### **IESI International Institute for Energy Systems Integration**

European Workshop, Copenhagen, May 2014

## **Regulation, Policy & Market Design Session**

# An appraisal of the EU Internal Energy Market

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# There is a clear trend towards "pooling" in electricity markets

#### The European Union



Candidate and potential candidate countries

#### ... and beyond: Euro-Mediterranean Electricity Initiatives







Mediterranean Solar Plan 20 GW by 2020 (~5 GW exports to EU)



500 GW by 2050 (100 GW exports to EU)

#### The Australian National Electricity Market





# Power Pools under construction in Africa





# Power pools were invented in US-Canada in the 1970's & later became markets...



Footprint of the North American ISOs and RTOs Source: http://www.iso-rto.org

# ...but they still have a long way to go in terms of integration

North American Electric Power Grids



# Background EU & USInformation for a comparison

## Size matters: Comparative analysis

	(	Are 1 000	ea km²)	F	ok Jo	oulation nillion)	gro	Per capita ss domestic product (PPS (¹))
The 27 European Union countries together			4 234			503.7		25 700
India			3 287			1 205.4		2 800 (²)
China			9 327			1 343.3		6 400 (²)
Japan			365			127.4		28 000 (²)
Russia			16 889			142.5		12 900 (²)
United States			9 159			313.8		37 100 (²)

## US & EU: a basic comparison (2014)

#### 🖵 EU-28 & IEM

- > 4,3 Mkm2, 503 Mhab, 12945 b€ GDP
- 1253 GW installed capacity
- >2883 TWh/year
- (Installed capacity, annual production)
  - >Germany (160 GW, 538 TWh)
  - France (130 GW, 447 TWh)
  - ≻UK (93 GW, 321 TWh)
  - Italy (118 GW, 311 TWh)
  - Spain (102 GW, 244 TWh)

#### 🗆 USA

- 9,8 Mkm2, 314 Mhab, 15.68b\$ GDP
- > 1053 GW installed capacity
- > 3883 TWh/year
- (Installed capacity, annual production)
  - ≻ PJM (184GW, 794 TWh)
  - >MISO (175 GW, 526 TWh)
  - >ERCOT (74 GW, 331 TWh)
  - ≻California (51 GW, 232 TWh)
  - > NY-ISO (40 GW, 163 TWh)
  - NE-ISO (32 GW, 112 TWh)



## Major issues in markets integration (from experience)

INSTITUTIONS AND GOVERNANCE ➢PROTOCOL OF AGREEMENT, REGIONAL INSTITUTIONS ORGANIZATION OF DISPATCH >MARKET DESIGN, CONTRACTING FORMATS TRANSMISSION >GOVERNANCE, ALLOCATION OF TRANSMISSION COSTS, CONGESTION MANAGEMENT GENERATION CAPACITY EXPANSION SECURITY OF SUPPLY

□ FINANCING THE INFRASTRUCTURES

# An appraisal of the EU IEM

Characteristic traits of the EU electricity & gas markets

- How do they differ from designs of regional markets in the US? Pros & cons?
  - Energy policy requirements & Governance
  - Market structure & Level of integration
  - Transmission network representation: Planning & Cost allocation
  - Design of market pricing rules
  - Harmonization of network tariffs & instruments for capacity remuneration or promotion of renewables
- >Any major improvements to be made?

# Governance Are EU Member States more "docile" than US states?

# Governance of energy markets in the EU & US

- EU Directives vs. Energy Acts
- ACER Framework Guidelines & ENTSO-E/G Network Codes vs FERC Orders
- The EU 2014 Target model for a seamless IEM vs the 2002 US Standard Market Design
- ENTSO-E/G 10 year transmission planning, e-Highway 2050 & Inter-TSO compensation scheme vs FERC Order 1000

### **Governance of the IEM**

A complex process

Consultation! Consultation! Consultation! Member States

- Catalogue of topics included in third package
- Commission sets priorities
- ACER adopts Framework Guidelines (FGs)
- ENTSOs develop FGs into Network Codes (NCs)
- Commission adopts NCs through Comitology procedures
- EU Network Codes are legally binding

Based on deep stakeholder engagement



Directorate-General

or Energy

#### **Delivery of the Third Package**

## Network Codes Overall Timeline

			CA	CM	F	CA	E	8	RF	G (	DCC		HVDC	0.9	š	OP	: [	LFCR	E&R
ng		EC invites ACER to develop Framework Guidelines																	
Scopi		ACER Public consultation begins		L							4	_					_	ł	
		Final Framework Guidelines published																	Ч.
evelopment		Formal invitation to develop Network Code _ 을 흘 붙																	
		Public Consultation Period Begins <sup>1</sup>																	
•		Public Consultation Closed																_	
Approval		Final version submitted to ACER <sup>1</sup>											Apr-14						
		ACER opinion published			L	Ļ	Mar	-14											
		Resubmission to ACER <sup>2</sup>			Q2-	2014													
		ACER recommendation published												Nov-	13	Nov-	3	Sep-1	
	Í	Comitology Begins <sup>3</sup>		¢-13					Jan	14	Mar-1	4							
		Cross-Border Committee delivers opinion <sup>3</sup>																	
		EC submits Code for scrutiny to the Council and EP <sup>3</sup>																	
		Network Code is adopted																	
y into force		Implementation begins* g 뉼 턈																	
		Network Code enters into force																	
Ent		Network Code is monitored and can go 전 정 법 through amendment procedure'																	

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ad and reasoning

# The "target model" Towards a seamless EU electricity trading platform?

## The EU Electricity Target ModelPCR: Price Coupling of the Regions

Goal: A single algorithm to determine electricity prices throughout the EU. Three main principles:

- One single algorithm
- Decentralized operation
- Individual accountability of each Power Exchange
- □ The EU Target Model is based on four elements:
  - ≻A day-ahead market
  - Intra-day markets
  - > The definition of a series of bidding zones
  - A coordinated approach to capacity calculation between bidding zones

#### eek Energy Exchanges and other market places in Europe in 2011





**Grid operators and power exchanges from 14 EU Member States** (Belgium, Denmark, Estonia, Finland, France, Germany, Austria, UK, Latvia, Lithuania, Luxembourg, the Netherlands, Poland and Sweden) plus Norway inaugurated on February 4 a pilot project for joint electricity trading, so-called day-ahead market coupling. The project, which is a milestone on the way towards a European **Electricity Market, had been jointly initiated by the EU Commission, regulators, grid operators and power exchanges in North-Western Europe (NWE). NWE market coupling combines** all bids and offers in a region and creates a large integrated electricity market in the area concerned, combining 75% of today's electricity consumption in the EU. The Commission prepares an EU Regulation that will make market coupling binding in the entire EU, leading to important costs savings for the benefit of European customers. Read more: http://europa.eu/rapid/press-release\_MEX-14-0204\_en.htm

#### **NWE Market Coupling Launch First Results**

Launched on 04/02/2014

**Operations** went on smoothly, prices were published on time except a delay of 4 minutes on the launch day

Starting in 2009, the project has involved **over 200 people** from the participating Power Exchanges across Europe

Baseload MCP for individual NWE bidding areas



Prices and net transfers are determined in a single calculation using the PCR Matcher-Broker (PMB) with its embedded algorithm "Euphemia", based on the order books and available transmission capacities from the NWE and SWE regions.

#### NWE – Results of the first month

(2014-02-05 to 2014-02-21 for illustration)



Note: arithmetic mean of MCPs for first 17 days of NWE Market Coupling; for Denmark, Norway and Sweden. First an aggregation on country level was performed (again arithmic mean of concerned area prices) Source: EPEX calculation based on data from APX, Belpex, EPEX SPOT, N2EX and Nord Pool Spot

#### Next steps on the Day-Ahead in 2014

entsoe

#### 2014 as target for most Europe to be coupled

- Goals for 2014
  - Consolidation of NWE
  - Full coupling SWE-NWE (with implicit allocation on FR-ES border)
  - IT borders project implementation and go-live
  - Implementation of the basis for the pan-European governance framework, covering the coupled areas
  - Preparation of coupling of northern Swiss borders and reaching readiness for go-live
  - 4M MC implementation and go-live using PCR
  - CEE Flow Based MC project design
  - CWE Flow Based MC go-live
- Next steps
  - CEE FB MC implementation and go-live
  - Evolution of markets towards MC compatible models in Ireland & Northern Ireland, Bulgaria, Greece and the Balkan States

End 2014 market coupling outlook

europex





Commission

#### Market coupling timetable



# Transmission iSSUESNetwork representation in electricity trade: Nodal vs zonal vs single price



#### **Operational network model**



#### Simplified network model for PCR





## Seamless interconnections Two very different approaches

### USA:

>LMP (locational or nodal energy pricing) at ISO/RTO level

LMP is ideal to integrate generation & network, but difficult to combine with neighboring systems & preserving identity

Once implemented has many advantages

## **EU**:

- Power Exchanges with single energy prices. Their outcomes are passed to TSOs to check grid compatibility
- Easy for Power Exchanges to integrate. But underlying network compatibility only becomes worse & locational signals have to be found elsewhere

## Seamless interconnections The way ahead

Conceptually, LMP, locational marginal pricing (nodal energy pricing) would the ideal solution

- It is widely used in the USA, but only at ISO/RTO level, not at a wider interconnection level
- Generalized LMP does not seem to be a viable solution in the EU in the short or medium term
# The EU gas market Is a good idea to copy the EU electricity market format?

## The process under European regulation

Objective: Gas target model to integrate national energy markets by 2014 (hub to hub gas trading)

Align national markets currently in development via network codes:

Congestion management procedures

Capacity allocation mechanisms

Market based balancing and harmonized nominations

Harmonization of tariffs

>Interoperability improvements

Network charges based on the entry-exit approach

#### Natural gas transmission system operators in Europe



### Natural gas hubs and natural gas exchanges in Europe



Sources: IberiangasHUB and P. Heather, "Continental European gas hubs: Are they fit for purpose?", OIES NG 63, June 2012.

#### RED DE GASODUCTOS RUSIA - EUROPA



# Coupling of gas & electricity markets in multiple time ranges



# Coordination of balancing zones in electricity & gas

- Balancing is necessary in both markets
- EU regulation wants market-based solutions, led by agents, without TSO intervention, except for emergencies
- Balance zones hide strong network simplifications both in electricity & gas
- Time dimension in gas must get closer to real time without adding much complexity
- Poorly designed cross-border network charges may hamper trade
- Intermittency in electricity generation amplifies existing shortcomings in operation rules

### Role of gas in a decarbonized power sector





#### Share of Renewables in Electricity Production in the EU scenarios



Source: EU Energy Roadmap

#### Source: Prof. Christian von Hirschhausen

#### Share of Gas in Electricity Production in the EU scenarios



#### Source: Prof. Christian von Hirschhausen

# A case example

How do solar & wind output affect generation dispatch & investment (& for gas-fired plants, in particular) in a specific power system?

□ How do solar & wind penetration affect the optimal generation mix *(horizon 2030, starting from some existing mix in 2012)*?

### Case example:

- 2 representative weeks in a system of the size & demand pattern of the Spanish power system, but with just nuclear, coal & CCGT
- >Different levels of penetration of wind and solar
- >Nuclear is frozen; only coal & CCGT respond

Results obtained with the LEEMA computer model, Institute for Research in Technology, Comillas University (Madrid, Spain). Collaboration Comillas-MIT Energy Initiative. Researchers: Carlos Batlle, Pablo Rodilla & Andrea Veiga.

#### Base case escenario: No PV

#### 14-20 June

#### 8-14 November



CCGT Coal Nuclear

14-20 June







#### 14-20 June





#### 14-20 June





#### 14-20 June

#### 8-14 November



CCGT Coal Nuclear

#### 14-20 June





#### 14-20 June





#### 14-20 June





#### 14-20 June





#### Base case scenario: no wind

#### 14-20 June





14-20 June







14-20 June





CCGT Coal Nuclear

14-20 June







14-20 June





CCGT Coal Nuclear

14-20 June







14-20 June





CCGT Coal Nuclear

14-20 June





CCGT Coal Nuclear

#### Optimal generation capacity mix as a function of PV & wind penetration levels



## A thought for debate

 The presence of economically viable storage
will facilitate the deployment of more intermittent renewable generation
but it will also decrease the pressure on less flexible generation to disappear

# The "target model"Market pricing rules do matter

# Examining the future with advanced market simulation models

- Increased penetration of wind & solar amplifies the differences in market prices resulting from different market rules (e.g. PJM & most US ISOs, Ireland or Spain & most EU PEXs), as well as the impact on the corresponding well adapted generation mix
  - \* "Nonlinear pricing" seems to under-remunerate baseloaded plants, since the non-linear costs are only used for side payments to generators incurring them.
  - "Linear pricing" seems to over-remunerate base-loaded plants, by introducing the non-linear costs into the marginal price that applies to the energy produced by all plants

Source: "Intermittent RES-E, spot prices and investment incentives: The role of pricing rules", I. Herrero, C. Batlle, P. Rodilla. Submitted to Energy Economics, April 2014.

# Impact of pricing rules with strong renewable penetration on the well-adapted generation mix



Source: "Intermittent RES-E, spot prices and investment incentives: The role of pricing rules", I. Herrero, C. Batlle, P. Rodilla. Submitted to Energy Economics, April 2014.

# Electricity transmission planning How to balance a global vision & respect for local jurisdiction?

### Unbundling (Directive 2009/72/CE)



G= generation; D=distribution; C=trading; T=transmission owner; SO=system operator.

Source: José Luis Mata, Red Eléctrica de España

### **Unbundling** (*Directive 2009/72/CE*)



Source: Red Eléctrica (own elaboration based on public information from TSOs, ENTSO-E and European Commission as of March 12, 2013).
## The challenge...

- Despite the large geographical dimension of the EU IEM & open transmission access, there are not very significant transfers of electricity between regions
  - The interconnections between regions are frequently weak
  - Typically there are no major surpluses / deficits
  - Generation technologies at the margin are frequently similar
- This situation will probably change with massive deployment of renewable generation, either internal or external
- A comprehensive approach to transmission expansion has been lacking, as well as the institutional capability for an effective implementation

#### **Grid information**



Number of circuits on cross-frontier transmission lines as of 31 December 2013 In the ENTSO-E area <sup>1,2</sup>

#### ENTSO-E Overview circuit length in km

A	Length of C circuits	of which AC cable	Sum of DC cable
220-285kV	141359	3230	
330 kV	9141	14	
380/400 kV	151272	1512	
750 kV	471	0	
Sum	302243	4756	5260

#### Number of cross frontier lines in the ENTSO-E area

	AC	DC
Over 400 kV	7	7
380-400 kV	116	4
300-330 kV	18	
200–285 kV	89	10
110–150 kV	88	1
Under 110 kV	1	
Sum	319	22

<sup>4</sup> Non geographic loscation of lines.

CY 🥏

<sup>3</sup> Between IE and NI 275W/ instead 220W.

<sup>3</sup> Only lines operated by TSOs are taken into account.

<sup>4</sup> All data with the country code GB represents monthly statistical data as sum of England, Scotland and Wales.

<sup>6</sup> All data with the country code NI represents the monthly statistical data G5 Northern Ireland.



#### Physical energy flows



	Sum of	Sum of	Balance (mp. em)
	iniporta .	exports	fund - exhi
AI	27.046	19760	7.286
BA	31/1	6865	-3694
BE	17 140	7607	9533
BG	3353	9635	-6182
СН	29386	30702	-1316
CY <sup>2</sup>	_	_	_
CZ	10568	27458	-16.890
DE	38460	72256	-33796
DK	11464	11172	292
EE	2436	5982	-3546
ES	10205	16646	-6441
FI	18093	2386	15707
FR <sup>4</sup>	11592	58212	-46618
GB <sup>1</sup>	17501	4455	13046
GR	4703	2697	2106
HR	11270	6764	4506
HU4	16631	4756	11875
IE	2626	395	2231
152	_	_	_
п	44 481	2203	42278
LT	8073	1128	6945
LU <sup>4</sup>	6706	1744	4962
LV	5006	3650	1366
ME	3013	3342	- 329
MK	3953	1535	2418
NP	1885	411	1474
NL	33252	14875	18377
NO	9887	14289	-4402
PL	7801	12323	-4521
PT	8099	5325	2774
RO	2706	4724	-2018
RS	4669	7417	-2758
SE4	15154	24698	-9544
SI	7519	8698	-1179
SK	10722	10628	94
ENTSO-E	408 558	404534	4024

Physical flow values in GWh

<sup>6</sup> Consolidated yearly values might differ from detailed flow data from the ENTSO-E database due to ex-post consolidation taking into account national statistical resources.

<sup>2</sup> isolated system; therefore no exchange data.

<sup>1</sup> All data with the country code GB represents monthly statistical data as sum of England, Scotland and Weles.

\* The reported exchange data are not complete.

<sup>4</sup> All data with the country code Ni represents the monthly statistical data of GB Northern Ireland.





EU Offshore Super grid

Which one to choose?







**HVDC Links** 

### TYNDP 2012 Transmission adequacy

### Interconnection ratio 2010-2020



INTERCONNECTION RATIO: Exchange capacity (import) vs. Total installed generation capacity (%)

Objective value = 10%

#### 100 main bottlenecks in Europe in 2020



#### Source: José Luis Mata, Red Eléctrica de España

## ... and the EU regulatory response

Electricity Directive & Regulation, July 2009

- Establish the participation of TSOs, collectively (ENTSO) & individually, the regulatory authorities, collectively (ACER) & individually, the Member States & the concerned stakeholders
- Non mandatory EU-wide 10-year ahead transmission expansion plan prepared by ENTSO-E every other year (European Network of Transmission System Operators for Electricity)

First plan published March 2010, second (draft) March 2012

- Mandatory national transmission expansion plans (prepared by national TSOs & approved & enforced by national regulators)
- Final decisions are left to national regulators & TSOs with ACER supervising compliance with EU-wide plan



### **TYNDP 2012** (Projects of EU significance)



Source: José Luis Mata, Red Eléctrica de España

### **EU legislation on Energy Infrastructure**

### Projects of common interest (PCI)



Source: European Commission - DG ENER

#### Source: http://ec.europa.eu/energy/infrastructure/transparency\_platform/map-viewer/

## Is this response enough?

- Institutions of European dimension (ENTSO & ACER) are responsible for developing (non mandatory) EUwide transmission expansion plans
  - However, final decisions are left to national regulators & TSOs
- Critical issues (authorizations, siting, remuneration (Art. 22.7 & 22.8 of Regulation)) are still open & cost allocation implicitly results from the Inter-TSO payment mechanism but the current method (not its underlying rationale) needs a thorough review

## Electricity transmission cost allocation The three fundamental principles

## Abandon this mental model...

### ... & follow the Single System Paradigm





# The EU hierarchical cost allocation method

- The basic principle behind the current "inter-TSO compensation scheme" (payment of the "modified" transmission charges in your country gives you access to the entire regional market) should be the basis for a future EU-wide transmission cost allocation method, since
  - reduces the dimensionality problem
  - >simplifies much the process
  - >does not require harmonization at Member State / TSO level of the internal transmission cost allocation procedures

## Inter-TSO payments Computation

- Step 1. Determine the compensation that is due to each country/TSO on the basis of the external use of its network & standard network & energy costs
- Step 2. Determine the charges to be applied to each country/TSO because of its responsibility in the extra costs of other countries
- Step 3. Application of the net balance of compensation & charges of a country/TSO to its internal network users

# Still a long way for application of basic cost allocation principles

- Beneficiary pays (i.e. responsibility in network investment)
- Transmission network charges should not depend on commercial transactions <sup>↑</sup>
- Transmission network charges should be determined ex ante and not updated (at least for a reasonably long time)

## Gas transmissionThe EU & US approaches

## Approaches to investment in gas pipelines: How much does regulation matter?



The success of each regime does not depend on physical differences, but on regulatory differences

# Approaches to investment in gas pipelines (1 of 2)

### The European approach is based on two complementary mechanisms

- A. National expansion plans that ACER verifies are consistent with the non-mandatory EU-wide plan prepared by ENTSO-G and costs are recovered via regulated entry-exit tariffs
- B. "Exempted" merchant pipelines, whose costs are covered by bilateral contracts between investors & users
- The traditional approach (B) to finance large projects faces considerable financial uncertainties & the regulated approach (A) meets political difficulties on decision making & cost allocation

### Approaches to investment in gas pipelines (2 of 2)

- The US approach is based on open access subject to a well-defined & stable regulatory compact
  - >Very liquid & competitive gas market
  - Point-to-point lines are built by numerous independent private investors under long term contracts with gas distribution companies that pass the cost to regulated gas tariffs
  - Open seasons and obligation of existing pipelines to provide taps
  - Economic value of lines is passed (somehow?) to consumers at the expiration of the contracts

# HarmonizationOf gas & electricity transmission tariffs?



Source: Project THINK, Florence School of Regulation



### **Experience from the EU electricity**

### **sector**Diversity regarding components included in tariff

- Tariffs do not cover the same cost components in all countries (Costs from losses and/or system services might be included in the tariffs or not, etc.)
- In the following discussion, we will focus on <u>network costs</u> (i.e. building and operating grids)



### Experience from the natural gas sectorHeterogeneity in form of tariff components

Tariff mainly based on contracted capacity, with some countries also applying an energy-related component



Source: KEMA (2009)

### **Does heterogeneity matter?**

## EU involvement in electricity and natural gas transmission grid tarification

Regulation of TSO revenues



- No need for an EUwide harmonization
- Benchmarking of national practices through ACER
- Consideration of innovative solutions to trigger investment

Electricity transmission tariffs



- Definition of cost components to be included
- Allocation based on principle of costcausality
- Minimum G-charge
- Limit charging in €/MWh

Natural gas transmission tariffs



- Principles for determining ideal size of market areas
- Breakdown of costs among (a) grid users and (b) entry-/exit points in costreflective way
- Good-practice guidelines

Source: Project THINK, Florence School of Regulation

## Harmonizationof renewables promotion instruments?

### **RES support schemes in Europe as of 2012**



Source: José Luis Mata, Red Eléctrica de España



# HarmonizationOf capacity mechanisms?

### Capacity mechanisms in the EU Member States (Eurelectric, March 2013)



## Significant issues when integrating capacity mechanisms in a regional market

- A "regional" market should imply that there is some sort of joint approach to reliability (& not only a concern that the proliferation of local capacity mechanisms may distort the energy market)
  - A minimum requirement in a regional market should be that all agents in the regional market must be allowed to participate in whatever capacity mechanism is established by any local authority (e.g. other member state in the EU)
  - In other words, that a commitment of a generator located in system A to contribute to the capacity mechanism in system B, cannot be cancelled by the regulator in A because the capacity committed to B is also needed in system A

# Significant issues when integrating capacity mechanisms in a regional market

- A diversity of (well-designed) capacity mechanisms will not distort the short-term efficiency of a regional market IFF
  - The rule in the previous slide (which amounts to Article 4.3 of the Security of Supply Directive) is applied
    - with firm nominations of cross-border bilateral contracts (only applied in case of emergency)
    - without need for cross-border capacity reservations
    - & limited by the actual interconnection capacity limits

However, this diversity will result in loss of efficiency in the deployment of installed capacity

# Significant issues when integrating capacity mechanisms in a regional market

It is to be expected (still a hypothesis) that application of Article 4.3 of the Security of Supply Directive will

- significantly reduce any possible distortion of the local capacity mechanisms in the EU-wide electricity energy market
- & will (subtly) reduce the proliferation of disparate capacity mechanisms & converge towards the dominant (preferable) ones

❑ Demand response has to play a crucial role → TSOs have to open grid codes to take advantage of this potential

## EU-wide energy policyLack of consistency? Targets vs CO2 prices The struggle to establish an UE Energy Policy

## Towards a EU energy policy

After much indecision, the EU was able to establish in the early 2000s important regulation:

- Inspired by sustainability & with the classical objectives of security, economy & environmental concern
- Reduction 2020/1990 of CO2 emissions by 20% (30% if international consensus)
- Improvement of 20% of efficiency in consumption
- Target of 20% of renewables in final energy consumption (approx. 35 to 40% of electricity production)
- Plus: Implementation of the GHG Emission Trading Scheme, more than 10 Directives & Regulations approved in 2009 & 2010, standards for appliances, sustainability criteria for biofuels, instruments to support clean technologies, infrastructures, 2050 Energy Roadmap, etc.

### **EU Energy Policy**

EU Energy and Climate policy objectives envisage a largely decarbonised energy system, which will need higher percentages of electricity supply from Renewable Energy Sources (RES):



Source: José Luis Mata, Red Eléctrica de España

### The EU 2050 Climate Change Roadmap

Figure 1: EU GHG emissions towards an 80% domestic reduction (100% =1990)



Source: "A Roadmap for moving to a competitive low carbon economy in 2050", EU Commission (DG Climate), COM(2011) 112 final, March-8-2011
### Towards a EU energy policy

These targets have been updated in January 2014, setting values for 2030:

- Reduction 2030/1990 of CO2 emissions by 40% & only with domestic measures
- >Efforts in improvement of efficiency, but no targets
- EU-wide target of 27% of renewables in final energy consumption
- >Plus some reforms in the EU Emission Trading Scheme



#### Climate and energy: where do we stand?



#### Prices of the European Trading Scheme (ETS) EUA (blue) & CER (red), €/ton



Period: August 2008-April 2014

#### Policy needs to be "loud, long & legal"

#### Loud

Policy instruments make a difference, so that investments in clean energy become commercially attractive

#### Long

Policy instruments are sustained for a period that is consistent with the financial characteristics of the project

#### Legal

Policy instruments are based on a clear, stable & wellestablished regulatory framework

Based on "Unlocking finance for clean energy", <u>www.chathamhouse.org.uk</u>, 2009

## Should technology targets be set for 2030? Of course, NOT

Deployment *(energy)* targets for renewables:

- >make it more expensive to meet the carbon targets
- waste resources that could be better used to stimulate low-carbon innovation
- > disrupt markets discovery processes
- >undermine the European Trading Scheme (ETS)

Source: Dr. Simon Less, Policy Exchange, London. Eurelectric Conference, Jan-2011.

## Should technology targets be set for 2030? Of course, NOT

Instead, energy policy after 2020 should:

- ≻keep it simple
- Focus on carbon price as "the" instrument & avoid technology-specific deployment targets
- focus (politically) on achieving a long-term, credible carbon pricing framework
- Focus any subsidies on stimulating most valuable innovation, while balancing R&D & learning-bydoing
- & overcome behavioral barriers to energy efficiency

## Should technology targets be set for 2030? YES, of course

Carbon price, for the time being, is not loud (too low to make an impact), long (no agreement after 2012) or legal (credible) enough

Any progress in this direction is very welcome Investment in subsidized technologies needs an adequate & credible regulatory framework

- Clear targets & strong enough economic signals by 2030 for renewables & efficiency
- Adequate support instruments for R&D & deployment for each technology

>But avoid picking winners as much as possible

#### Still work in progress...

Vertens Source: Jean-François Conil-Lacoste. Chairman of EPEX SPOT. 4th OMIE International Workshop. Madrid 29 April 2014

# Thank you for your attention