

The need and potential design for capacity mechanisms in the German/continental European power market

DIW, 03.11.2011

Jörg Jasper
Group Expert Energy Economics & Policy
EnBW Energie Baden-Württemberg AG

The EnBW logo consists of a horizontal orange line followed by the letters 'EnBW' in a bold, blue, sans-serif font.

Energie
braucht Impulse

Our analyses: Need for cap. incentives apparently depends on geographical space generation adequacy (GA) is defined for (preliminary)

Europe/CWE-region

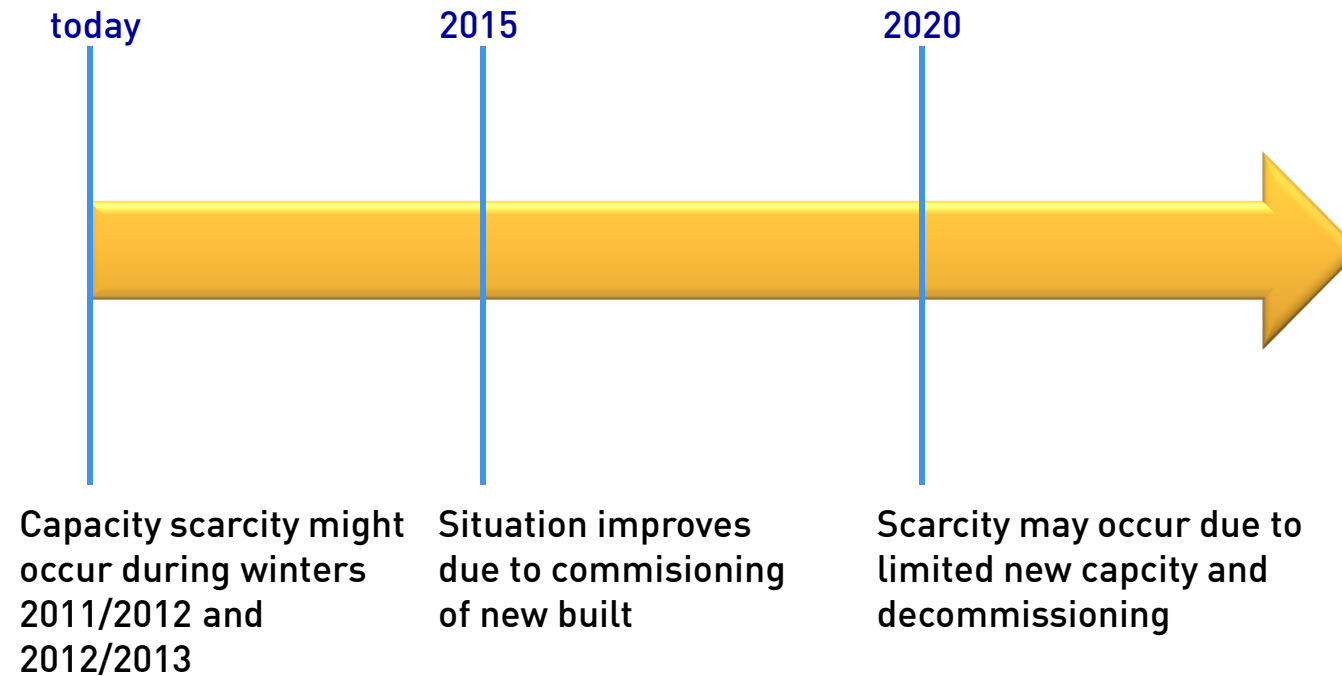
- ‚GA-Region‘ (more or less) identical with geographical space for which scarcity price signal is generated
- Energy only market very likely to be sufficient, esp. if demand made more elastic (DSM)
- No capacity mechanism required
- Local/regional problems to be cured with alternative means (technical solutions in smart grids, like smart transformers, batteries etc. or G-components)

Germany (autarky)

- ‚GA-region‘ not congruent with price area
- Scarcity price for specific requirements of GA-area cannot be generated
- Capacity mechanism perhaps required in the long run; might be transitory if definition of GA-region changes
- No need for fully-fledged mechanism – at least not in the transition period

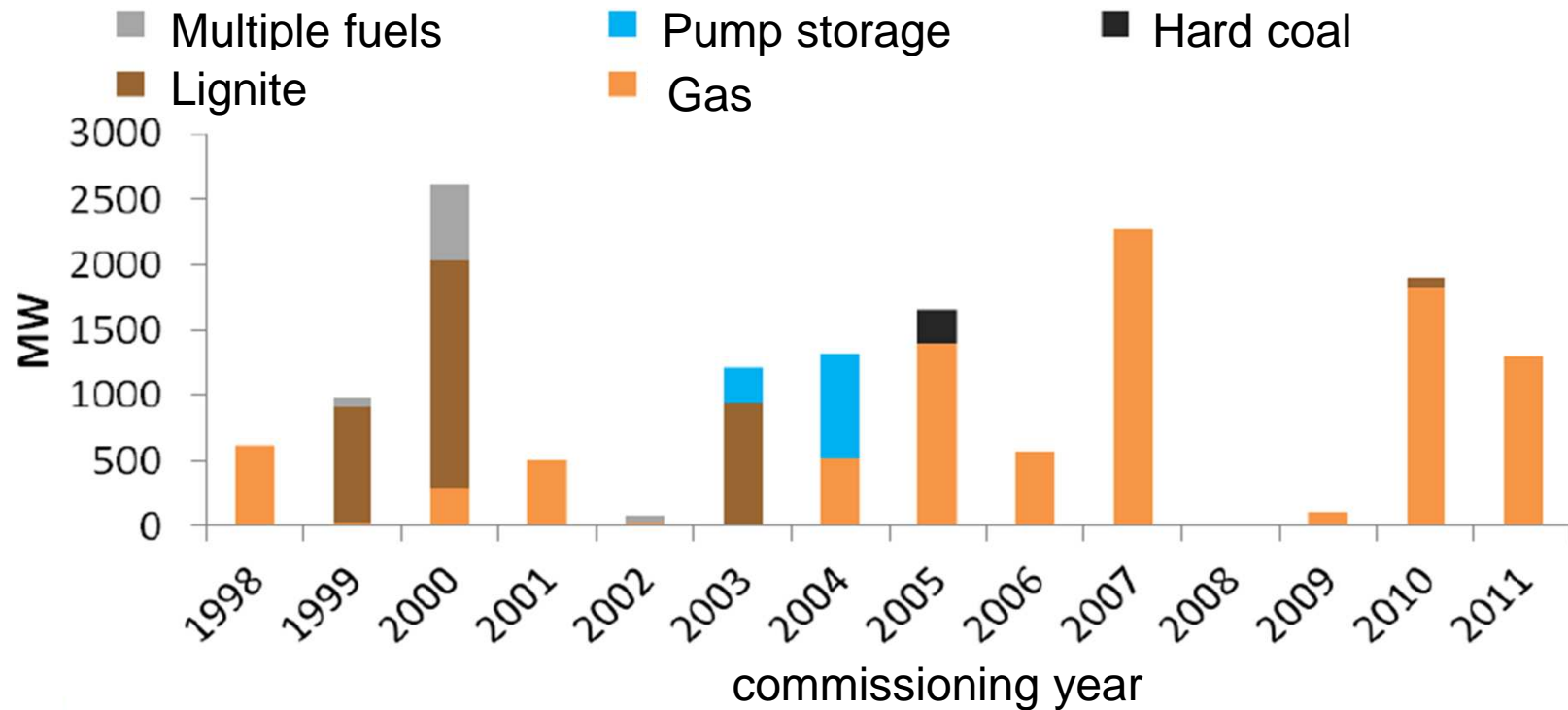
Autarky: Need for new built only in second half of decade (earliest)

EnBW



For time being, markets not willing to pay capacity price.

Significant new capacities built since 1998

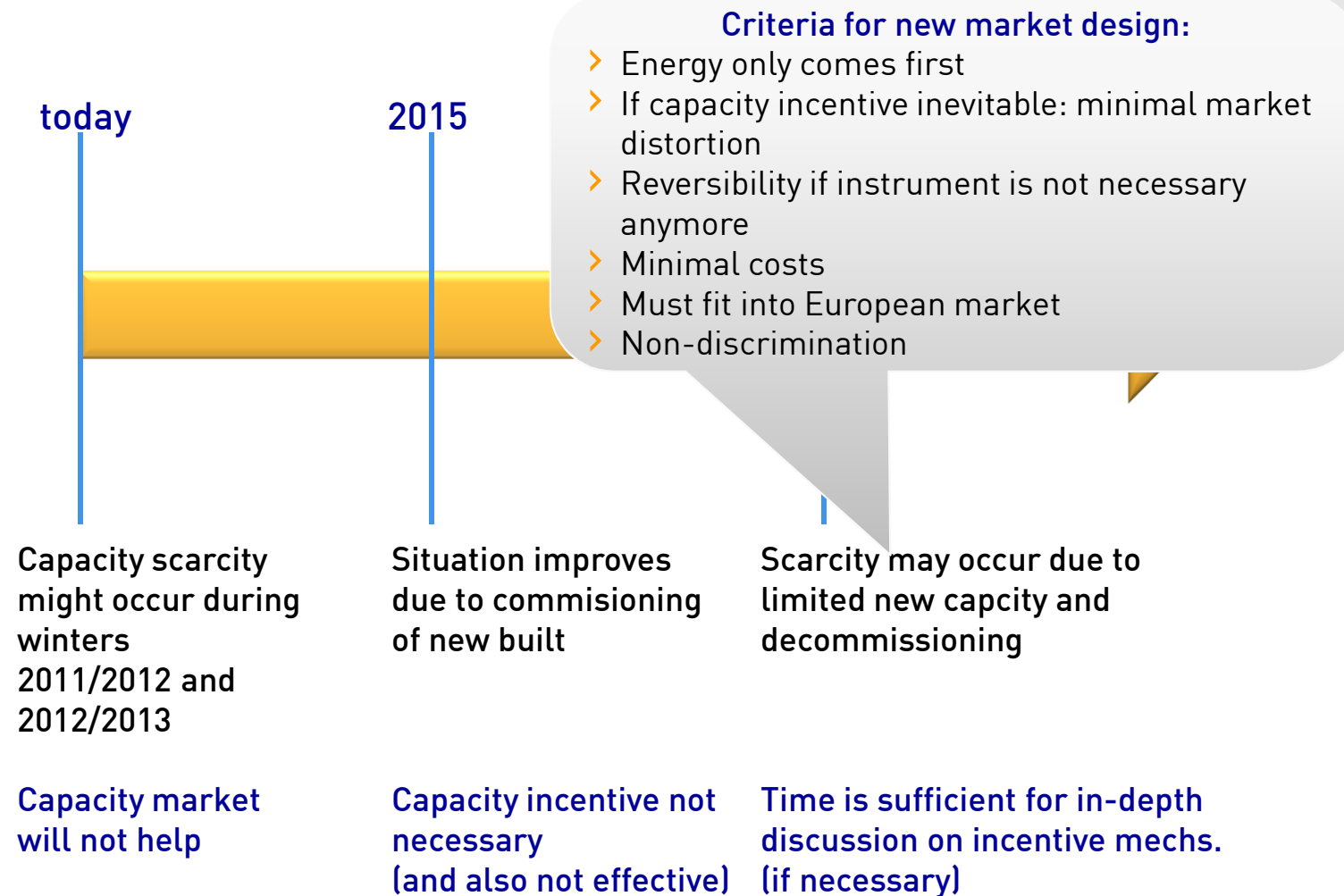


Bundesnetzagentur

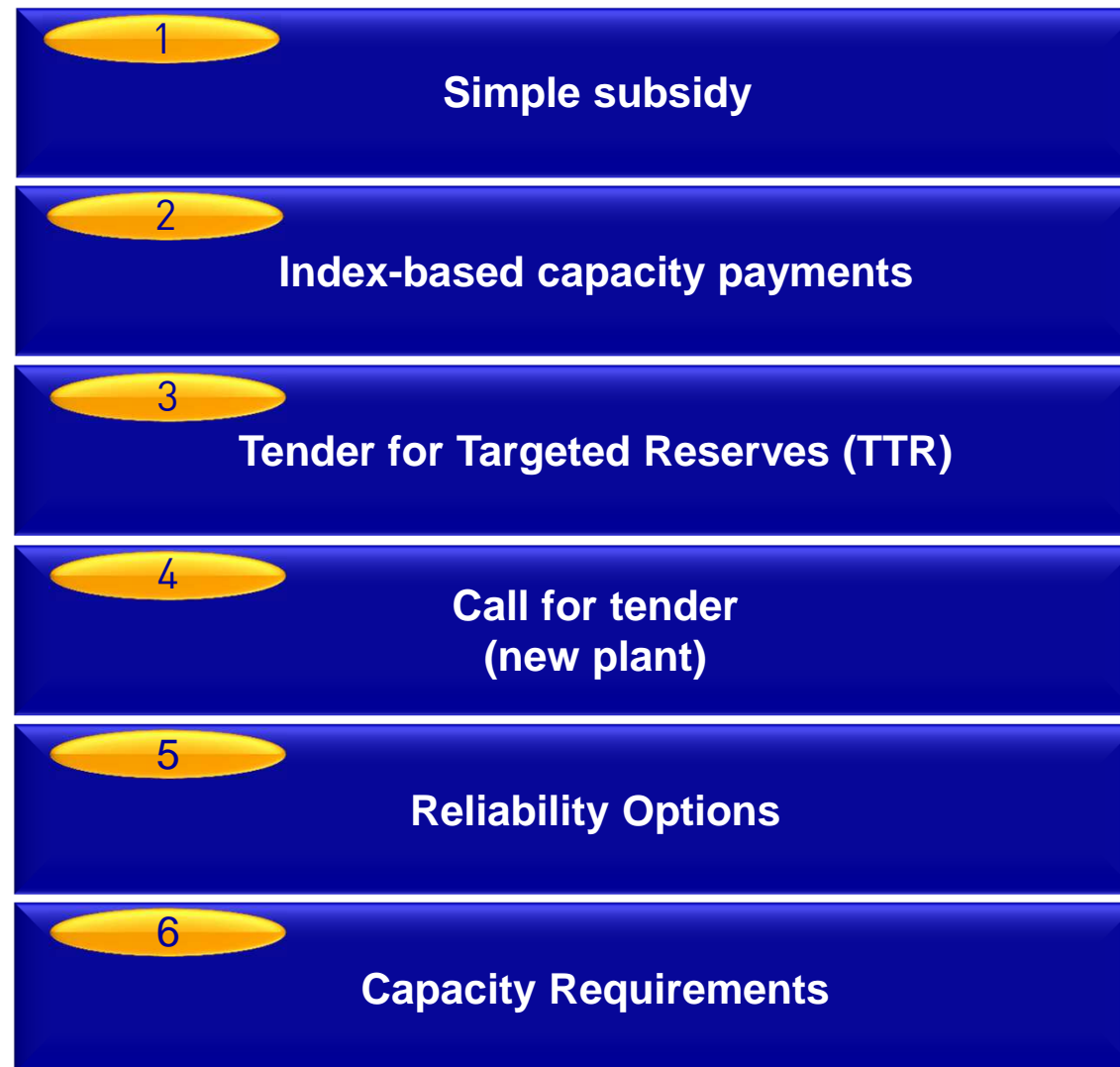
- More than 15 GW new built since beginning of liberalisation despite initial overcapacities
- Since 2007 mostly CCGT (no subsidisation)

Need for new built only by 2020 (if any)

EnBW



Some capacity mechanisms under discussion



— EnBW

complexity

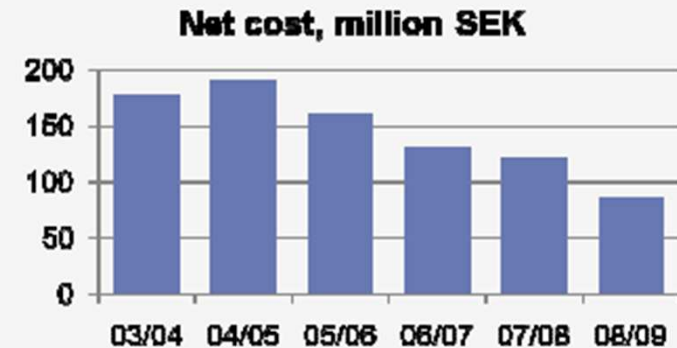
TTR: Swedish example



- *Idea: central body (TSO) procures reserve capacity and withholds it from market unless ,exceptional circumstances' prevail.*
- Swedish TSO calls tender for 2 GW peak reserves: capacity payment
- Plant must be available within 12 hrs (winter); offer in day-ahead market if market does not clear
- 0,01 €/MWh above last commercial bid
- Costs (SWE) limited
- Finland: similar model, but higher costs

Small cost for keeping the the reserve

- The reserve is financed by the balance responsible parties
- Annual cost about 150 million SEK (15 million euro)
- Trend of decreasing cost. But long term costs may increase again.



Sweco

Some aspects of TTR to be discussed

Advantages

- TTR can be implemented at short notice, if necessary, and easily be removed
- Limited (but probably existing) influence on energy-only market
- Less spot market distortion than alternative simple approaches (subsidies, tender for new plant); open for DSM (SWE)

Issues to be tackled

- Market power
- Optimal timing of implementation/Lock-in effects
- Parametrisation and other design issues
 - Dimensioning of reserve capacities (if too many reserves: high costs, perhaps artificial scarcity in spot market; if not enough: capacities not contracted may retire forever)
 - Activation rules (second auction?; highest commercial bid or spot market limit, other price?)
 - But Problems appear solvable, esp. compared to alternative mechs.

→ If capacity mech. is required (autarky), TTR may be feasible and pragmatic solution for transitional period.

Summary



- Capacity problems likely to occur during next winter periods. Regulator attempted to address problem already.
- No scarcity for several years to come.
- Scarcity depends on geographical area for which GA is defined. In case of autarky for GER scarcities may occur by end of decade. For CWE-region energy only may be sufficient to provide GA, esp. if demand is made more robust. Subsidies won't help anyway.
- EO-Market provides efficient outcomes and must continue to be the reference.
- Capacity incentive mechs. should only be in place if other means to increase GA (e.g. DSM) not sufficient : "*We particularly recommend to address the chief market failure—the absence of a robust demand side—that is the primary motivation for capacity markets*" (Cramton/Ockenfels (2011), p. 3)
- Capacity markets always interfere with energy only markets (largely depends on design, however). Mistakes in market design may cause huge inefficiencies. Problems well understood theoretically, but danger of political agendas.
- Mechs. must be as ‚microinvasive‘ as possible and reversible, esp. in case of changed GA-definition → TTR for transitional period?

Thank you!

Dr. habil. Jörg Jasper
Group Expert Energy Economics & Policy
EnBW Energie Baden-Württemberg AG

The EnBW logo consists of a horizontal orange line followed by the letters 'EnBW' in a bold, blue, sans-serif font.

Energie
braucht Impulse