Success stories and lessons learned in EU Internal Electricity Market

October 24th 2019
I. Success stories

What are the most influencing success stories which have contributed to the overarching success story of EU Internal Electricity Market?

A subjective selection:

- Integration stories
  - Nordic Market
  - Trilateral Market Coupling (TLC)
- Institutional stories
  - Nord Pool
  - EPEX
- Theoretical, legislative success
  - Definition of target model
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What is the story


• Generous generation mix including water, unevenly distributed. HPPs (50% of generation) are located mainly in north, TPPs power prevails in the south.

• Hydropower technology is almost exclusive reservoirs based. The storage being possible, opportunity cost of producing is permanently analyzed by hydropower generators.

• Since the beginning, the model of Nordic market was net pool plus bilateral contracts.


• An innovative method to couple the day-ahead markets through the so called “market splitting”.

• Exclusive rights by license of regional PX Nord Pool to organize cross-border trading: 100% of cross-border capacity is allocated implicit, making impossible any bilateral contract with physical delivery in adjacent zones. It boosts development of financial derivatives market.

• Financial transmission rights traded in PX since 2000 to hedge price differentials between zonal price and market system price.
Nordic Market (2)

What is the story (continuation)
Nordic Market (3)

What is the story (continuation)

Current and planned relation with continent
What is the success?

• Acting together as a common market, the national Nordic markets harvest the benefits of a better functioning market and a more cost efficient electric system:
  • A higher liquidity which allows a better price formation
  • Access to a larger generation capacity.
  • A larger competition
  • Low market concentration in the overall regional market. (No major producer has a market share that exceeds 20% of the Nordic market).
  • A bigger market, attracting investors with its long term predictability (due to regulatory regime)
• Successfully, the Nordic market model became the EU target model, here included Day-Ahead market coupling and Intraday / Intraday Coupling
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What is the story

• In the beginning of the previous decade, while Netherlands had the first continental power exchange (1999) and France a PX since 2001, Belgium had no power exchange.

• In fall 2005 the Belgian PX (Belpex) is born with shareholders Elia (Belgian TSO) 60%, APX (Dutch power exchange), Powernext (French power exchange), RTE (French TSO) and Tenet (Dutch TSO) each 10%.

• Day ahead trilateral coupling (TLC) of the three markets starts on 21.11.2006. Explicit auctions on the two borders remained for annual and monthly allocations.

• TLC was at the origin of CWE market coupling implementation (TLC + Germany and Luxembourg). After the launch of ATC-based market coupling on 9 November 2010 the CWETSOs have successfully implemented the Flow-Based capacity calculation and allocation (21st May 2015 first delivery day).

• TLC has determined very high volume of electricity exchanges between the three countries, followed by a steep rise in electricity volumes traded on Belpex while the growing trend in traded volume continued on APX and Powernext.
Trilateral Market Coupling (2)

What is the success?

The successful achievements:

- **An optimal use of the transmission capacity** between the three countries leading to an increase in imports and exports.
- **A larger volume of electricity traded on Belpex** with the benefit of a stable price setting for the Belgian market.
- **A price convergence between the three markets** in the absence of congested interconnections (figure below).
- TLC promoters have invented a new method for coupling the markets, different from that of Nord Pool.
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What is the story

• In 1993, the first power exchange in Europe, Stattnet Marked, was created by the Norway’s TSO Stattnet. In 1996 Stattnet Marked was renamed Nord Pool, becoming a common Norwegian - Swedish market, with Swedish and Norwegian TSOs co-owners. Until 2000 the Finnish and Danish TSOs joins the Nord Pool ownership. In 2010 and 2012 Nord Pool Spot opens bidding areas in Estonia and Lithuania. Nord Pool has opened the ownership to Baltic TSOs on the principle: “one seat for each TSO”. Baltic region became part of Nord Pool world.

• In 2008 financial part of Nord Pool is sold to NASDAQ OMX Commodities as a decision of Nordic TSO to focus on physical trading and on connection to the continental markets upon the principle “follow the cables !”.

• In 2010 Nord Pool Spot and NASDAQ OMX Commodities launches N2EX PX in UK.

• Since 3 May 2018, Nord Pool is re-organizing its legal structure – separating its Market Coupling Operator functions from the commercial Power Exchange functions. The two legal entities thus created will be owned by a holding company.
What is the story (continuation)

• In 1999 Elbas of Nord Pool becomes the first international intraday market. In 2011 intraday platform Elbas of Nord Pool becomes the intraday market in Belgium and the Netherlands.

• In 2009 a Market coupling of 11 European countries is launched by Nord Pool Spot and EPEX through EMCC (European Market Coupling Company) administrating the Market Coupling Office in Hamburg. It was an innovative “volume market coupling” connecting initially Germany to Denmark, and since December 2010 coupling the two regional markets.

• At the end of current decade, Nord Pool is part of the cooperative concept PCR (Price Coupling of the Regions).

• The volume of power traded through Nord Pool grew to 524 TWh in 2018, with Nordic and Baltic day-ahead market trading rising to 396 TWh, UK day-ahead achieving 120 TWh, and volume on intraday markets reaching an all-time high of 8.3 TWh — a growth of more than 20 % compared with 2017.
What is the success?

- **MARKET-ORIENTED.** Nord Pool was since early ‘90s the main vehicle of Nordic regulators to implement a regional market model which became the EU target model. Nord Pool provided first in Europe a transparent and fair price to electricity to become reference for the forward physical contracts, retail market and an underline for financial trades.

- **INNOVATIVE.** Nord Pool has set a mechanism for day-ahead markets integration, a model for intraday market and a coherent model for physical/financial trading.

- **SUPPORTIVE.** Nord Pool provided consulting services for other countries / PXs in EU to align to the best trading practices: Germany/LPX, Romania/OPCOM, Bulgaria/IBEX, Croatia/Cropex, Albania, (ongoing) as well as to the Energy Community and its Athens Forum.

- **COMPETITIVE.** In a very competitive framework, at the end of previous decade and beginning of the current one, Nord Pool became PX for Baltic countries and UK, and service provider for other countries (Poland, Bulgaria, Croatia).

- **COOPERATIVE.** In a new framework asking a more cooperative approach Nord Pool contributed to EMCC and PCR, two consecutive steps in EU-wide market integration.

- **SURVIVOR.** Last but not least Nord Pool is a survivor in a world which have seen disappearance of famous exchanges as APX Amsterdam and BlueNext.
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What is the story

- EPEX SPOT is created as a joint venture of the European Energy Exchange (EEX) and Powernext in 17.09.2008.
- In 2009 Powernext Power Spot and 2009 EEX Power Spot transferred into EPEX SPOT.
- In 9.11.2010 Market coupling in CWE and “Interim Tight Volume Coupling” CWE - Nordic launched successfully.
- In 14.12.2010 French and German intraday markets were coupled
- In 14.12.2011 EPEX SPOT launches first flexibility product: 15 minute contracts in intraday market
- In 16.10.2012 EPEX SPOT launches intraday trading in Austria and in 26.06.2013 in Switzerland.
- In 4.02.2014 first implementation of Price Coupling of the Regions (PCR): Germany, France, Benelux, Great Britain, Nordic and Baltic countries then in 13 May 2014 same mechanism covers France, Spain and Portugal. In 24.02.2015 PCR expands over Italy and Slovenia.
- EPEX SPOT is the owner of APX Group since 2015. From 31 March 2016 to 10.04.2018 all trading businesses operated by APX Group in Belgium, Netherlands and UK are incorporated in EPEX SPOT and all clearing businesses are incorporated in ECC, the clearing house of the group Powernext-EEX.
- In 12.06.2018 first go live of European Cross-Border Intraday solution XBID.
What is the success?

• In 2009 EPEX SPOT registered 203 TWh of traded volume. It was more than doubled in the following decade, with 567 TWh traded in 2018 – a new record, only 43 TWh more than volume traded same year by its competitor Nord Pool.

• With the most diverse trading product portfolio in Europe, including 15 minute intraday contracts, product which is central for the integration of renewables, EPEX SPOT’s markets have become a cornerstone of the energy transition.

• EPEX is not a pioneer and innovator as Nord Pool but succeeded to play an always leading role in the establishment of the European Internal Energy market cooperating with other large EU power exchanges to many Market Coupling initiatives.

• As well as Nord Pool, EPEX succeeded to survive and to grow.
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Definition of target model (1)

What is the story

• Before the launch of 3rd EU energy legislative package, stakeholders understood it will be impossible for newly established ACER and ENTSO-E to elaborate the framework guidelines and the network codes in the absence of thorough definition of a pan-EU trading model.

• A first attempt to define such model was the joint effort of the ETSO and EUROPEX finalized with so called “Interim Report”, rather an inventory of best practices in the areas of Regional Initiatives and a try to imagine how the regional integration processes and mechanisms could be integrated at an overarching level.

• An outcome of this work was the concept of DOME COUPLING which was implemented as European Market Coupling Company (EMCC), which linked since 2010 price coupling in CWE with price coupling in Nordic region through a “volume coupling” ad-hoc mechanism.

• After joint work of TSOs and PXs, the “target model” (TM) was defined by the work of Project Coordination Group (PCG) and AHAG (Ad Hoc Advisory Group) along 2009-2011.
Definition of target model (2)

What is the success?

- The success of target model definition is materialized in adoption of network codes and guidelines which is the key issue in implementation of internal electricity market.

- The definition of target model largely enforced by codes is acknowledged by the new legislative package adopted along 2018-2019 which open a new stage of IEM development.

- The definition of the target model boosted establishment of a series of new power exchanges in CEE and SEE (OKTE-Slovakia, SEEPEX-Serbia, IBEX-Bulgaria, CROPEX-Croatia) coming with foundation of new day-ahead markets, new pillars for enhanced integration. The definition of target model essentially boosted the implementation of PCR in three successive waves and the launch of XBID intraday market.
II. Lessons learned

1. About opposition and adherence, acceptance and reluctance, competition and cooperation
2. About governance and road-maps
3. About “regional” and about competition between institutions
About opposition and adherence, acceptance and reluctance, competition and cooperation

• Without political support, no technically, regulatory, or commercially driven action has the smallest chance to go well. History of Nordic market started with Louisiana declaration in 1995 by Nordic Council of Ministers for energy established in 1971 between Denmark, Finland, Norway, Sweden and Island “on a free and open market”.

• No country will do the most reasonably substantiated change if the decision makers however perceive such change as contradicting with their country current interest.

• Cooperation within a region is essential. But “Is not always about cooperation”. Competition is part of life and has its role in a regional market development. Many times the progress of a common market came with innovative solutions from institutions in competition to survive in a changing world.

• Professional persons working together for commonly shared goals may achieve admirable results, despite in particular they may be animated by contrary professional beliefs, different national or corporative interests and competitive feelings.
About governance and road-maps

• Where the top down favorable initiatives look deadlocked, the bottom-up initiatives may succeed in finding the right and straight way. The TLC project and the interim solution of volume coupling have offered technical solutions in 2006 and 2009 to couple national and then regional markets when the top-down EU legislation was not able to incorporate in overall market design a viable model for further integration.

• The roadmaps are very good tool to handle processes and to help the managers to know what they are doing and everybody to acknowledge what the managers do and what will happen next. Ideally deadlines should be respected but sometimes the fruits are harvested not at deadline but when they are ripening. The EU envisaged 2014 as deadline for internal electricity market completion. The actions provided were done or are in ongoing development but deadlines are overdue.
About “regional” and about competition between institutions

- It is impossible to imagine a regional market without regional institutions.
- Some institutions are born nationally and become more and more regional by mergers or joint ventures (EPEX = ½ Powernext + ½ EEX since 2009, then including since 2015 APX Group which in its turn included since 2010 Belpex), some are born regionally and then disappear (Market Coupling Office in Hamburg), some born regionally survive and expand (Nord Pool), some are born regionally and by mergers become EU-wide (JAO = CASC + CAO).
- In early times of market opening the competition between institutions may help finding of the best solutions but progressively PXs or allocation offices merge.
- When EU passed from regional solutions to EU-wide solution there were stranded costs due to very short life of software solutions, these being easily replaced by other trading solutions due to political decisions or as effect of PX mergers.
- In EU, the competition between power exchanges is generally accepted but also national monopoly of centralized trading is accepted.
- Some operators may be confused when EU general rule asks them to compete but other EU specific rule (CACM regulation) asks them to cooperate. They hence take care to separation of related activities as for example Nord Pool did in 2018.
About more coordination at regional and EU level; new (empowered) institutions

Last two legislative packages paid attention to more specialized and empowered coordination through the establishment of new regional and EU-wide coordination institutions. It follows obviously to adoption of more detailed and more demanding legislation, whose enforcement should be supported and monitored. It also comes with a new stage of renewable integration and a new view on electric value chain due to interference generation-demand.

Package 3 (2009)

- **ACER was established**, which together ENTSO-E defines the so-called network codes.
- **ENTSO-E was established**, which draws up a EU-wide ten-year network development plans.

Package 4 (2019)

Additional regional and EU structures were introduced by the “Clean energy for all European” package:

- **Regional Coordination Centers**, to be set by TSOs in each region, which shall replace the regional security coordinators established pursuant to the system operation guideline.
- **EU DSO entity**, established to promote operation and planning of distribution networks in coordination with the operation and planning of transmission networks.
III. Several ready-made solutions for the EU internal electricity market followers

1. Power of enforcement
2. Power of debates
3. Power of elapsed time
Several ready-made solutions for the EU internal electricity market followers (1)

- **POWER OF ENFORCEMENT**

- Generally a concern would be if the EU market model, either both “harmonized market design” and “target model” or only the second is candidate to be followed: the concern is that the support of EU central institutions which come with overarching economic Treaties (TEU and TFEU) is missing.

- In this regards, governance structures of Energy Community (Ministerial Council, PHLG, ECRB, Secretariat as well as governance structures of Nordic Council of Ministers for Energy the official body for inter-governmental co-operation in the Nordic Region (Nordic energy ministers, Committee of Senior Officials for Energy Policy, Nordic Working Groups on Energy Policy - Nordic Electricity Market Group, Working Group for Renewable Energy, Working Group for Energy Efficiency) could be excellent examples of efficient governance. *)

Several ready-made solutions for the EU internal electricity market followers (1)

- **POWER OF DEBATES**

  No matter if a new regional market wants to clone EU IEM or not, the experience of gathering all stakeholders in large fora (as the Florence and Athens fora) should not be forgotten, as well as the good results of using the vehicles of working groups and task forces.

- **POWER OF ELAPSED TIME**

  Different from the beginning of integration in EU, now the technical solutions to join national markets in a common day-ahead market exist and are tested, either market splitting or market coupling. The debate on either starting with national PXs or with regional PX has no relevance as a barrier.

  The main concern when the EU IEM is analyzed by potential followers is the long time since 1996 until 2019 spent for implementation. “Spent” means not “required” again: longest time within 23 years period was consumed by technical debates, technical solutions testing, and much shorter time for implementation and dry runs. This time, a follower would not start from scratch.