

Are electricity market and policy designs fit to reach the Paris Agreement? Perspectives from California, Germany and Europe

Key messages

The discussions during the workshop showed that there are still many open questions and uncertainties with regard to making the electricity market and policy designs fit to reach the Paris Agreement goals. Increasing flexibility as well as sector coupling/electrification are common themes for the way forward in California, Germany and other jurisdictions pursuing this path. However, both face technological, regulatory and social challenges that need to be tackled in the next years. The workshop made clear that this is a new wave of regulation where experimentation is only about to begin – with high potential for learning from each other along the way.

In that regard the workshop itself also offered insights about which formats of international exchange are suitable for “learning lessons”: Discussions can be very fruitful if they focus on either big ideas or small ideas. Big ideas such as “getting the prices right” (see below) are general design principles that facilitate discussion and reflection about the overall policy model in which all types of stakeholders can easily engage. This helps to understand where the policy-making process is headed to at large, and why this direction is taken. In contrast, small ideas such as “design options for flexibility markets” (see below) are typically solutions to rather well-defined policy problems. This is of particular interest for experts and has a higher potential to eventually lead to policy transfer. The workshop showed that it is commendable to combine both, as discussing big ideas can provide important context for discussing small ideas.

Key messages

The German and Californian electricity systems have reached an inflection point. A new wave of deep policy and market design reforms are required to achieve the decarbonisation of energy and other sectors. Above all, this implies to “get energy and carbon prices right” eventually.

In this regard, three core issues emerged from the discussions:

1. National and international carbon pricing is an essential part of achieving ambitious climate change mitigation targets.

Achieving both the decarbonisation of electricity generation and the electrification of final energy demand, in order to meet climate change mitigation targets, requires to get the prices right. This means to commit to an adequate carbon price signal on the national and international level. On the EU level this implies the necessity to implement a carbon price floor that provides a stable and credible signal to investors in renewable generation assets and flexibility options. Moreover, the EU carbon price is necessary to support the implementation of phase-out coal policies. In the absence of EU carbon prices, national solutions will need to be developed. A sufficient carbon price is further needed, also in combination with an energy tax, to facilitate the decarbonisation of the transport and heating sector as well as other non-ETS sectors.

2. The future role of command and control or market-based instruments is a major decision point for policy makers.

Command and control instruments are regarded as a supplemental policy options in the absence of adequate (carbon) price signals, yet they may come at potentially high costs (e.g. German coal phase-out). More broadly, as the transition progresses, their lack of efficiency compared to market-based instruments becomes of increasing concern. At the same time, regulators still seem to favour command and control mechanisms because they are easy to understand and have worked in the past. Getting the prices right is thus also an educational endeavour.

3. Congestion pricing in European electricity markets is one of the most important steps to realise the next step of power market decarbonisation.

Inefficiencies derived from the lack of locational price signals in European power markets become increasingly evident in markets with high variable renewable sources. Rising costs for market based redispatch are a consequence of these inefficiencies. For example, in Germany where electricity trade occurs more and more close to real-time, redispatch becomes more difficult and expensive. Moreover,

the German single price zone creates counter-productive redispatch incentives (thermal generation preferred to renewable generation). Rising redispatch costs and other congestion management related costs already today provide the value of locational investment in the grid. It can also be regarded as “congestion value stream” for flexibility options and business models in flexibility provision (e.g. demand aggregators) the need of which will steadily increase overtime.

4. It’s not only a question of policies, public acceptance also plays an important role

If implemented, policies incentivising the above-mentioned solutions will only level part of the path needed to create a market based on high shares of renewables. Public acceptance of energy infrastructure will be just as important as issues like availability of space, ownership or compensation will play a crucial role when it comes to the physical implementation.

5. Active steps towards understanding and overcoming the barriers towards policy changes need to be taken

Considering that many of the above recommendations (point 1-3) leading to the design of policies that would allow compliance with the Paris Agreement are not new, it remains unclear why they have not been implemented yet. A useful next step would therefore be to identify relevant bottlenecks and try to overcome them.