



# **Sustainable security of electricity supply through coordinated national security of supply policies**

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# Executive summary

EU Commission: „Our vision is of an Energy Union where Member States see that they **depend** on each other to deliver secure energy to their citizens, based on true **solidarity** and **trust**, and of an Energy Union that speaks with **one voice** in global affairs.” (COM (2015) 80)

Today's aim is to show

- how integration **can** lead to a more sustainable security of electricity supply
- sustainable integration is only possible if **more coordination** is achieved regarding
  1. common understanding of and a regional perspective on security of supply („one voice“)
  2. market designs that reflect interdependencies
  3. clear and adequate rules for dealing with critical situations
- more coordination is needed

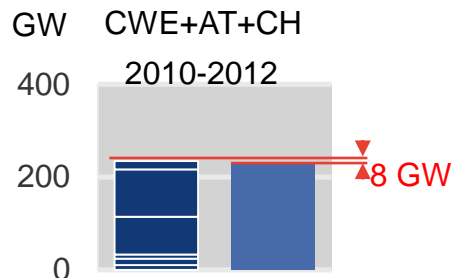
All three necessary to create solidarity and trust, today's focus on second two

# More sustainable SoS possible through integrated markets and networks...

## Potential benefits from a coordinated integrated electricity system

More efficient and sustainable security of supply through mutual provision of security

- More efficient merit order through differences in technology costs
- More efficient allocation of generation resources
- Portfolio effects and cost reduction through sharing of generation capacity\*



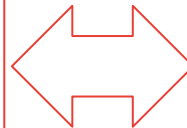
## Risks under national, not (sufficiently) coordinated policies and unclear rules

Inefficient SoS level → unsustainable SoS in terms of costs

- **distorted incentives for investors**
- over-/under-provision of generation capacity
- (inadequate interconnection capacities)

Insufficient solidarity and trust in mutual provision of security → continuity of IEM under threat

- **potential re-distributional effects**



...but coordination and clear rules that create solidarity and trust are needed for benefits to outweigh potential risks

# Insufficiently coordinated policies or unclear market and operating rules can distort investment incentives...

Spill-over effects from **higher foreign generation capacity** in an integrated market and electricity network with unclear rules for simultaneous scarcity

## Mutual security effect

- Higher serving of national demand in times of scarcity

## Capacity effect

- Price in integrated market decreases (for coupled region)

## Simultaneous scarcity effect

- Rationing rules and TSO rights to curtail IC capacity determine national SoS
- **Current framework unclear**
  - pro-rata curtailment → possibly „unfair“
  - national security as priority

- Higher national SoS (in the short run)





- Potentially lower national generation capacity

- Market players possibly unable to anticipate shortages and associated risks correctly
- Potentially distorted investment and too low national SoS

...IEM requires clear and adequate market and operational rules for coordinated measures in times of (simultaneous) scarcity

# Market designs should reflect interdependencies to avoid „unfair“ market outcomes and distortions...

Example: Strategic Reserve in Belgium with non-harmonized balancing rules...  
...can lead to export of reserve in times of simultaneous scarcity

	FR 	NL 	BE 	DE 
Day-Ahead Energy Market	Market Coupling → price reaches 3.000 €/MWh → import/export unclear → pro rata allocation → some market parties still short → incentive to trade intraday			
CRM dispatch & nomination rules	No specific rules	No (current situation)	<b>SR chips in at 4.500 €/MWh</b>	No (current situation)
Non-harmonized Intraday & Imbalance Settlement	Gate closure: 45 min Max. balancing price: 3000 €/MWh (= max. day-ahead price)	Gate closure: 5 min Max. balancing price: D-1 spot price +/- 1000 €/MWh	Gate closure: 5 min <b>SR decreases imbalance prices → exports?</b>	Gate closure: 45 min <b>Max. balancing price: 15.000 €/MWh</b>
TSO actions	NC Emergency and Restoration requests a System Defence Plan			

Different balancing rules may reflect different willingness-to-pay for SoS

However, if exports during scarcity in BE allowed, export of reserve possible

...further coordination regarding design of national markets is needed

# Operational rules and responsibilities for TSOs should reflect interdependencies...

## Current framework for dealing with events with simultaneous scarcity

### Non-specific operational rules

- EU framework (incl. network codes in development) not sufficiently specific with room for interpretation

### Responsibility for regional stability

- primary responsibility of TSOs is national SoS
- right to curtail IC capacity shortly before usage
- overrides result of market coupling

### Insufficient incentives for solidarity

- ability to curtail IC capacity irrespective of market rules
- pro-rata curtailment rules during simultaneous scarcity may lead to „unfair“ allocation of generation capacity as consumers in one member state finance SoS in another
- actual curtailment decided by TSO

### Result

- Uncertainties about contribution of foreign generators to national SoS
- Potentially distorted incentives and inefficient generation capacity

... Current framework requires coordination but does not introduce clear rules and regional responsibilities that promote solidarity and efficiency

# Summary

## Benefits

- An integrated electricity market creates opportunities for more sustainable SoS

## Risks

- Integration and interdependence may also pose risks
  - provide inefficient level of SoS
  - threaten solidarity and mutual contribution to SoS

## Coordination

- Risks can be avoided through
  - coordination of national policies ,
  - clear and adequate market rules, and
  - a regional perspective on SoS

## Future scope

- Current level of coordination insufficient
- Progress already in sight, but scope for much more coordination (→ topic for another talk)

# Frontier is an economic consultancy working across sectors...

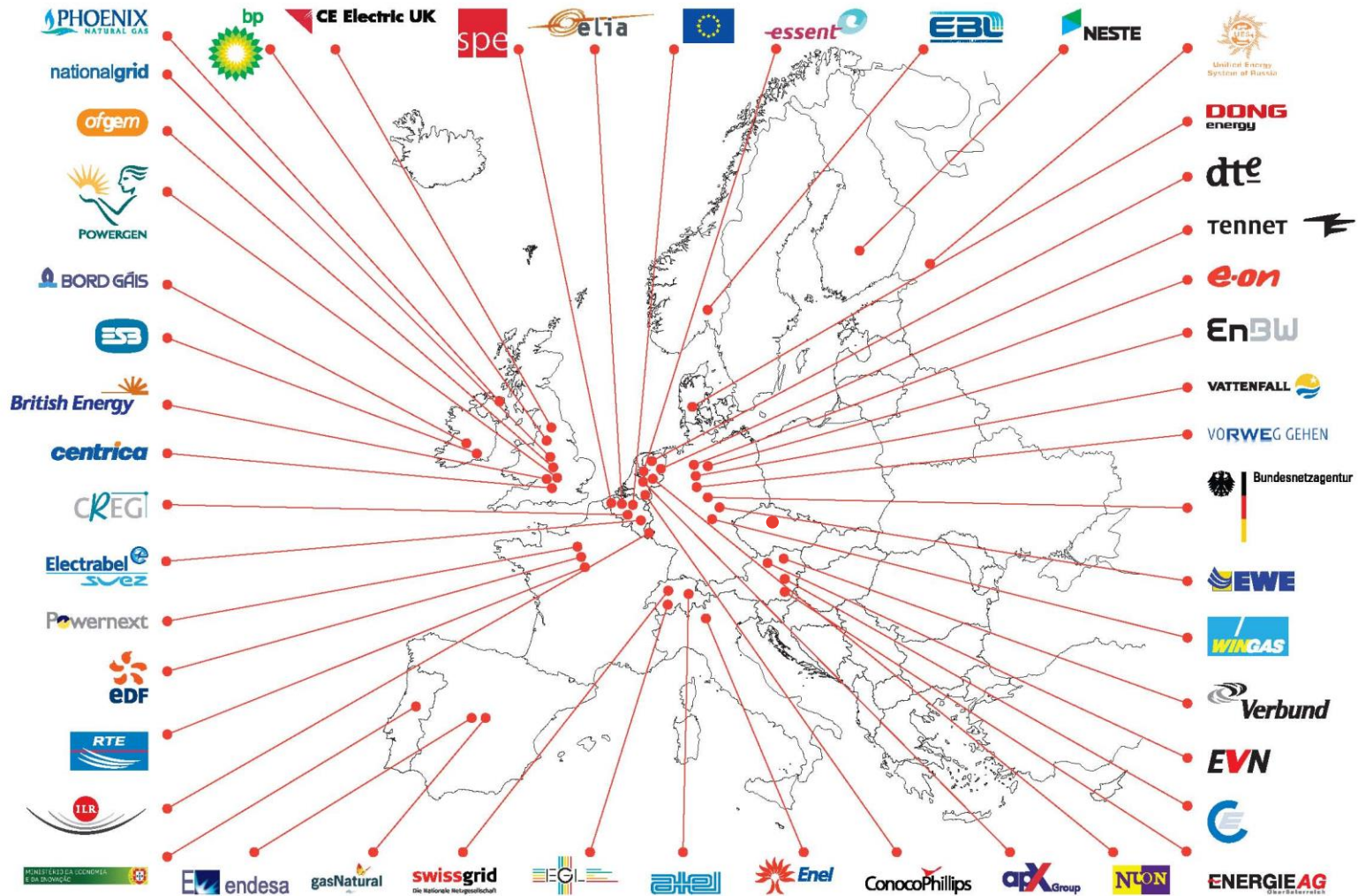


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- Energy is our biggest sector specialisation
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- Energy market analysis and price forecasts are a core part of our energy work

...and energy is major capability\*



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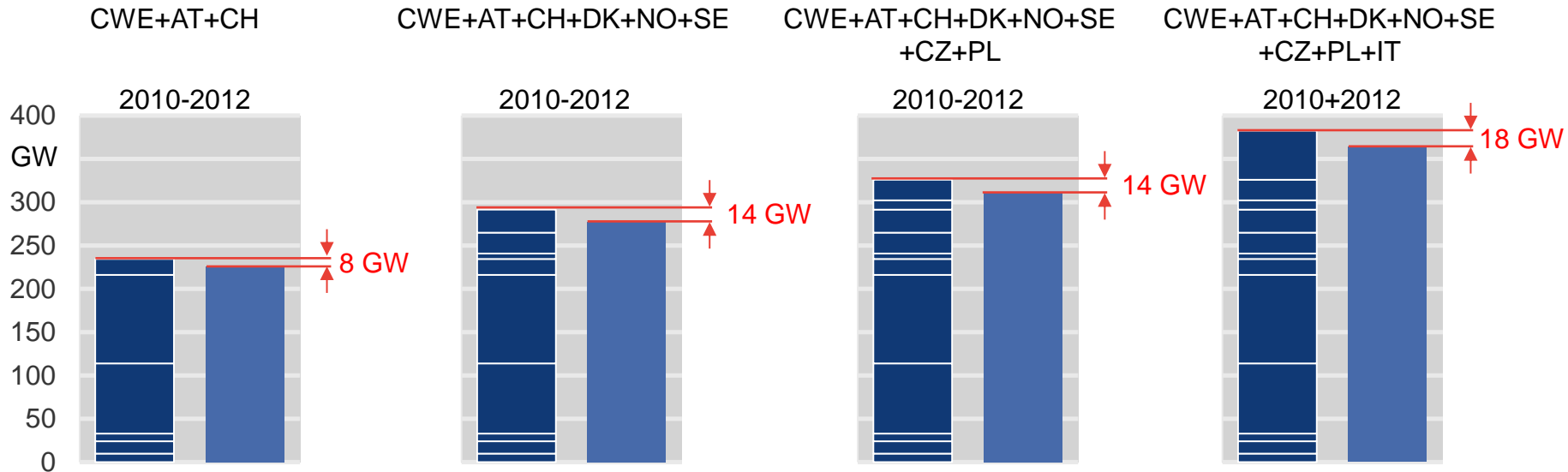
- Annexe

# Portfolio effects of regional rather than national approaches to SoS

Based on peak-load analyses ; portfolio effects of RES-E and plant outages not taken into account

## Approach applied by Consentec in BMWi-Study

- Derivation of delta between sum of national peak loads and simultaneous peak loads for different regions, based on ENTSO-E load series 2010-2012



Portfolio effects (benefits) can be shared by countries but “double-counting” to be avoided



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