Regional market development process in CAREM
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Lessons learned from International Experience in Regional Electricity Markets
Lessons from International Experience in Regional Electricity Markets

• **Worldwide could be found different levels of regional electricity market integration and different market structures at the national level.** Several alternatives failed to be developed, or are in an extremely low process.

  – Successful experiences adopted simpler forms as in SAPP, Central America than the most sophisticated ones, like in EU (took 20 years). **One key component of the successful experiences has been not forcing member countries to adopt a single internal model**, rather to adopt regional market design that assumes the countries will not modify their internal electricity sectors.

  – In the case of EU, it was possible to force changes to internal models, because the umbrella of the EU and actions of the European Commission.

  – Existence of the national competitive power market is beneficial as improves efficiency, but is not required to become part of the regional market.
Lessons from International Experience in Regional Electricity Markets

• Each level of market integration improves security of supply and brings efficiencies in terms of operations and investments (Gen&Tr) in comparison to the independent operation
  
  – Central Asia as extreme case – as it was designed as a single country, took benefits of unevenly distributed resources, now in different countries, generation/demand locations and transmission lines constructed without consideration of national borders
  
  – Gains are considerable: In CAPS these are lost each year because lack of trading, in spite most of the conditions are given: existent transmission capacity, agreement on parallel operation, regional generation surplus and nexus!

• Staged and flexible approach to development is key to success
  
  – Could be gradual, but permanent and consistent
  
  – Allows to start immediately
  
  – And obtain immediately the important benefits of cross border trading
  
  – LT vision (roadmaps) allow to define specific actions required at each stage
  
  – Definitely to be proposed in CAPS: some improvements in regional trade can be reached shortly as regional transmission infrastructure is already in place.
Lessons from International Experience in Regional Electricity Markets

• **Regional coordination is required, as someone needs to set rules and oversee the development**
  
  — CDC is already existent and operative institution in CAPS, can fulfill the role of regional system operator, similar to similar roles in SAPP and Central America
  
  — The willingness and support from the countries-participants is essential

• **Regional technical and regulatory framework should be developed and agreed**
  
  — “The common market works only if all the participants knows and complies with the same rules of the game”
  
  — Minimum common rules and regulations are required to act in fair, safe and efficient way
  
  — Harmonization on national level might be an ultimate goal but not a requisite from the beginning. Most of the benefits and economic gains can be achieved with minimum and non intrusive regulation
  
  — In CAPS, the CA Parallel Agreement (1999) might become good starting point in the process of definition of the common framework.
Regulatory framework – missing elements

• The legal framework for regional trade is outdated but the cornerstone agreements are still effective.
  – The still-current Parallel Operation Agreement does provide for willingness of the signatories to consider establishing the regional Electric Power Pool of Central Asia (CAREM)

• Given the historical synchronization with the power systems of the CAPS and multiple precedents of power exchanges among the counters in the region, it could be concluded that there are no technical impediments either to bilateral power exchanges or to regional electricity trade in the form of a day-ahead market

• But are necessary technical (Grid Code) and commercial regulations (“Market rules”) to support the cross border trading under the Parallel Operation Agreement. Also a governance agreement, including disputes resolution, enforcement and monitoring rules
Process Organization / Important Steps
Process Organization/Main Steps

Diagnostic of the current situation
• Questionnaire and info collection
• Background analysis

Identification and assessment of market model
• Identification of alternatives
• Wide view: Advantages/Disadvantages
• Agreement between countries on selected alternative

General design
• Gap analysis / Roadmap
• General principles
• Proposal on Staged Development

Market Rules and Grid Code
• Development of the Regional Market Rules and Regional Grid Code
• Proposals to adjustment of national legislation
Identification of Alternatives

• Wider view, but to consider only successful models and their potential application to the CAREM framework

• Some criteria for identification of alternatives:
  – Organization:
    • Level of regulatory harmonization required
    • Level of coordination required
    • Implementation time and effort
  – Impact on actors:
    • Level of access and participation
    • Non – discrimination
    • Efficiency
  – Results:
    • Expected Impact on reliability
    • Expected Impact on adequacy
    • Expected gains from trade
    • Expected impact on system development
Selection of the market model by the CA countries authorities

- The choice of a regional market model will be undertaken by the competent national authorities.
- Once agreed, depending on the selected regional market model, it could be sufficient to base on the parallel operation agreement, and the case of a model that requires a high level of harmonization, could be necessary to transpose in national legislations where the governments have a key role.
- Specific organizational framework to work on the definition of the target market model should be defined by the CA countries.
- The rationale of longer term implementation asks for staged and flexible approach and the defined concept shall leave room to further adjustments. Both ultimate goals and short term quick wins shall be envisaged.
Key points

• Parallel Operation Agreement (1999) might become the starting point for further steps in increasing the regional power exchanges and CAREM development.

• The principles for further operation (may be in a form of roadmap) are to be defined by Governments, considering national priorities, giving the mandate to the TSOs for further implementation.

• Improvements of existent framework are required, including market rules, grid code and governance rules, as well as their thorough implementation

• CDC is the natural candidate to coordinate the process of establishing operational arrangements for efficient, secure and reliable operation of the interconnected transmission system; and further to perform functions of regional market operator (market clearing, settlement, etc.).

• The minimum pack of required regulation that would define the level playing field and decrease risks for participants to be developed includes:
  – Rules for trading
  – Methodology for calculation of available capacity and congestion management
  – Compensation of transits
  – Schedules flows control and settlement procedures (incl. how to treat deviations: financial compensation or in a kind). In the future a balancing mechanism
Roadmap for implementation

- The roadmap will be based on the agreed alternative and will set up general principles to follow, such as:
  - Define actors: what countries, institutions are involved, who are market participants;
  - Define products: energy, ancillary services, transmission rights, capacity, etc;
  - Define actions: steps to undertake for preparation of the plan (covering technical, normative, institutional prospective), mutual support during emergency situations
  - Timeframe: near-, medium-, long term prospective
Elaboration of the general design for CAREM and Proposal for Staged Development

• General design for CAREM may have components not necessarily representing equal priorities:
  – target trading model: trading timeframe, mechanisms, products, market players access;
  – Operation of the regional market: by a regional SO (CDC) or by coordination of national TSOs
  – congestion management and cross-border capacities allocation (capacity calculation model based on a common grid model, allocation timeframe, mechanisms, products, market players access);
  – Transit compensation methodology
  – Eventual adjustments to the domestic market design definition (role of regulators, unbundling, market access, market opening, universal service) and further harmonization.

• The most important and productive components when implemented and less difficult to be accepted by national policies are target trading model as well as congestion management and cross-border capacities allocation.

• Largest part of structural market design definition shall be planned for later stages (while harmonization remains an ultimate goal).
Regional Market rules

• For the advanced stage of market integration might include:
  – Market participants, registration, information obligations
  – Protocols for information exchange, Ex-post information
  – Operational planning,
  – Rules for DAM dispatching (setting eventual dispatch priorities, treatment of RES, network consideration)
  – Congestion management methodology (explicit, implicit, SCED…)
  – Transmission rights, allocation mechanism and type (either node to node rights, or only allocation of cross border capacity, or financial transmission rights).
  – Deviations treatment
  – Ancillary services mechanism/markets, Balancing mechanisms
  – Guarantees and financial assurance
  – Metering, settlement, billing and collection
  – Governance: Disputes resolution, Market Surveillance, Enforcement, Change of rules, etc
  – Eventual Capacity mechanism (capacity payments, capacity markets, etc.)

• For the first stages the structure of Market Rules would be simpler
Regional Grid Code

• Typical topics include:
  – Security, quality and performance criteria
  – Dispatch and Trading network model
  – Regional Data Base
  – Transmission security, quality and performance standards
  – Ancillary services requirements and coordination of use
  – Flows control in interconnectors
  – SCADA, commercial metering and communications
  – Coordination of operation in normal and emergently situations
  – Calculation of cross border transmission capacity
  – Regional transmission planning

• The level of complexity under each section would depend on the alternative chosen for further implementation
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