

MANAGEMENT SUMMARY

WHITEPAPER ON ELECTRICITY SPOT MARKET DESIGN 2030-2050

Driven by the climate conference in Paris in December 2015 countries worldwide are confronted with the question of how to shape their power systems and how to establish alternative technologies to reduce harmful CO₂ emissions. The German government plans that, even before the year 2050, all electricity generated and consumed in Germany should be greenhouse gas neutral. To successfully integrate renewable energies, a future energy system must be able to handle the intermittent nature of renewable energy sources such as wind and solar.

One important means to address such electricity production variability is demand-side flexibility. Here, the industrial sector plays a major role in responding to variable electricity supply with adequate flexibility. Accordingly, a future market design must be well suited to accommodate demand-side flexibility and address the intermittent nature of important renewable energy sources.

The current electricity market design in Germany is not well suited to deal with increasing levels of renewable energy. In particular, it does not embrace demand-side flexibility. Almost 6 GW of power curtailed in 2019 make it evident that the rules that govern electricity markets require changes. This is the case, as these rules were designed at a time when electricity generation was concentrated on a few large and dispatchable conventional power plants and demand was considered inelastic.

Against this background, the whitepaper recommends a move toward a locational, marginal price-based system together with new bidding formats allowing to better express flexibility. We argue in favor of a one-step introduction of locational, marginal prices instead of repeatedly splitting existing zones. Frequent zone splitting involves recurring political debates as well as short- and long-run instabilities affecting, for example, the basis for financial contracts. Importantly, with increasing levels of distributed and renewable energy sources it is very challenging to define stable prize zones. The recommendation is the outcome of an intense debate about advantages and disadvantages of different policy alternatives.

However, such a transition to locational, marginal prices is not without challenges, and it is a call to arms for the research community, policymakers, and practitioners to develop concepts on how to best facilitate the transition and ensure a reliable and efficient electricity market of the future.

Instant access to the whitepaper: <https://s.fhg.de/whitepaper-espm�>



GEFÖRDERT VOM

Bundesministerium
für Bildung
und Forschung