the 2050 grid architectures, also including governance models;
- ✓ To apply the toolbox to rank the 2030 and 2040 grid architectures;
- ✓ To elaborate the global modular plan over 2020-2050.



# ENTSO-E R&D Roadmap – A single KPI: “Increased network capacity at affordable cost”

The **enabling capability** of electrical networks means

their **capacity** to connect renewable electricity generation (**sustainability**),

ensuring enough **flexibility** for the system operation

and serving customers according to affordable electricity pricing (**market competitiveness**),

while keeping the system reliability at levels compatible with societal needs (**security of supply**)

Expected network capacity & flexibility improvement/KPI	Related R&I cluster(s)	Compliance with EU policy goals		
		Sustainability	Market competitiveness	SoS
<i>Extended asset life time</i>	Asset Management			X
<i>Increased RES &amp; DER hosting capacity</i>	Power Technologies			
	Network operation	X	X	X
	Market Designs			
<i>Reduced energy curtailment of RES and DER</i>	Grid Architecture	X	X	X
<i>Increased flexibility from energy players</i>	Power Technologies			
	Network Operation	X	X	X
	Market Designs			
<i>Increased quality of service and supply</i>			X	X
<i>Improved competitiveness of the electricity market</i>	Market Designs		X	
<i>Decreased network congestions</i>	Grid Architecture			
	Network Operation			
	Market Designs	X	X	X
	Asset Management			

## Final thought



*“Not everything that counts can be counted,  
and not everything that can be counted counts”*

Albert Einstein