International experiences on regional trading

EU internal electricity market

October 24th 2019
EU INTERNAL ELECTRICITY MARKET

- Probably the most successful common electricity market
- Stemming on principles of EU economic treaty: harmonization and competition
- Starting from national, going then regional, moving EU-wide
- Very advanced harmonization of national legislation due to EU-wide rules; level playing field can exist
- Efficient national and cross-border trading
- Support for EU economic development and citizens welfare
I. EU INTERNAL ELECTRICITY MARKET

- Legal basis
- Market model
- Governance of integration process
- Main indicators for integration benefits
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Legal basis (I)

The European Union Law

- **Treaty on European Union** (TEU), Maastricht, 1992, on common provisions
- **Treaty on the Functioning of the European Union** (TFEU), Rome 1957, on role, policies and operation of EU
  - free movement of people, goods, services and capital,
  - competition and harmonization of regulations.
- Several amending treaties, last one: Lisbon treaty, 2009

  Article 194, following Lisbon Treaty: “**Union policy on energy shall aim to ensure the functioning of the energy market, ensure security of energy supply in the Union, promote energy efficiency and energy saving and the development of new and renewable forms of energy and promote the interconnection of energy networks.**”

The “EU energy acquis”

- EU legal framework for internal energy market: directives and regulations establishing common rules for internal electricity and gas markets and regulating cross-border trade.
- Four legislative packages (directives and regulations which are of **THE EUROPEAN PARLIAMENT AND OF THE COUNCIL**) adopted in 1996, 2003, 2009, 2019
Legal basis (2)

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<td>2nd energy legislative package - electricity</td>
<td>3rd energy legislative package electricity</td>
<td>The package “Clean Energy For All Europeans”</td>
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<td>Regulation (EC) No 1228/2003 on conditions for access to the network for cross-border exchanges in electricity</td>
<td>Regulation (EC) No 714/2009 on conditions for access to the network for cross-border exchanges in electricity</td>
<td>Regulation (EU) 2019/943 on the internal market for electricity</td>
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2020 climate & energy package

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<td>Directive 2001/77/EC on the promotion of electricity produced from renewable energy sources in the internal electricity market</td>
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<td>Directive 2009/28/EC on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC</td>
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<td>Directive (EU) 2018/2001 on the promotion of the use of energy from renewable sources</td>
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<td>Directive 2005/89/EC concerning measures to safeguard security of electricity supply and infrastructure investment</td>
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<td>Regulation (EU) 2019/942 establishing a European Union Agency for the Cooperation of Energy Regulators</td>
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<td>Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action*</td>
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The Electricity network codes and guidelines (2)

Adoption of electricity network codes and guidelines which are COMMISSION REGULATIONS (enforcement of 3rd legislative package provisions)

• **MARKET AND TRADING GUIDELINES**
  • Capacity Allocation and Congestion Management (Regulation (EU) 2015/1222)
  • Forward Capacity Allocation (Regulation (EU) 2016/1719)
  • Balancing (Regulation (EU) 2017/2195)

• **CONNECTION AND SYSTEM OPERATION CODES AND GUIDELINES**
  • Emergency and restoration (Regulation (EU) 2017/2196, code)
  • Demand Connection (Regulation (EU) 2016/1388, code)
  • Requirement for generators (Regulation (EU) 2016/631 code)
  • High-Voltage Direct Current (Regulation (EU) 2016/1447 code)
  • System operation (Regulation (EU) 2017/1485, guideline)
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Market model (I)

HARMONISED NATIONAL MARKET DESIGN

All legislative packages were top-down actions, imposing to the member states a harmonized national market design and uniform rules for access to the cross-border capacities.

TARGET TRADING & CONGESTION MANAGEMENT MODEL

• A quintessence of best trading and congestion management practices put in page by ETSO/EUROPEX, Project Coordination Group of Experts (PCG) and Ad-Hoc Advisory Group (AHAG) along the period 2008-2011.
• Top-down adopted with network codes and guidelines as well as with the 4th legislative package (Clean Energy for all European) in 2019.

“CLEAN ENERGY FOR ALL EUROPEAN” adopted 2017-2019

• Adjusts both Harmonized National Market Design and Target Trading & Congestion Management Model
• Introduces a regulation “on Governance of the energy union and climate action”.
• Transforms “directive of security of electricity supply” in a “regulation on risk-preparedness in the electricity sector.”
• Transforms regulation “on conditions for access to the network for cross-border” in a regulation “on the internal market for electricity”.
WHAT IS “HARMONISED NATIONAL MARKET DESIGN”

DIRECTIVE (EU) 2019/944 on Common Rules for the Internal Market for Electricity

REGULATION (EU) 2018/1999 on Governance of the Energy Union and Climate Action

- Planning and reporting obligations from the energy and climate acquis

Energy policy issues are a shared competence between the EU and the Member States (Article 194 TFEU). Member

States however still allowed to:
- Unilaterally determine their own ‘energy mix’
- Propose (then negotiate) national RES, GHG and EE targets
- Introduce national Capacity market mechanism under fulfillment of certain conditions
- Pick-up from common lists of products that can be taken into account in day-ahead and intraday coupling processes
Market model (3)

WHAT IS “TARGET TRADING & CONGESTION MANAGEMENT MODEL”

• The target trading and congestion management model is:
  • “ZONAL”, the zones are either countries or within the countries
  • “ENERGY-ONLY”, until now capacity markets are national arrangements
  • “NET POOL PLUS BILATERAL CONTRACTS”
  • “NET TRANSFER CAPACITY” (NTC) or FLOW-BASED (FB) where more efficient are the transmission model for day-ahead and long term allocation. In day-ahead it moved under Price Coupling of the Regions from NTC to “FLOW-BASED”.
  • “MARKET COUPLING” (ongoing implementation of Multi Regional Coupling)

• BILATERAL CONTRACTS shall be traded
  • Physically and / or financially
  • Centralized (“OTC” PLATFORMS if physical or PX if financial) and / or decentralized (direct negotiation)
Market model (4)

THE TIMEFRAMES FOR ELECTRICITY TRADING AND THE LOCATION OF CROSS-ZONAL CAPACITY

- **FORWARD TRADING UNTIL DAY-AHEAD** (through bilateral contracts, either physical or financial) and periodic **ALLOCATION** (YEARLY, MONTHLY),

- **DAY-AHEAD AUCTION** (one day before delivery day) with harmonized gate closure time (GCT), either national or subject of EU-wide PRICE COUPLING

- **CONTINUOUS INTRA-DAY TRADING** (until nearest possible to the delivery hour), either national or subject of EU-wide coupling by continuous trading and continuous allocation

- **BALANCING MECHANISMS** (BALANCING AND ANCILLARY SERVICES: still national markets)
Market model (5)

ALLOCATION OF CROSS-BORDER CAPACITY

TWO METHODS
• Explicit allocation (on all time horizons: year, month, day, intraday) and
• Implicit allocation (combined with electricity trading) for day-ahead and intraday.

TRANSMISSION RIGHTS
• PTR (Physical Transmission Rights), to secure cross-border delivery of bilateral contracts
• FTR (Financial Transmission Rights), to hedge day-ahead price differentials support trading of electricity, in case of implicit allocation

DRAWBACKS OF EXPLICIT AUCTIONS
• In explicit allocation, transmission capacity and electricity are traded in two separate auctions. Due to the lack of information about prices of the other commodity may further result an inefficient utilization of interconnectors (flows in wrong direction: from higher to lower price).

LONG TERM ALLOCATION (YEARLY/MONTHLY)
• Only explicit. Joint responsibility of TSOs in adjacent zones of interconnector.

SHORT TERM ALLOCATION (DAY-AHEAD/INTRADAY)
• Explicit allocation done by one TSO for each timeframe on behalf of joint responsible TSOs.
• Implicit allocation organized by cooperative PXs in each country, supported by TSOs.
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Governance of integration process (1)

Leading role of central institutions: the Parliament, the Council, the European Commission, which issue binding legislation: directives, regulations, decisions.

Electricity Regulatory Forum (the Florence Forum)

- Set up to discuss the creation of the internal electricity market. Meets once per year.
- Participants: are national regulatory authorities, Member State governments, the European Commission, TSOs, electricity traders, consumers and power exchanges.

European Regulators' Group for Electricity and Gas (ERGEG), later on replaced by Agency of Cooperation of Energy Regulators (ACER)

- Advisory group to the European Commission on internal energy market issues, set up in 2003. When ACER, set in 2009 became operational, ERGEG was dissolved.

Regional mini fora

- The Florence Forum in 2004 decided to establish 7 electricity “mini-fora” to develop plans and detailed timetables for the introduction of at least day-ahead coordinated market-based congestion management mechanisms. Active until February 2005.
- Main achievement: amendment of Annex to Regulation on conditions for access to the network for cross-border exchanges in electricity.
Amendment of the Annex to Regulation (EC) No 1228/2003 in 2006

To define the regions to introduce a **common coordinated congestion management method and procedure for the allocation of capacity to the market at least yearly, monthly and day-ahead**

(a) Northern Europe (i.e. Denmark, Sweden, Finland, Germany and Poland),
(b) North-West Europe (i.e. Benelux, Germany and France),
(c) Italy (i.e. Italy, France, Germany, Austria, Slovenia and Greece),
(d) Central Eastern Europe (i.e. Germany, Poland, Czech Republic, Slovakia, Hungary, Austria and Slovenia),
(e) South-West Europe (i.e. Spain, Portugal and France),
(f) UK, Ireland and France,
(g) Baltic states (i.e. Estonia, Latvia and Lithuania).

**Regional Initiatives**

- In 2006 ERGEG, with the support of the European Commission, launched “Regional Initiatives”.
Governance of integration process (3)

Regional initiatives

- Initial priority issues: Congestion management, Interconnections, Transparency, Balancing.

- Assumed risk: divergent solutions in the regions, difficult to be mitigated at EU-wide level.

- Expected benefit: faster solutions and better coordination at a regional level than dealing with EU-wide representation.

- Once the role of ERGEG, the initiator of voluntary regional initiatives, was transferred to new established ACER, the still active governance structures of regional initiatives were incorporated to ACER.

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<tr>
<th>Governance structures</th>
<th>Participants</th>
<th>Objectives</th>
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<tbody>
<tr>
<td>Regional Coordination Committee (RCC)</td>
<td>Regulators (NRA) + EC</td>
<td>Define priorities for the region as action plan and monitor project development</td>
</tr>
<tr>
<td>Implementation Group (IG)</td>
<td>NRA + EC + TSOs + PXs</td>
<td>Implement the regional action plan</td>
</tr>
<tr>
<td>Stakeholders Group (SG)</td>
<td>All concerned stakeholders</td>
<td>Involve properly all stakeholders, with support of EC and national stakeholders</td>
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</table>
EU IEM: current stage of implementation and governance by projects

DAY-AHEAD

- **Price Coupling of Regions (PCR) project**, an initiative of 8 Power Exchanges (PXs): EPEX SPOT, GME, HEnEx, Nord Pool, OMIE, OPCOM, OTE and TGE.

- Covers the electricity markets in Austria, Belgium, Czech Republic, Croatia, Denmark, Estonia, Finland, France, Germany, Hungary, Italy, Ireland, Latvia, Lithuania, Luxembourg, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and UK.

- PCR is implemented in Multi Regional Coupling (MRC) and 4M Market Coupling (4M MC) regions.

- **MRC project** covers 19 countries (since 2014, replacing the former NWE).

- **4M Market Coupling** project covers CZ-SK-HU-RO; CZ-SK-HU operational since 2012; CZ-SK-HU-RO operational since 2014.
EU IEM: current stage of implementation and governance by projects

INTRADAY

• The Cross-Border Intraday initiative (XBID Project) started as a joint initiative by the PXs EPEX SPOT, GME, Nord Pool and OMIE and TSOs from 11 countries, to create a joint integrated intraday cross-border market across Europe.

• With larger participation than initial XBID, the project is recalled **Single Intraday Coupling (SIDC)**, as an initiative between the NEMOs and TSOs

• The first go live in June 2018 included 14 countries: Austria, Belgium, Denmark, Estonia, Finland, France, Germany, Latvia, Lithuania, Norway, The Netherlands, Portugal, Spain and Sweden.

• A second go-live is foreseen in Q4 2019
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Main indicators for integration benefits (1)

I. Welfare benefit

- One market integration benefit is the improved economic efficiency, allowing the lowest cost producers to serve demand in neighboring areas.
- In a separate non-coupled bidding zone, the welfare benefit is the consumers’ and producers’ gain as the difference between the prices bid into the market and the matched prices obtained, multiplied by the quantity (shaded area in the left figure below).
- The welfare benefit due to integration is the gain obtained by participants because obviously the shaded area is larger than in case of missing coupling.

ACER Market Monitoring Report 2017

- “Over past 7 years, market coupling has rendered a benefit of approximately 1 billion euros / year. The finalization of market coupling implementation on all remaining open borders that still applied explicit DA auctions by the end of 2017 would render an additional benefit of more than 200 million euros per year.”
Main indicators for integration benefits (2)

I. Welfare benefit

ACER Market Monitoring Report 2012

- “Welfare gain from trade for 2012, in million euros as difference between the gross welfare benefit the historical scenario (real data) and the Zero scenario (ATC=0). Also the ‘Incremental Gain’, which is the difference between the gross welfare benefit from the Incremental scenario (ATC+100 MW) and the historical scenario.”
II. Other indicators (ACER Market Monitoring Report 2017)

2. PRICE CONVERGENCE.

“Baltic and Central-West Europe (CWE) regions recorded the highest share of hours with full price convergence, respectively, 80% and 41% of the hours in 2017.

3. UTILISATION OF CROSS-BORDER CAPACITY.

The efficient utilization of cross-zonal capacity in the intraday timeframe remains low (50%). Crucial step towards the more efficient and sustainable use of available capacities across Europe was taken on 12 June 2018 with the go-live of the single intraday coupling. The additional welfare benefits from the more efficient use of ID cross-zonal capacity across Europe are estimated at more than 50 million euros per year.

4. BALANCING SERVICES ACROSS BORDERS.

In 2017, the projects to increase the exchange of balancing services across borders that were initiated in recent years started to bear fruit.

5. CHURN RATE

The combined analysis of churn factors and bid-ask spreads confirms that forward markets liquidity in Europe remained modest or low in 2017, with the main exceptions being Germany / Austria / Luxembourg, followed by France, the Nordic region and Great Britain.
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