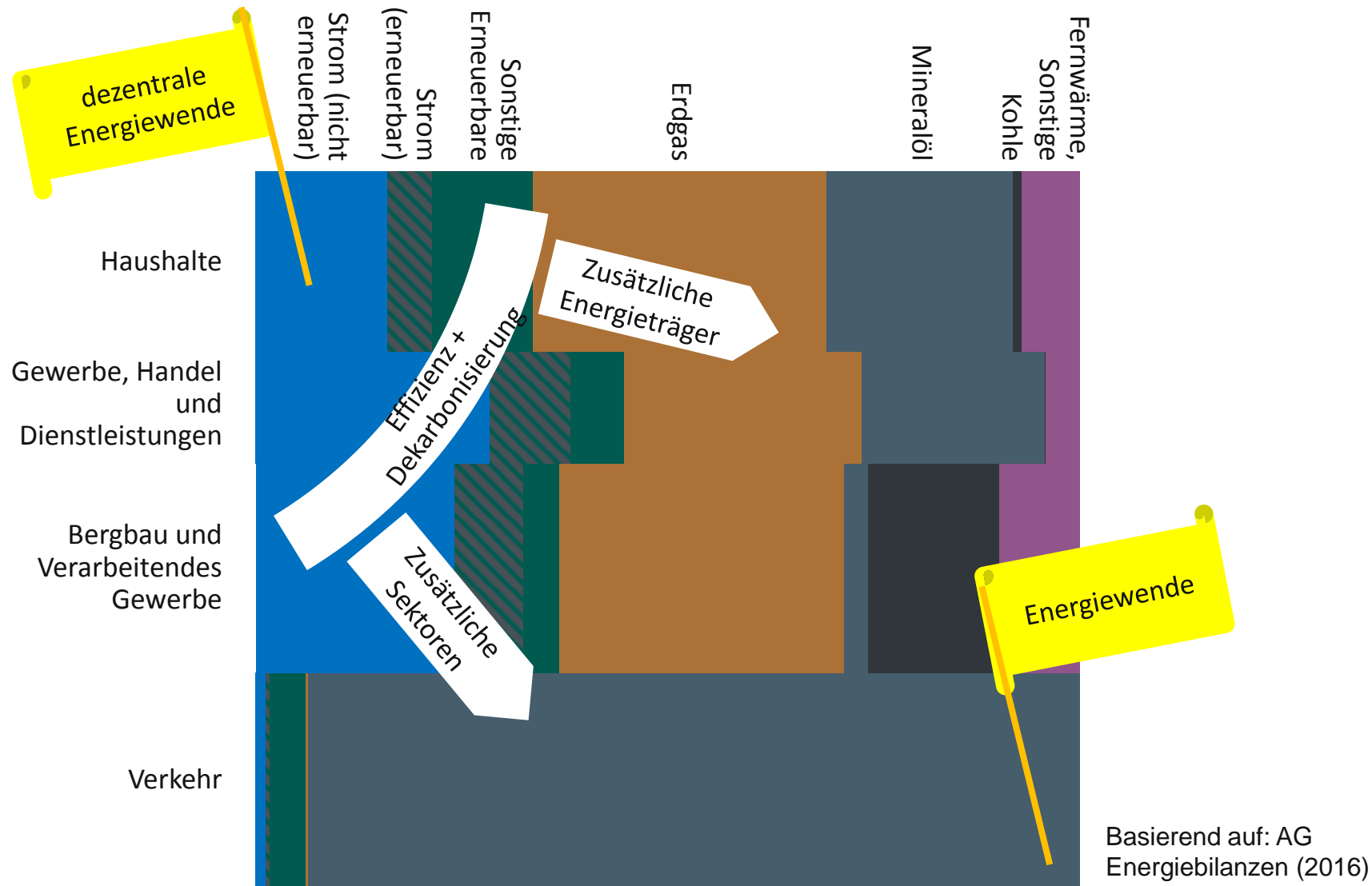


Jahreskonferenz des Leibniz-Forschungsverbundes Energiewende

Gestaltung der Energiewende: Dezentrale versus zentrale Elemente?

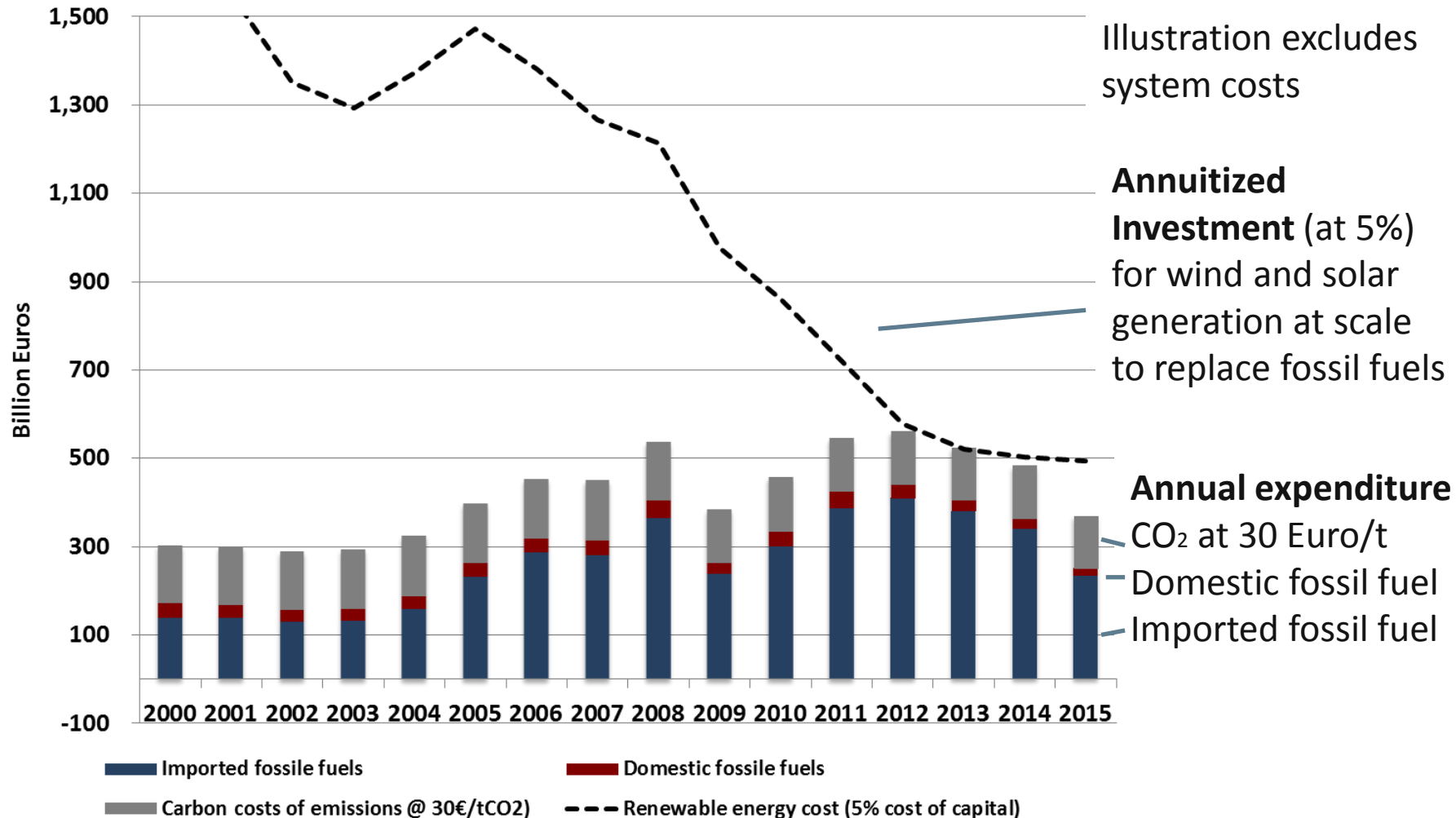
Karsten Neuhoff, 30.06.2016

1 Aufteilung des deutschen Endenergiebedarfs (8700 PJ)



Basierend auf: AG Energiebilanzen (2016)

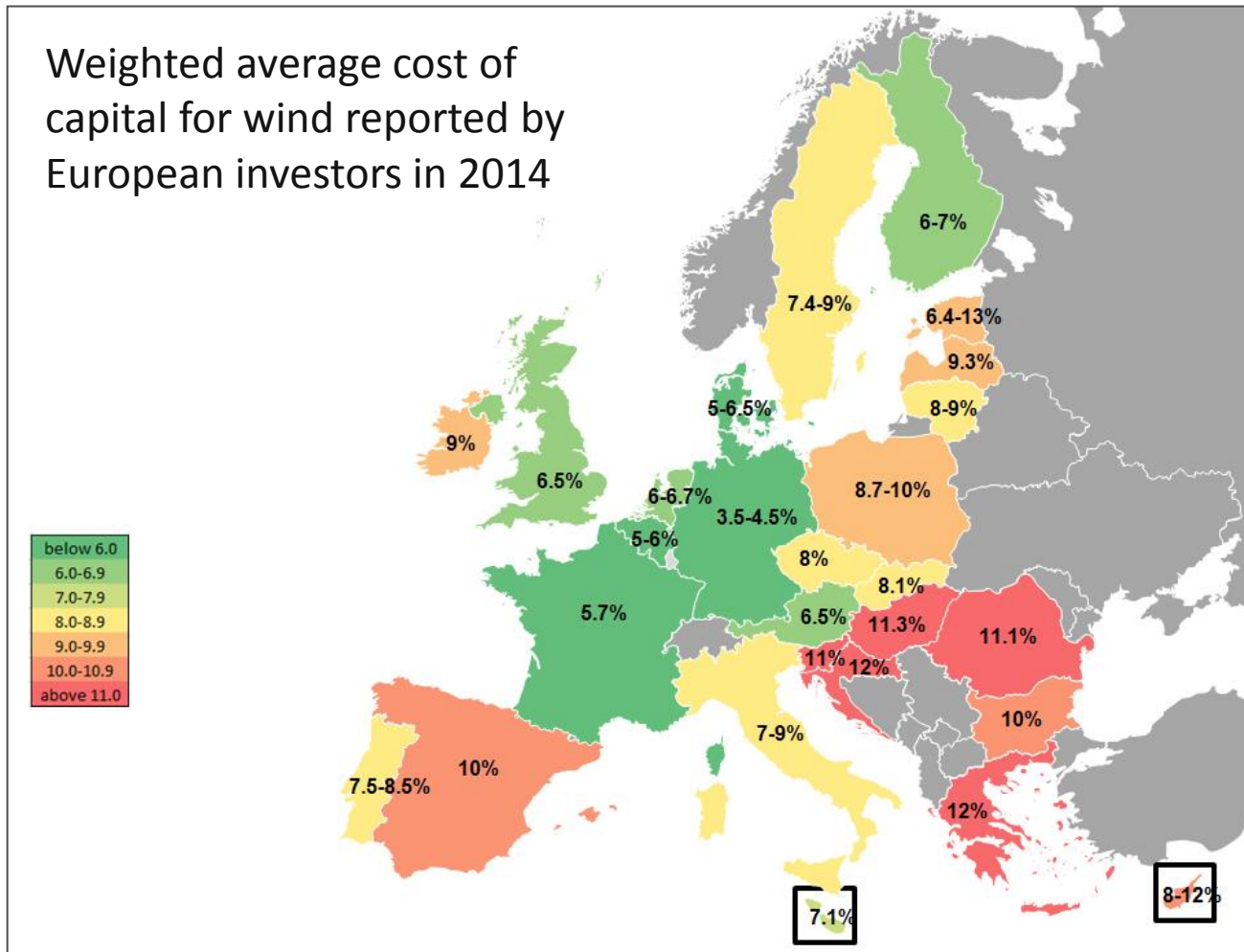
Make use of renewables to stabilize energy costs

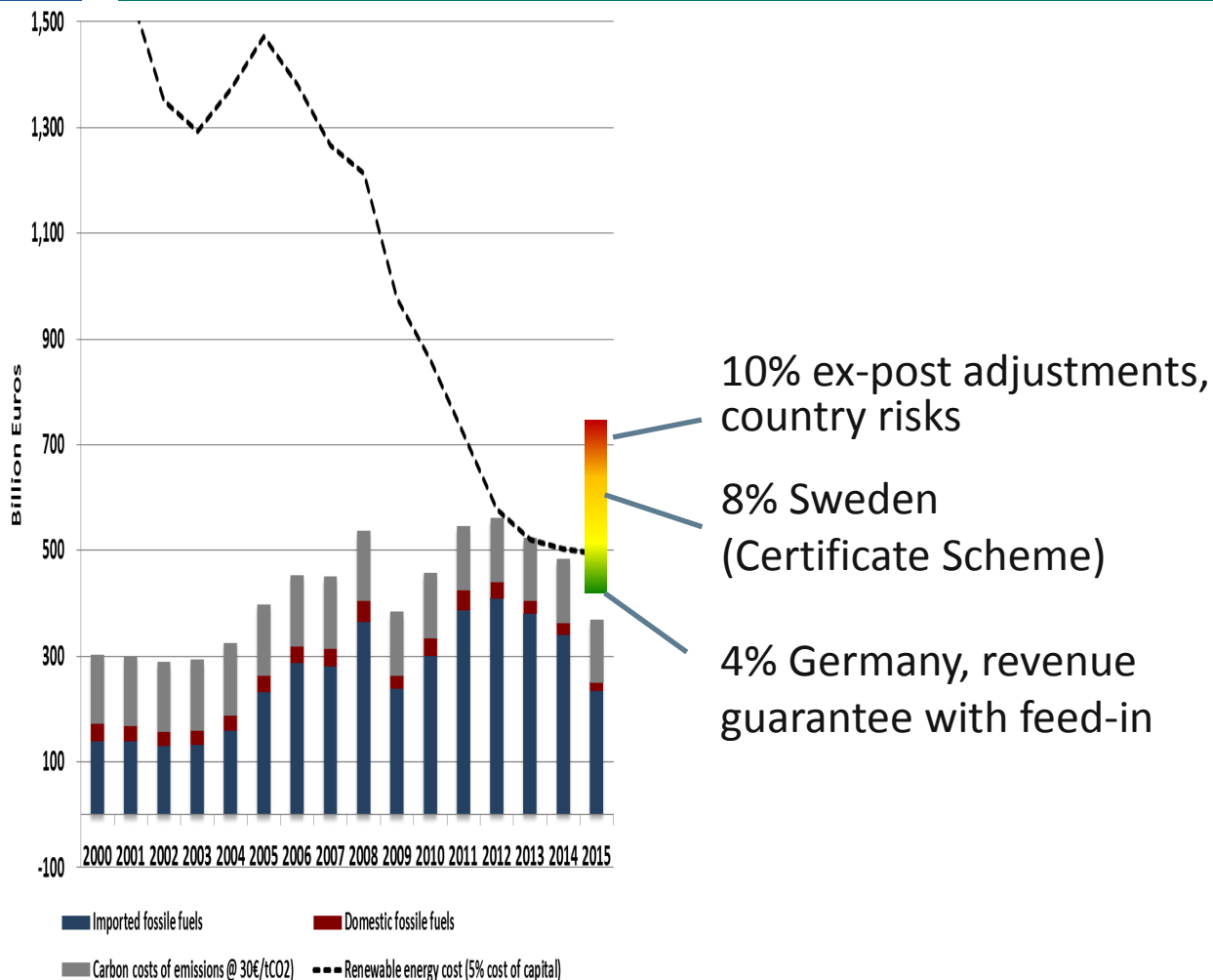


Similar cost level for serving demand with new wind and solar as with fossil fuel:

- *Cost of learning investment in wind and solar dominates debate but is sunk.*

Financing costs increase with (i) country situation (ii) policy design not addressing market imperfection and policy risk





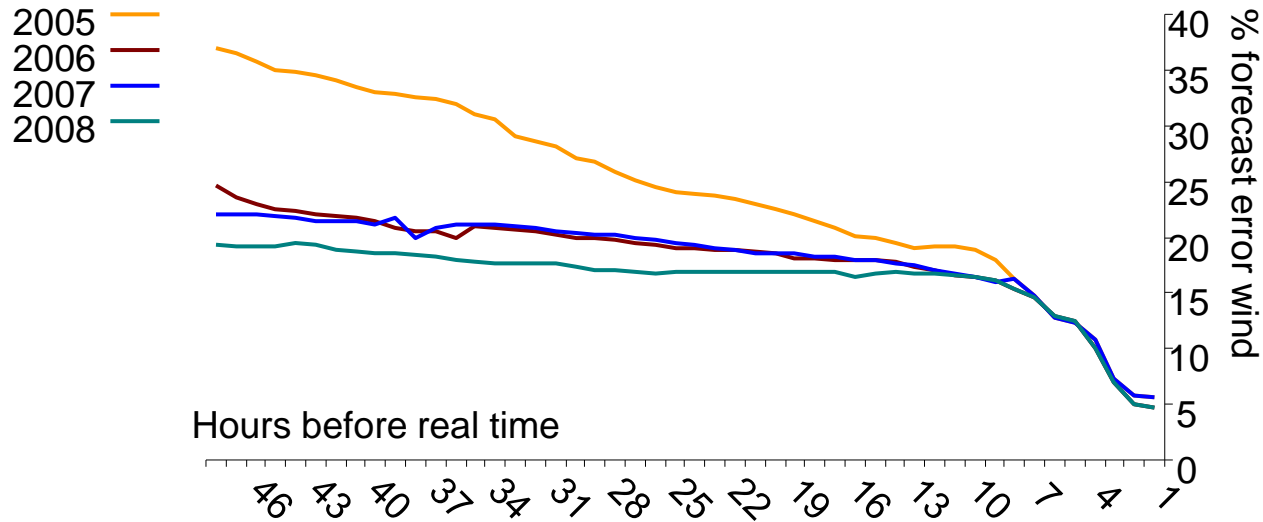
1. Cooperation can reduce financing cost for countries.

2. Policy can reduce financing cost for wind and solar by ensuring long-term stable revenue streams.

3. RE benefit from hedge at times of low power prices: Ensure consumers also benefit at times of high power prices.

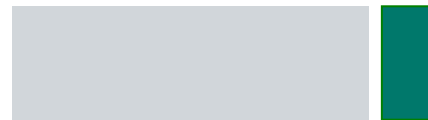
	Wind and solar PV	Fossil fuel based generation ... and flexibility options ...
Capital costs	~ 80%	~ 30%
Main strategic choices	New investment decision Location and dimensioning	(Re-)investment and retrofit decision Closure Fuel contracting
Capacity for government to decide	High (homogenous technology, competition for entry)	Low (inhomogeneous assets, large incumbent players, information asymmetries)
Other aspects	RE trajectory required - For grid investment - Supply chain / planning	Government choices politically contentious
Strategic choices	Policy-driven deployment	Private sector determined (financed on-balance sheet)

Short-term market design open for all technologies: Time frame and platform



**Wind &
solar**

Can & need to adjust
close to real time



**Coal &
most gas**

Require early
start-up



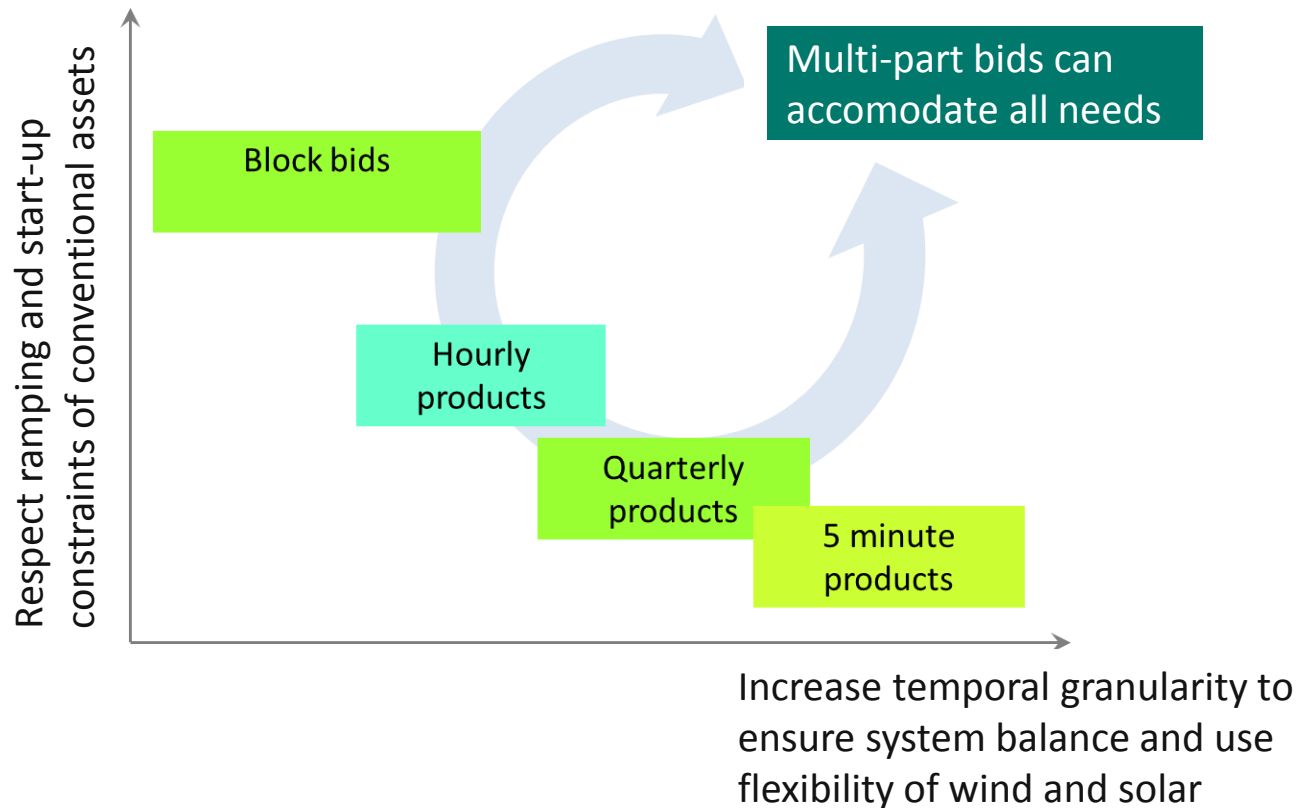
Ensure deep intraday
and real-time markets



and consistent
day-ahead markets

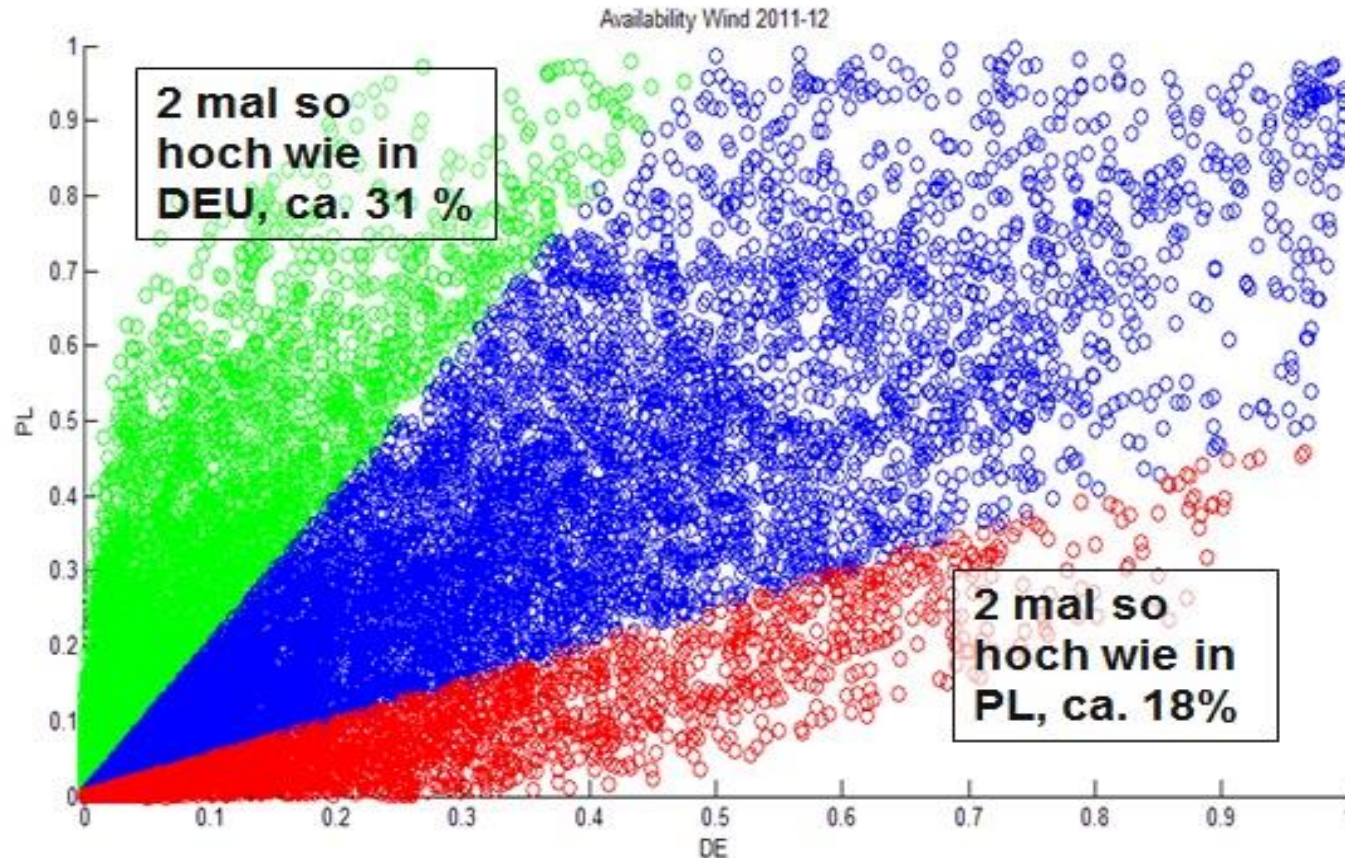
Clearing platforms or auctions are increasingly used in US and Europe for short-term power markets.

Short-term market design open for all technologies: Bid format



Further dimensions that good market design needs to ensure:

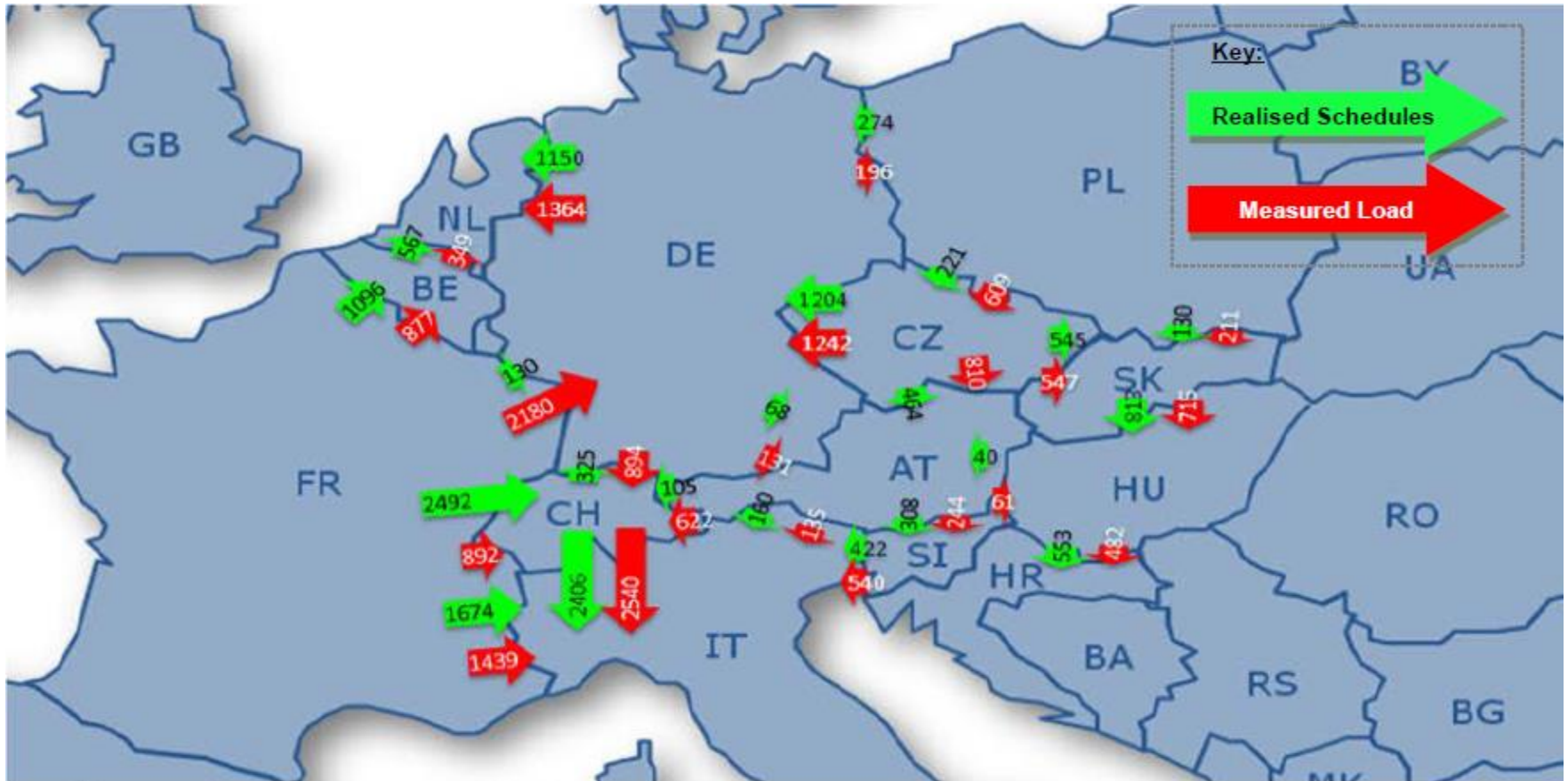
- Effective use of transmission capacity
- System-wide pooling of reserves



→ DEU und PL können Synergien in der Erzeugung bergen.

Es gilt Balance zu treffen zwischen (i) lokaler Erzeugung (Bürgerbeteiligung, weniger Netze) (ii) besten Standorte (höhere Vollaststunden) (iii) räumliche Verteilung (Systemvorteile)

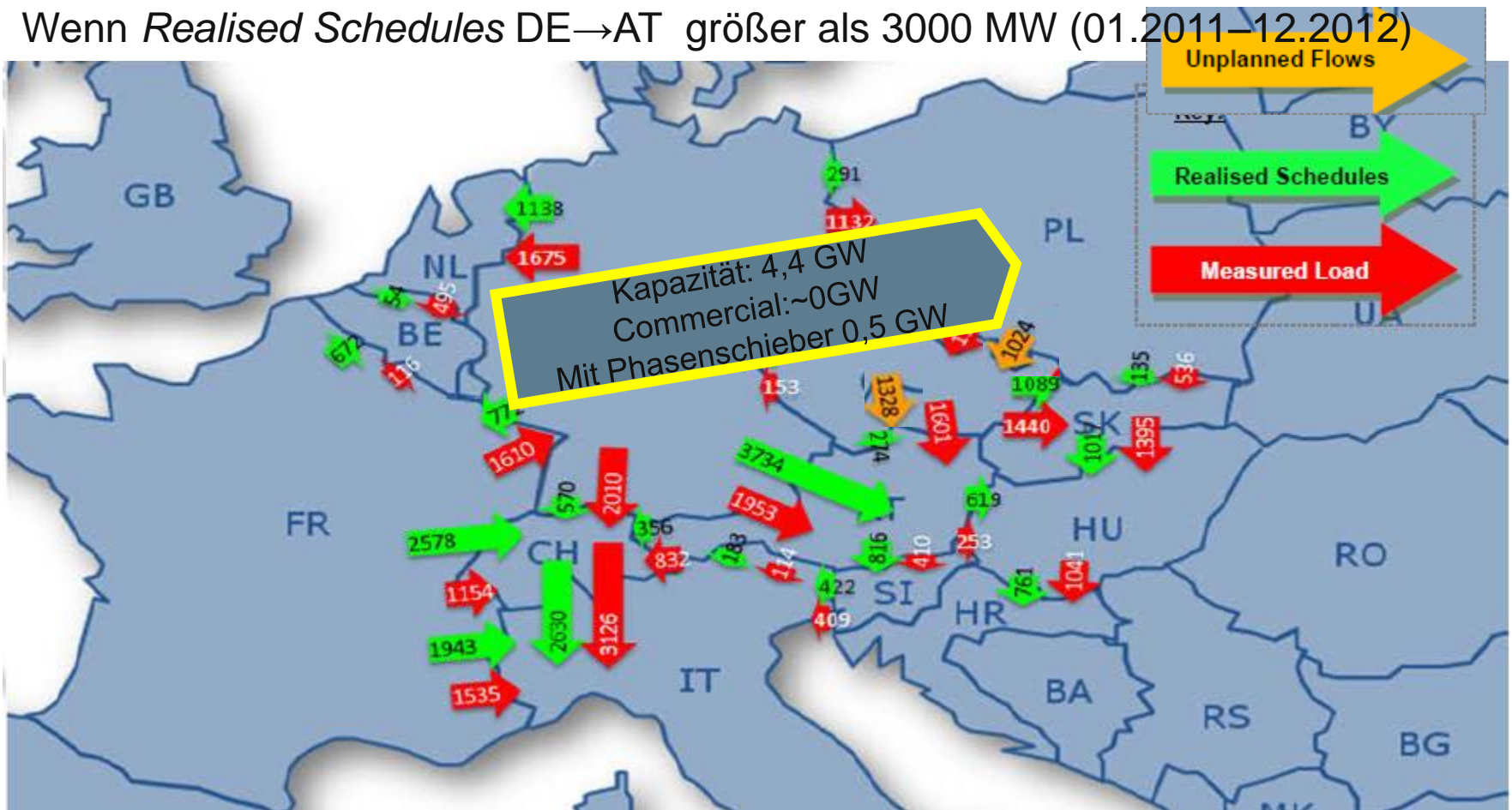
Wenn *Realised Schedules* DE→AT kleiner als 500 MW (01.2011–12.2012)



Warum ist keine Interkonnektorkapazität zwischen DE und PL verfügbar?

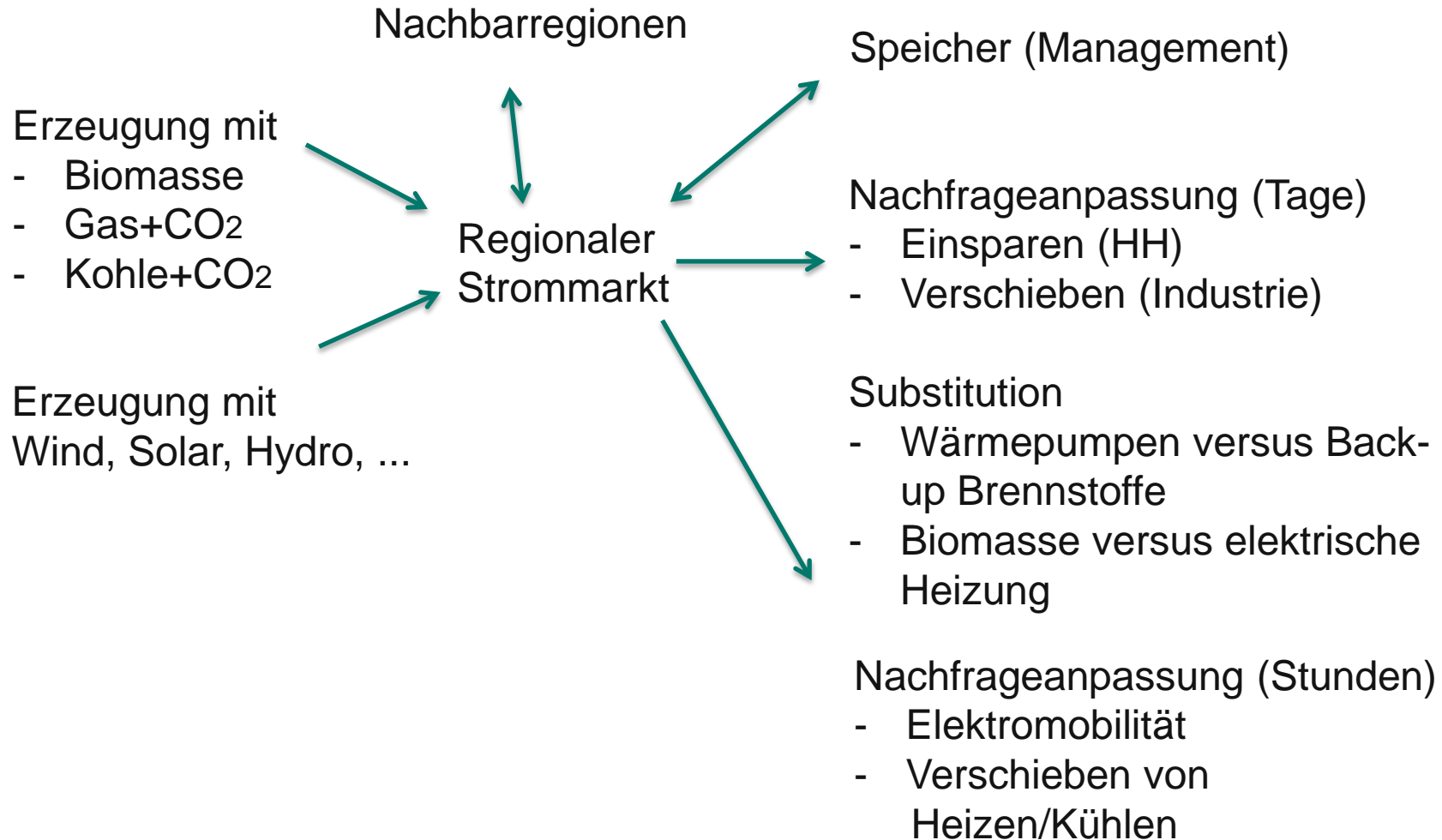
Quelle: Joint study by ČEPS, MAVIR, PSE and SEPS regarding the issue of Unplanned flows in the CEE region in relation to the common market area Germany – Austria, January 2013

Wenn *Realised Schedules* DE→AT größer als 3000 MW (01.2011–12.2012)



Kapazität muss reserviert werden für loop flows und Sicherheitsmargen.

Quelle: Joint study by ČEPS, MAVIR, PSE and SEPS regarding the issue of Unplanned flows in the CEE region in relation to the common market area Germany – Austria, January 2013





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