Abstract: Structural changes of the electricity market

Regulatory approaches under increasing shares of renewables

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Abstract

Discussion paper: Structural changes of the electricity market
- regulatory approaches under increasing shares of renewables

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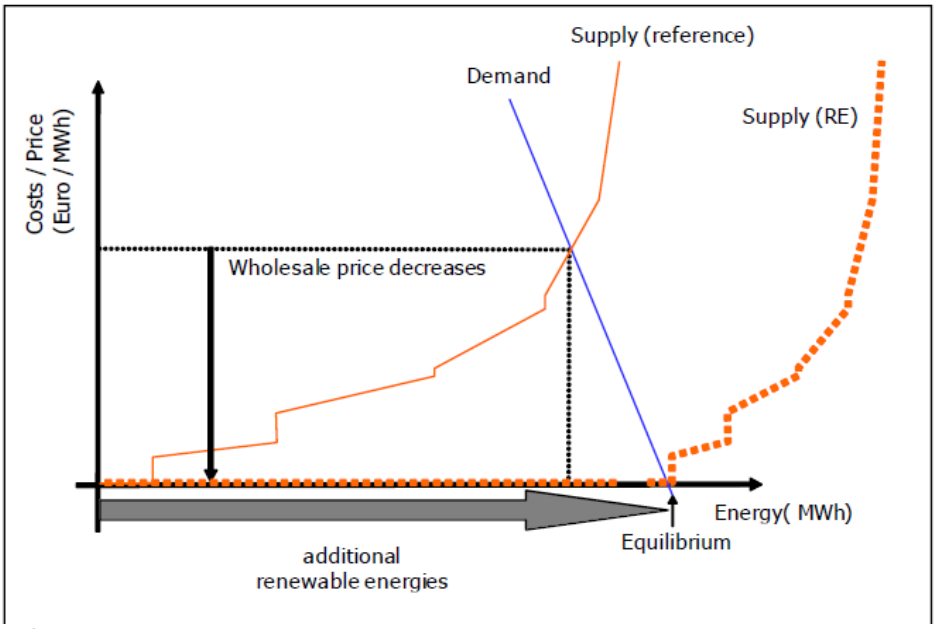
The characteristics of renewable electricity production, namely close-to-zero marginal costs and fluctuating supply, results in an inherent problem: Lacking incentives for the provision of renewable electricity generation capacity. The electricity price is driven towards zero, when renewable production shares increase, as shown in the following diagram, driving down the revenue of electricity producers.



Price formation in competitive markets. Source: Bode 2008

This creates a dilemma: The incentive to invest in additional renewable installations decreases with increasing market penetration in liberalized markets. That is, the higher the share of renewables, the less profitable is the installation (of any generating capacity, not only renewable) – the 'missing money' problem.

A paradox situation results: With the current market structure, renewables are dependent on support schemes, also in the long run. This is contrary to conventional wisdom, where learning curves and technological development result in increasing competitiveness over time.

This paper discusses tendering schemes as a regulatory mechanism to ensure the provision of (renewable) production capacity.

Furthermore, the paper discusses the importance of demand response in creating a well-functioning electricity market. Especially the role of the "prosumer", i.e. consumers with e.g. electric cars and heat pumps are considered.

Furthermore, a redefinition of the role of the Transmission System Operator (TSO) and Distribution System Operators (DSO) is discussed.

References:

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