

WP6 – RES Policy Consistency with other EU Policies, System and Market Integration

Karsten Neuhoff, Climate Policy Initiative at DIW Berlin

karsten.neuhoff@cpiberlin.org



CLIMATE
POLICY
INITIATIVE
BERLIN

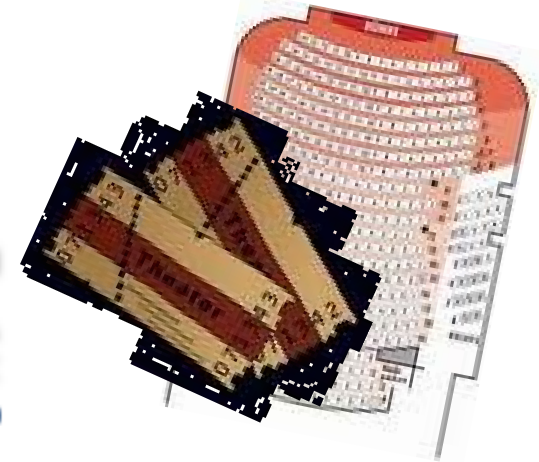
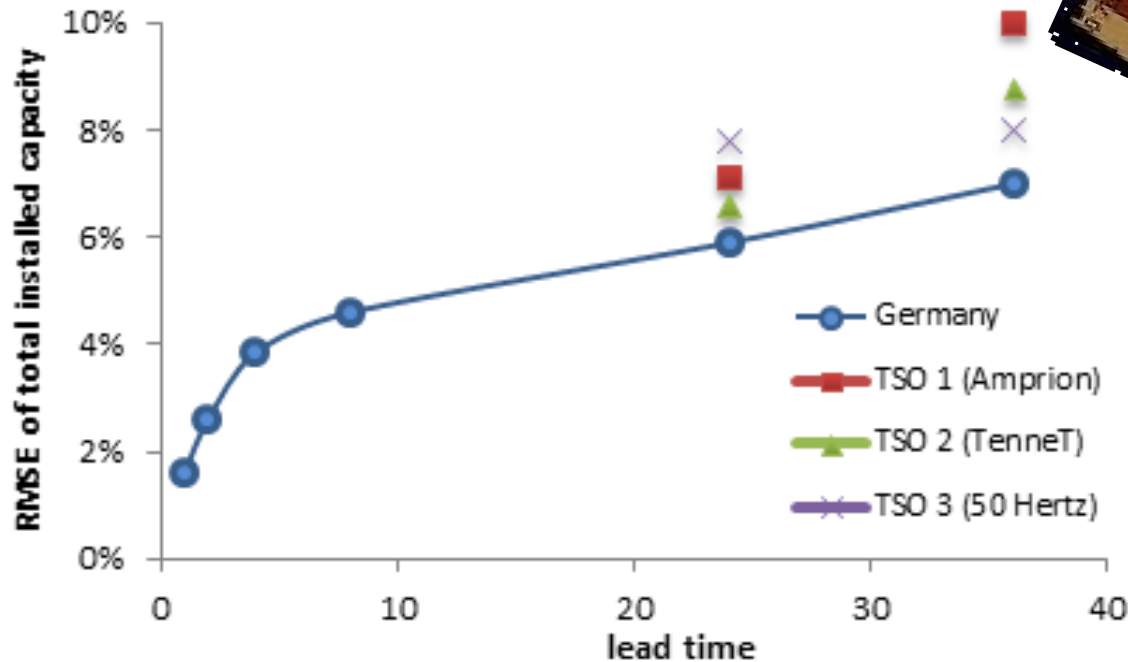
DIW BERLIN

ECOFYS

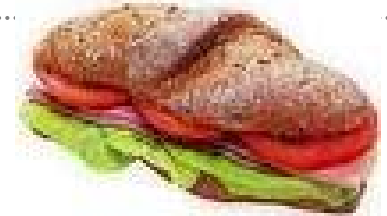


The time to trade

Wind forecasts improve 4 hours before real time



- Currently trading/transmission allocation focused day ahead
- Many power stations/grid can respond short time
- But power market design limits participation of actors



Combining products

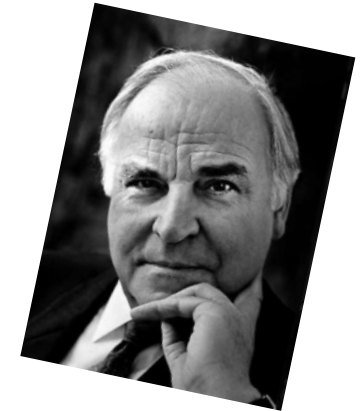
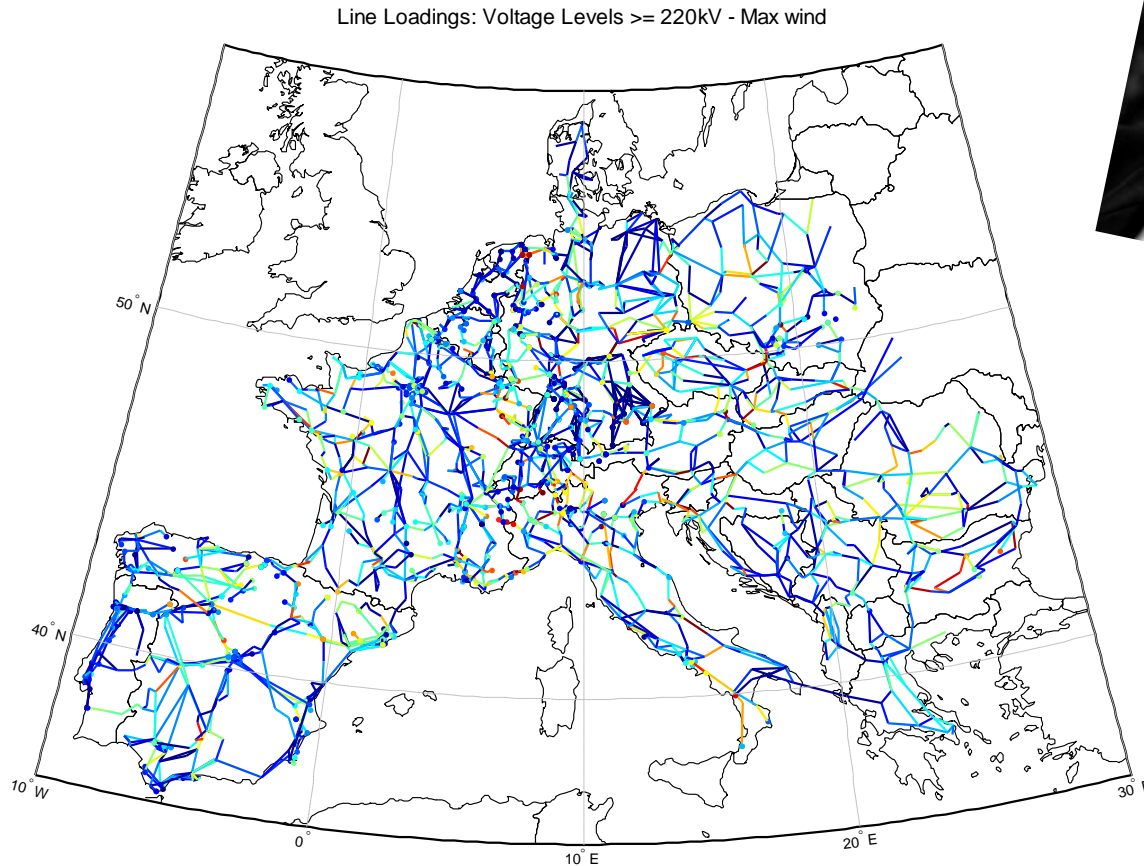
How do current power market designs perform?

	Dispatch adjusted during day	Balancing requirements / provision adjusted during day	Flexible use of individual conventional power stations	International integration of intraday / balancing markets	Integration of demand side response services	Effective monitoring of market power possible
UK System						
German system						
Nordpool						
Spanish system						
ISO with nodal pricing						

Borggrefe and Neuhoff 2011: Balancing and Intraday Market Design – Options for wind integration

Issuing multiple property rights

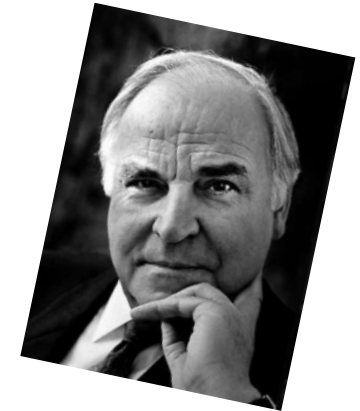
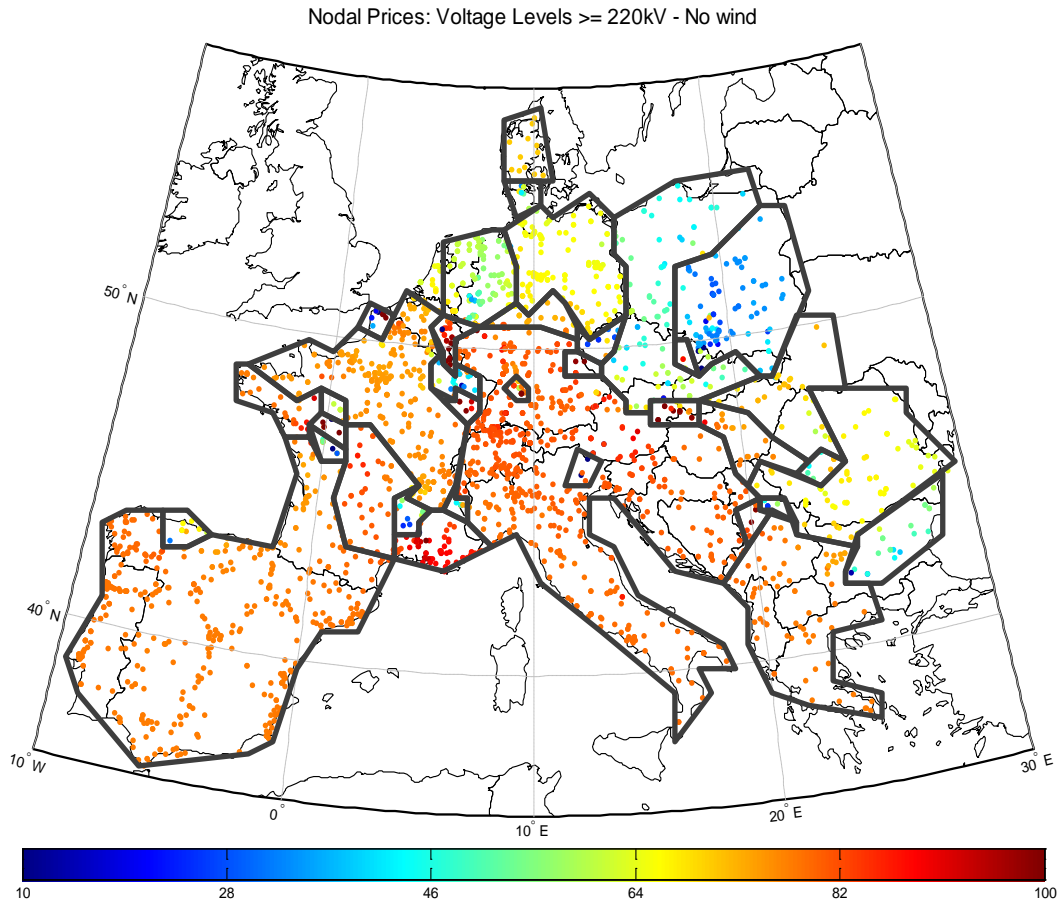
Many transmission constraints **within** countries.



Source: Model results from project Re-shaping;
congestions are indicated with red (range is from blue to red)

Zones for zonal pricing do not match national borders...

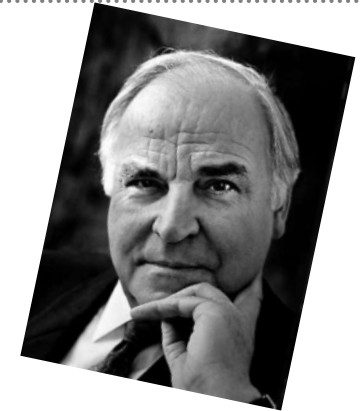
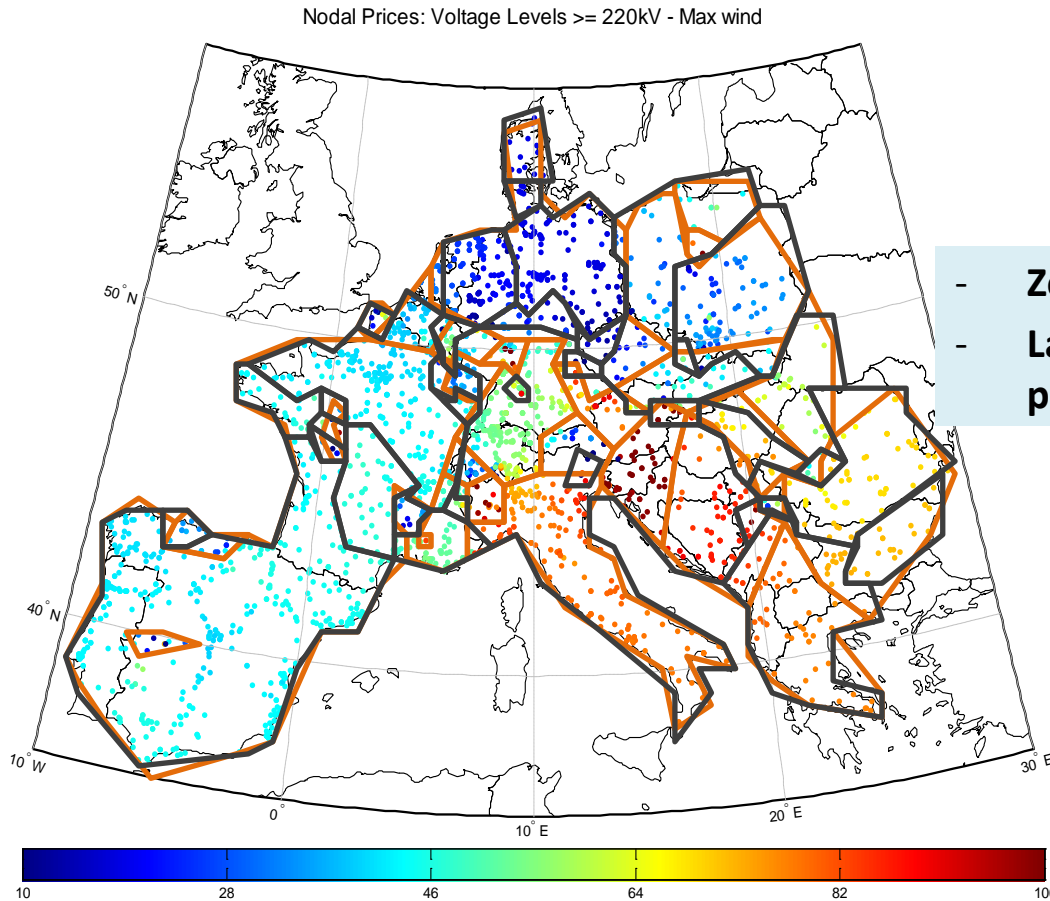
No wind.



Source: Model results from project Re-shaping

...and zones with similar price change with wind output

Max wind.

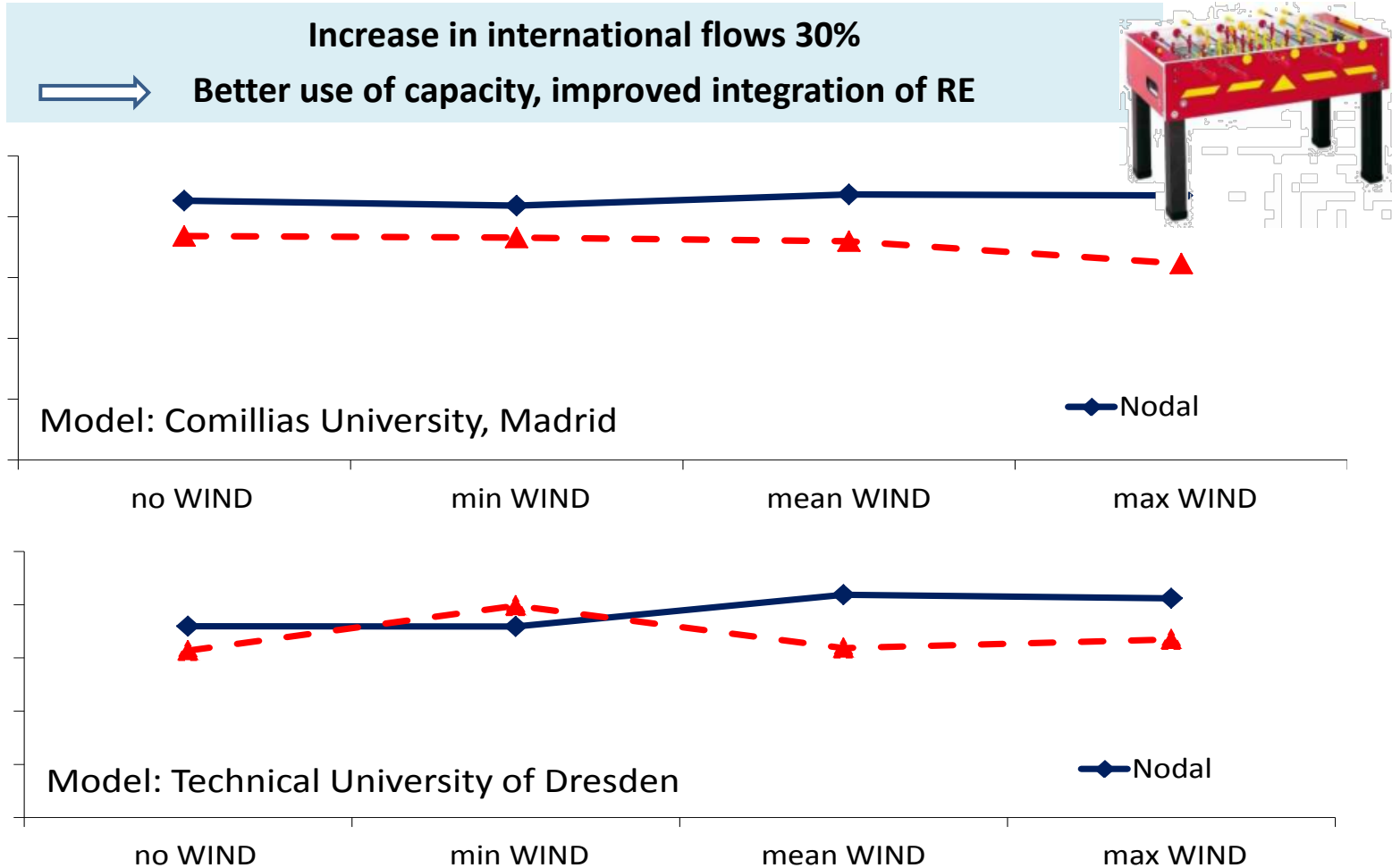


- Zones change hour-by-hour
- Large zones do not match physical reality.

Source: Model results from project Re-shaping

Constraining flexibility

Model results – comparing nodal pricing (small zones) design to large zones

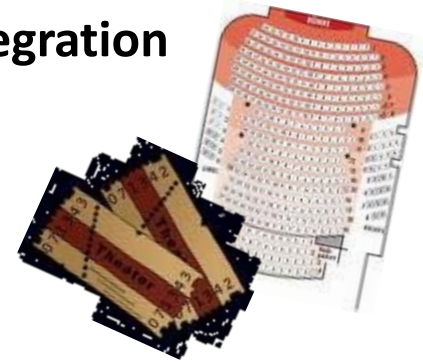


Source: Model results from project Re-shaping

Smart power market design for renewable energy integration

It's all about **TIME**

- Align auction time frames with forecast quality
- Create a joint auction for linked energy products



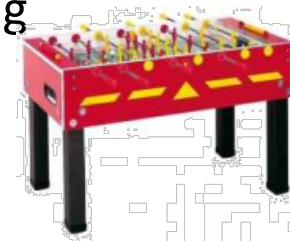
and **SPACE**

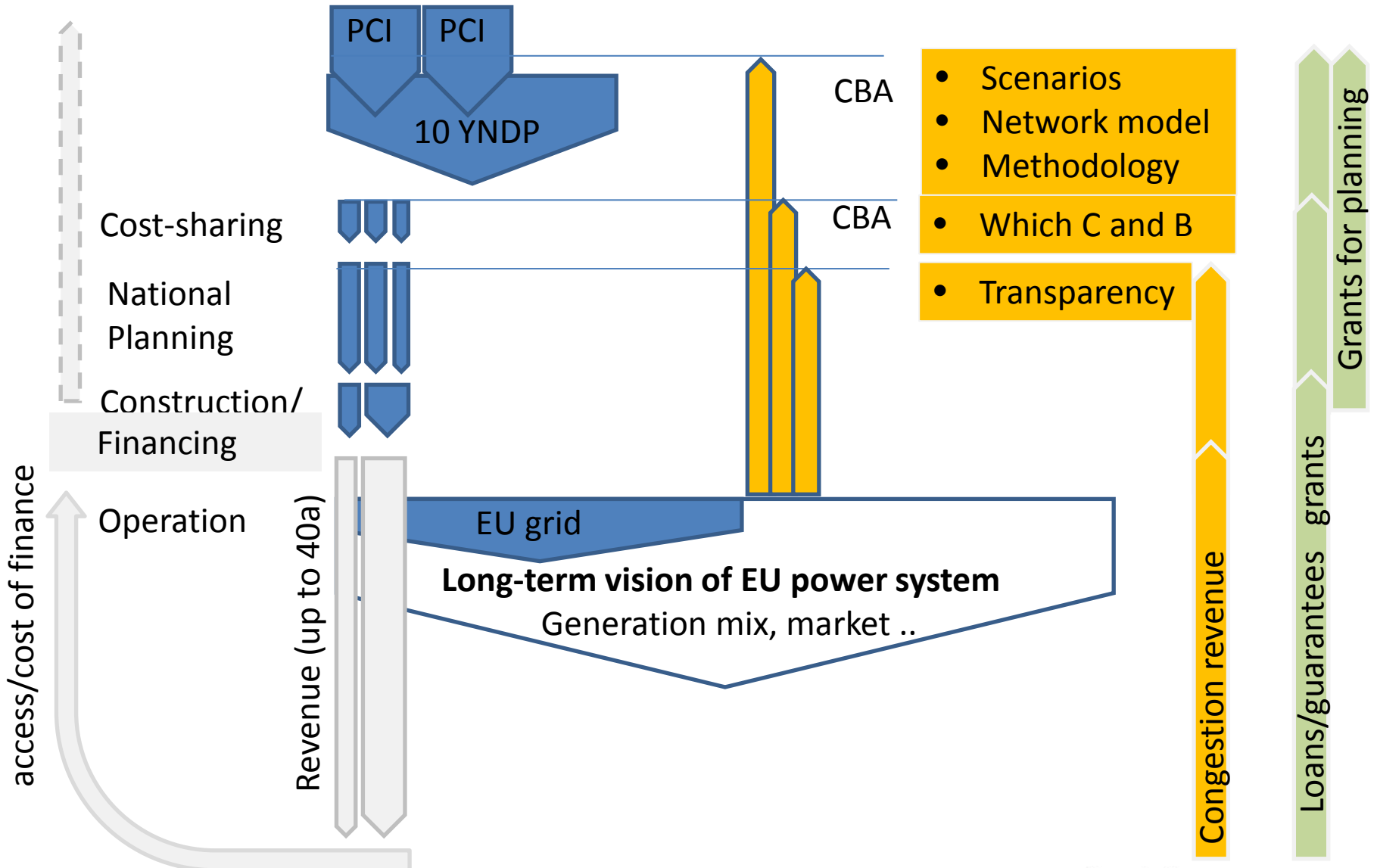
- Use market to allocate access to scarce transmission (and compensate / hedge with financial transmission contracts)
- Unlock flexibility of network with nodal pricing



and of course **SYSTEM SECURITY**

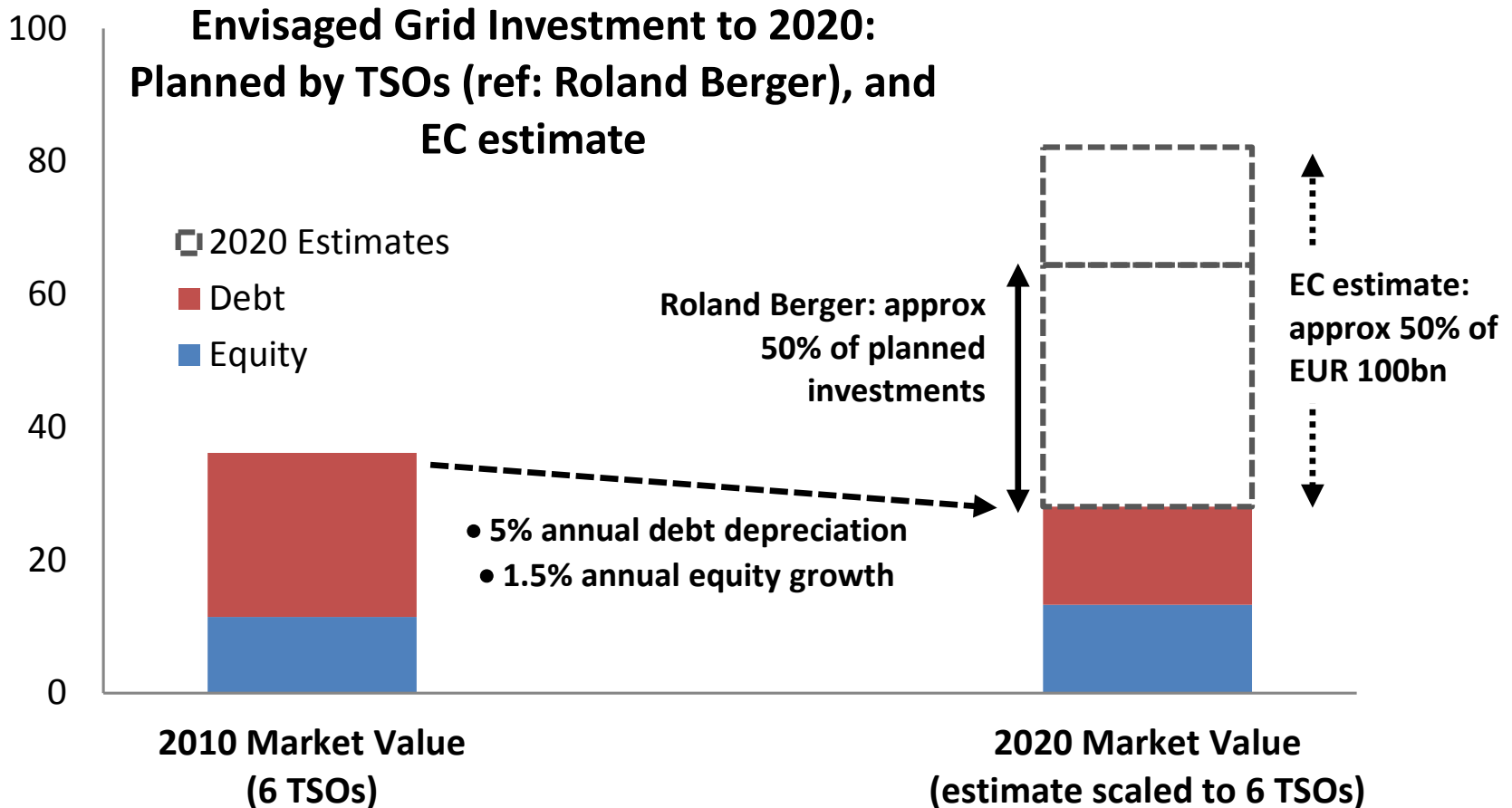
- ISO to host information and responsibility





Grid 2020 – Financing Needs

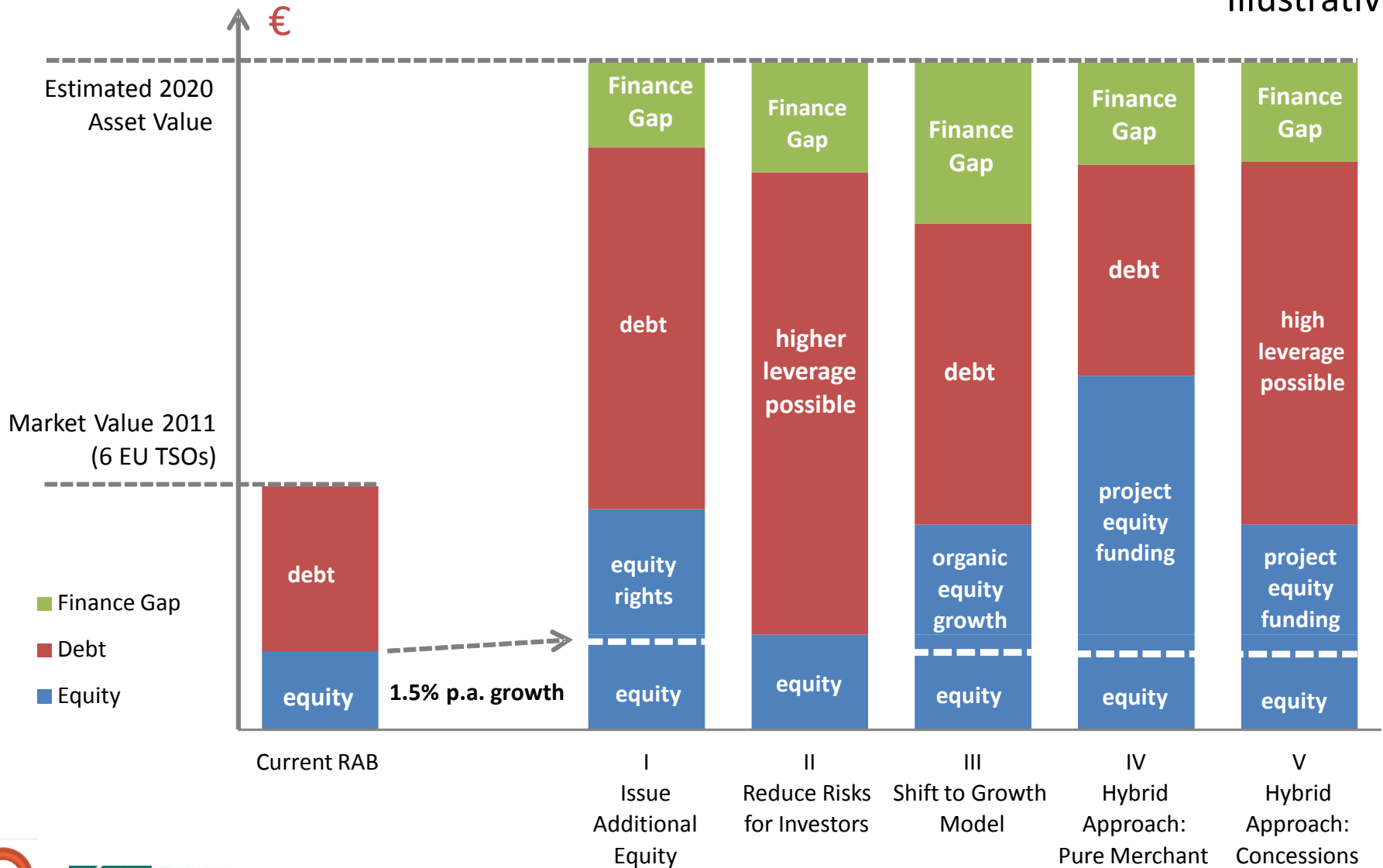
6 TSOs - represent approx. 50% of current EU installed capacity: UK, FR, ES, DE (2), IT



Sources: 'planned' from Roland Berger 2011, 'estimates' from EC, 2011

Options for financing strategies

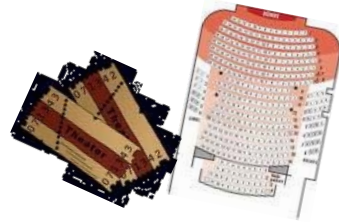
Illustrative



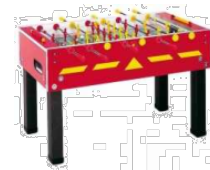
Smart power market design for renewable energy integration

Opening the power market for renewable integration

TIME



SPACE



Framework for grid expansion

INFRASTRUCTURE PACKAGE: (Transparent data, Scenarios,
Methodology, CBA ...)

STRENGTHEN NATIONAL REGULATION TO FACILITATE FINANCING