

## Capacity mechanisms: EU or National Issue?

Are capacity remuneration mechanisms helping to build the market or just a symptom of what does not work?

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In a competitive energy system, generation investment choices are left to investors. It is then the responsibility of the market actors to invest and ensure peak, medium and base load generation, based on market perspectives and trends. If through actors' investments the stability of the system cannot be ensured (because, for example, peak generation is not sufficient to satisfy demand), some measures have to be taken. These can have economic and system integrity impacts on neighboring systems, especially if they are connected. This is precisely what is happening in the European electricity market.

While the internal electricity market should be completed by 2014, the adoption by Member States of capacity remuneration mechanisms in an uncoordinated way may lead to new market distortions. Whereas national capacity remuneration mechanisms (CRMs) already exist in several European countries (e.g. Italy, Spain, Sweden), others have taken steps in the past months to implement CRMs (France, UK) or contemplated to introduce them (Germany). After the puzzle of more than 27 different regimes for incentivizing renewables, the same heterogeneity will appear in the capacity markets if no coherent and Europe-wide framework is proposed. While increased interconnections and market coupling will lead to more efficient and liquid markets at regional and EU levels, the opposite will happen if Member States adopt national solutions without looking beyond their borders.

In order to understand why we have come to this point, it is essential to start

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from the roots of the problem and to throw light on some false beliefs.

It would be much easier to blame market liberalization and unbundling or RES integration into the market. The truth is that both measures were important. Timing showed that the RES production is developing very fast and creates local over capacity in some national systems, while when there is no wind or sun, the conventional plants are still needed to supply the customers, ensuring thus a backup function for variable RES.

## **The market**

The changes introduced in the electricity market, by and after the liberalization process at European and national level, have not led to the perfect equilibrium in generation means and has sometimes resulted in decommissioning and mothballing of generation assets. This happened for example in Sweden in the late '90, where nuclear power plants were decommissioned, creating capacity gap. To respond to specific peak situations and ensure the country security of supply, Sweden put in place a "temporary strategic reserve" mechanism. The "temporary" mechanism was initially set until 2020, when eventually (or possibly) the market should take over.

Experience shows that early decommissioning and lack of visibility induced by changing legislation and world scale events (e.g. earthquake in Japan, shale gas in the US, CO2 market in Europe) might endanger the ability to satisfy peak demand.

Moreover, there is not much left to the market in terms of generation choices in some states. Support schemes for renewables have increased the share of generation assets being build under direct regulation, instead of under a market regime. In Germany for example, by 2030, only 20% of the total power production will be generated by sources competing in the market. How to combine the process of market liberalization with regulated RES schemes?

## **Prices**

Prices are still regulated in some countries and spot prices are not affecting most customers directly with the right price signal and, as a result, demand is not really participating in the market unless dedicated schemes are in place. Moreover, other mechanisms that hamper price signals to function according to supply/demand theory, such as price caps, have been introduced. They can vary sensibly (from as high as €3000 in the spot Central Western Europe market or to very low prices, 180 €/MWh, in the Iberian market). On the other hand, energy only solutions that may lead to price spikes would be politically difficult to accept, even though there are examples of countries having adopted very high price caps (e.g. Australia).

## **Renewables boom**

The 2001 and 2009 RES Directives boosted the volume of electricity generated from renewables injected into the system, an important share being generated by intermittent sources (wind, sun). Besides the surprise effect, Directives and national

legislations missed an important aspect: balancing and back-up. The different national subsidy schemes only guarantee the cost recovery of the (not yet fully competitive) RES assets, without taking into account the hidden costs for “back-ups”. These sometimes require that some conventional plants, that are not longer profitable, are kept as “back-up” capacities. Also, the additional distribution grid investments necessary to bring the energy from a multitude of remote energy sources to the load centers and the increase in interconnection capacity on the transmission system have been underestimated.

Since large storage technology is not yet available at an economic viable price and interconnections take years to develop, the fastest and/or cheaper solution to ensure that flexibility is available appears to be keeping/developing thermal plants (eg CCGT for secondary reserve, coal for tertiary reserve) and promoting demand-response. However, with RES-E priority dispatching, these plants are more and more under utilized, as they are incapable, in some countries, to recover fix costs. The case of Bavaria in this respect is eloquent: a highly efficient CCGT gas plant has worked 400 hours in the first 3 months of activity. In order to be profitable, a CCGT should be running about 5000 hours/y. This is the case in Spain as well, where CCGT’s are not able to recover their fixed costs mostly because of high wind variable generation. With these perspectives, the industry contemplates mothballing or closing those plants and is currently not taking the risk to invest in the short term at least on peak capacity, although generation investments are much needed to renew the ageing generation park .

### **Interconnections and flows**

Cross-border flows and efficient interconnections are the basis for the market integration. With the explosion of RES generation and no sufficient back-up available to balance the system, more interconnections will have to be built, enabling additional imports and exports in situations of generation deficit or surplus with respect to the local demand. The main issue is that the time lap is not aligned: while the need for more grid capacity all over Europe is growing with the share of variable RES, infrastructure will take years to develop. In a world based on immediateness, it is hard to explain that the lack of public acceptance is often at the origin of the length of an interconnection project.

What’s more, the amount of new RES projects developed cannot be accommodated in some of the host countries. This calls for a truly European grid, able to accommodate these new flows, as countries are counting on exporting this electricity all over Europe. With no new or increased interconnection capacity these exports are likely to go nowhere.

### **....and capacity mechanisms**

All these evolutions pointed out the need for a mechanism to incentivize capacity when needed. The reasoning behind the setting up of a capacity remuneration mechanism may differ from state to state (peak demand, intermittent RES, etc.) and

may call for tailor-made solutions. As well, there is no silver bullet solution and capacity remuneration mechanisms can vary sensibly (capacity markets, strategic reserves, reliability option, capacity payments, ...). Purely national solutions without regional/European coordination will impact the functioning of neighbouring markets, whether market coupling is in place or not. Capacity remuneration mechanisms are not the answer for every problem in the market, rather they are symptomatic of other market design/energy policies failure!

## **Recommendations**

All these challenges show that the target market design for electricity market, which is currently being implemented in European countries, is not necessarily wrong, it has never had a chance to work. And now that it finally should take shape, it appears not entirely fit to the current, new situation. Cross-border trade is one of the fundamentals of the target model while day-ahead and intraday markets are the preferred tools for cross-border trade. On the other hand, capacity remuneration mechanisms are not part of this model, but have become necessary markedly due to shortcomings introduced by inconsistencies of energy policies, whether at the national or European level, and by lack of coordination between different levels of decision. When introduced, Member States should be aware of implications.

The risk, in fact, is that the implementation of different capacity remuneration mechanisms, especially if badly designed, will lead to a European market composed of 27 regulated markets that once in a while exchange energy (i.e. back to pre-liberalisation model), losing most of the benefits from the achieved market integration.

The Commission should assess the inconsistency that may result from the implementation of measures that are not compatible and their impact on the well functioning of the market.

It should at least ensure that Member States put in place solutions that are market-based, compatible for further connection with neighboring countries, and take into account demand-response as it does for generation. Accordingly, the 6 June Communication on RES was most welcomed, since it addresses the need of more consistency and proposes a more coordinated approach to the RES support schemes.

Although the Lisbon treaty gives Member States the right to establish their own energy mix and the 2009/72 Third Package Directive allows them to invoke the “security of supply” risk in order to apply a national capacity mechanism, the “subsidiarity” clause should not be taken as an excuse for not proposing a common regional or EU-wide solution. A treaty change in this case would be costly and not timely. In fact, in the short term, a treaty change might not be the best solution as it takes years to be implemented. But removing the subsidiarity principle for some

elements of the electricity and gas value chain may be the most efficient way forward for the medium and long term. Although the debate should start now, it won't give a practical solution to problems that risk arising in the next two years.

A common framework is much needed as system differentials might distort the market even more. It should help avoiding these outcomes and ease the transition from the "old" to the "new" system.

The strong power system we inherited is now attaining its limits. Once endangered, it takes years to fix, given the long lead-time for investments in generation, transmission and distribution networks. Are we waiting for a power shortage (as the gas 2009 shortage that kneeled down Bulgaria and other Central / Eastern European countries leading to the Security of Supply regulation) to have a European-wide approach to prevent this to happen? We hope not.