

Moving towards EU market harmonisation

National European energy systems were designed to cover national needs. This, as well as the existence of divergent trading rules, impedes the current move towards market harmonisation. So will fragmented European electricity markets soon become a thing of the past?

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It is difficult to see into the future, but many scenarios suggest we should anticipate a significant increase in electricity demand in the coming decades. Even if we speculate that more advanced technologies and people's elevated environmental responsibility may reduce electricity consumption in developed countries, we have European regions where the increasing standard of living and rapid economic development will definitely see further requirements for an increase in power.

The challenge to cover increased needs can only be achieved through the efficient utilisation of electric power production in a fully integrated internal European market with harmonised rules, allowing for short and long term trading, balancing services and security of supply across borders.

Recently we have witnessed a significant expansion of renewable electricity generation in Europe – generation that may change intermittently, depending on the time and changing weather conditions. To cope with the flexibility challenges related to the growing share of renewable, non-dispatchable generation plants, electricity must be increasingly moved from one country to the other. Before a cross-border power trade can be executed, the required transport capacity must be available. Since transport capacity is not unlimited, traders must bid for and purchase the needed network capacity before a cross-border deal can be accomplished.

Unbundled Transmission System Operators (TSOs) responsible for developing, maintaining and operating the transmission networks should allow non-discriminatory third parties access to these networks. Consistent with European legislation, the expectation is that the free transport capacities are assigned according to a fair market-based allocation process.

The European Commission started to introduce harmonised trading rules back in 2009 with the goal of creating a pan-European electricity market that enables the free movement of electricity between the integrated markets – a process called “market coupling”. Actually, for the day-ahead market a Trilateral Market Coupling (France, Belgium, and The Netherlands) was introduced even earlier in 2006 through a cooperation between Exchanges and TSOs. Since that time we have achieved considerable milestones towards the integration of EU wholesale power markets.

In 2010 market coupling in Central Western Europe (CWE; covering Benelux, France and Germany) was launched – since then CWE has been volume coupled with the Nordic region via the Interim Tight Volume Coupling ITVC (the Nordic countries have had implicit auction mechanisms since 1993 and their cross-border electricity market is already harmonised to a great extent).

An important step in the European market integration was taken in February 2014, when Price Coupling in North Western Europe (NWE) was successfully put into live operation, covering the region of CWE, Great Britain, the Nordics and the Baltics. NWE, stretching from France to Finland, uses a common day-ahead Price Coupling of Regions (PCR) solution to calculate the power price.

PCR is a single price coupling solution using the algorithm Euphemia (abbreviation for Pan-European Hybrid Electricity Market Integration Algorithm) to calculate electricity prices, net import and export positions across Europe and allocate cross-border capacity on a day-ahead basis.

Additionally, in 2014 Southwestern Europe (SWE; Portugal, Spain and France) joined the Northwestern Europe (NWE) day-ahead coupling and the project was renamed as Multi-Regional Coupling (MRC). Czech Republic, Slovakia, Hungary and Romania successfully implemented the 4M Market Coupling (4M MC) also using the PCR solution and hence paving the way for the future integration with the MRC project (i.e. the integration of the Central Eastern Europe (CEE) with the NWE region).

The Irish and Northern Irish energy regulators published a consultation in 2014 on the high level design of the wholesale electricity market that will replace the Single Electricity Market (SEM) by I-SEM (Integrated SEM) around 2016, guaranteeing compliance with the EU legislative measures and seeking a common mechanism for electricity trading across national borders. The next milestone took place in February 2015, when Italian borders (Italian-Austrian, Italian-French and Italian-Slovenian) were coupled with the MRC. Finally, in May 2015 CWE implemented the Flow-Based capacity calculation for the first time in Europe.

Having introduced day-ahead market coupling across EU member states, the liquidity and transparency for electricity markets is improving and we now have greater price convergence. It is much simpler to trade since electricity is sold together with the available interconnection capacity. Still, the potential of the existing transmission networks could be used more efficiently.

There is a pressing need to optimise the algorithm of how available capacity is calculated, so that global social welfare can be maximised. The historically used Available Transmission Capacity (ATC) method includes high security margins that considerably restrict the cross-border flows that are possible. The new more sophisticated Flow-Based (FB) method takes into account the increased volatility from renewable production and has a more detailed grid description. Consequently the capacity available for cross-border trading is increased and this leads to electricity prices that reflect the actual grid situation more accurately.

The next step from an IT perspective is to introduce the FB method for cross-border capacity calculations, already successfully utilised in the CWE region, on a larger European scale. Going forward, following the ambitious objective of achieving a “European Copper Plate” with the same electricity price for the entire EU region, a functioning intraday trading market with continuous implicit capacity allocations needs to be implemented.

One important step in this direction is the joint initiative by five Power Exchanges together with the TSOs from 12 countries (this is the so called XBID project) to create a joint



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integrated intraday cross-border market based on an EU Regulation for Capacity Allocation and Congestion Management (CACM). The current ambitious target for the XBID project implementation is 2017.

Even in the fully harmonised electricity market, imbalances may occur as a result of imprecise consumption forecasts or generation/grid faults. The Finnish, Norwegian and Swedish TSOs agreed in 2010 to form a joint project with the objective to establish a harmonised imbalance settlement model for the three Nordic countries. The project Nordic (Im) balance Settlement (NBS) should be operational in 2016 and we anticipate the common imbalance rules should make it easier for a retailer to enter the market, thus promoting a more competitive and innovative end user market.

Without any significant investments in the basic network infrastructure any legislative measures regarding market harmonisation supported by innovative IT projects will not be successful in facilitating more powerful and better integrated electricity networks across the continent to enable certain EU regions to emerge from isolation. We must invest in electricity networks to upgrade existing and build new interconnectors to allow (renewable) energy to be transported across large geographical areas from the point of generation to the end user.

In order to increase the focus of the investments and coordinate on the European level, in 2013 the EU Commission introduced “Projects of Common Interest” (PCIs). The PCIs list of energy infrastructure projects identifies 248 priority projects aimed at increasing competition and the security of energy supply. The total investment volume required for the implementation of all 248 projects by 2020 is estimated at €119 billion,

with approximately two-thirds of it being for investments in the electricity transmission networks and one-third for the gas pipelines.

Although 72 PCIs, costing €50 billion, are well on the way to being implemented by the end of 2017, the investment volumes in electricity transmission infrastructure remain a major financing challenge. The additional complication is that in parallel with the PCI projects, the TSOs are expected to invest substantially as part of the ENTSO-E Ten-Year Network Development Plan (TYNDP), which contributes greatly to the integration of Renewable Energy Sources.

At present the single price coupling solution, PCR, for day-ahead wholesale electricity markets covers some 85 per cent of the whole European power consumption. There is a realistic hope that in the next decade the ongoing market harmonisation processes will move the EU countries/TSOs towards tighter intraday cooperation with a common goal leading to an increase in the welfare of the European Economy.

However, the market harmonisation “project” is unprecedented in its size and complexity and requires coordination and massive investments on several fronts. The EU energy law framework that harmonises the legal rules for electricity trading in the member states is not enough; in addition coordinated massive investments in the IT, generation and network infrastructures are essential prerequisites for success. Hence, we are still distant from the vision of a common electricity price across the whole continent, but the excitement of a better energy world in the future is omnipresent.

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