



Transmission and distribution system coordination in Energy Community

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- There are changes happening at distribution level in gas sector and DSOs no longer have the sector-passive role,
- The process of market opening and new regulations establish new roles and activities for DSOs,
- Regulators need to understand new processes and relationships and consider where regulation might be necessary,
- Regulators have a role in ensuring that DSO-TSO cooperation evolves in a beneficial way for energy markets and for consumers.

- The ECRB Gas Working Group (GWG) Work Program 2019 foresees Task Force to deal with mutual topics of transmission and distribution system operators,
- Report aims to develop a review of practice in EnC countries with regard the topics contained in transmission and distribution network codes,
- Scope of analysis: Albania, Bosnia and Herzegovina, North Macedonia, Georgia, Moldova, Serbia and Ukraine. In addition to the Contracting Parties, the report includes also information from observer countries - Armenia and Turkey.

- Information about TSOs and DSOs (number, size, structure) and their relationship,
- Transmission/distribution network planning coordination,
- Gas quality,
- Coordinated maintenance procedures,
- Determination of daily quantities for system users,
- Coordinated system operation.

- Gas market development as well as number of DSOs and TSOs differ widely among the analyzed countries,
- In most of the countries there is only one (Albania, Georgia, North Macedonia, Ukraine, Turkey, Armenia) or two transmission system operators (BiH, Moldova, Serbia),
- The number of distribution system operators varies more in observed countries and it goes from one DSO (Albania, Armenia), two in BiH and three in North Macedonia. Though, there are countries with larger number of DSOs like Moldova (25), Georgia (26), Serbia (33), Ukraine (46) and Turkey (72).

- Regarding the size of DSOs in terms of quantities delivered they also vary from 6.4 bcm in Turkey, 2.5 bcm in Ukraine, 1.9 bcm in Armenia, 1.1 bcm in Serbia, 642 mcm in Moldova, 571 mcm in Georgia, 4.7 mcm in North Macedonia, 3.4 mcm in BiH, 3.1 mcm in Albania,
- Number of end consumers connected to distribution systems also differs a lot,
- Distribution companies with largest scope of quantities delivered are not necessarily the companies with highest number of end consumers connected.

- Based on the number of customers connected to distribution system and requirements from the Gas directive for the DSO unbundling there are distribution companies with this obligation,
- Obligation to unbundle exists for 41 among 46 licensees in Ukraine, in Moldova there are 25 DSOs with this obligation (out of 25 in total),
- There is no obligation to unbundle in Turkey, Armenia, North Macedonia, BiH, Serbia and Albania,
- In Georgia there are distribution companies with more than 100.000 customers connected but requirements of the Directive are to be fulfilled after 2021.

- Structure and technical solutions regarding connection of transmission and distribution systems are also very different,
- There are connections of DS to TS (Albania, Armenia, North Macedonia and Turkey), DS to TS but also DS to DS (BiH, Moldova, Georgia) but also systems that have connections both to transmission and distribution like in Serbia and Ukraine,
- Analyzing the size of markets it can be concluded that the larger the markets are, the more complex infrastructure and their relations are in place.

- Gas market complexity influences also relationship between the end consumers, network operators and suppliers.
- In some countries end consumers have contracts with both network operators and suppliers (Ukraine), in Turkey rules are different for transmission and distribution network use,
- In Moldova, suppliers conclude contracts with TSO and DSO on behalf of their customers like in BiH, Armenia and Albania,
- in Georgia end consumers connected to TS have the right to sign a transportation contract, while those connected to the DS are not allowed to do the same,
- In Serbia and North Macedonia customers connected to both transmission and distribution system have the right to conclude contract with respective network operators for system use, but this in practice rarely happens.

- TYNDP are prepared and approved by NRA in all of the observed countries except Armenia, while in Georgia they are envisaged in Network Codes but procedure is still not applied,
- DSOs prepare network development plans, but sometimes they are also for the period of 10 years (Ukraine, BiH) or five years (Turkey, Serbia, North Macedonia, Albania, Georgia in future), or three years in Moldova. DSOs plans are not necessarily approved by the regulator (Serbia),
- Network planning is not coordinated in Turkey, while there is coordination in network planning in Albania, Ukraine, BiH, Georgia, North Macedonia, Moldova, Serbia (reference to Strategy or Law),
- Development plan is submitted simultaneously with price request in Albania and Turkey,
- NRA`s regulation defines procedure for submission and approval of development plans in Albania and Moldova.

- Content and time-periods of development plans are defined in transmission and distribution network codes in Ukraine, Turkey, Georgia (but not applied in practice yet) in Law in BiH, Serbia, North Macedonia, Moldova,
- Deadlines for preparation and submission of network development plans are different and sometimes coincide and sometimes are consecutive thus disabling network planning in coordinated manner (deadlines vary from end of May to end of October),
- NRA announces public consultations in Albania, BiH, Serbia,
- There are mutual TSO/DSO relations to urban planning bodies in Albania, Turkey, BiH, Moldova,
- Development plans are publicly available in all of the observed countries except Armenia (in Georgia in future).

- Responsibility for gas quality is defined for both TSO and DSO in Moldova, Serbia, Macedonia, BiH, Armenia, Albania, just for TSO in Georgia and Turkey,
- Production exists and it is connected to DS in Moldova, to TS in Georgia, Turkey, both TS and DS in Serbia and Albania,
- Storage exists and it is connected to transmission system in Serbia, Turkey, Armenia,
- National legislation envisages connection of biogas producers in Moldova, Serbia, BiH, but they are actually connected just in Moldova.

- There is an obligation to make public announcement about period for scheduled maintenance by SO in all of the observed countries, except Armenia,
- Consent is needed to a proposed maintenance period in Moldova, Serbia,
- There is no consent about the proposed maintenance period in Albania, Georgia, North Macedonia, BiH, Armenia, Turkey, Ukraine,
- In case there is no mutual agreement on the proposed maintenance period there is a regulation that deals with this situation in Albania while in Armenia it is defined in the contract, or secondary legislation in Turkey,
- In case there is a need to change envisaged maintenance programme procedure for these changes is defined in regulation in Albania, SOs agreement in Moldova, network code in Serbia.

- Information about the start of maintenance works is provided to customers, other system operators or suppliers by system operator in all of the observed countries except Armenia where this information is given by supplier,
- This information is provided in direct communication with large customers in Albania, website in Moldova, e-mail and website in Serbia, web site and to all customers in Georgia (by sms), website and directly with large customers in BiH, website in Armenia, Ukraine, North Macedonia, website and media in Turkey.

- All exit points from transmission system are equipped with daily meters in Ukraine, Turkey, BiH, Georgia, Moldova, Albania but not in North Macedonia and Serbia,
- TSO allocates quantities delivered from TS in all of the analyzed countries and DSO is forecasting party for customers connected to DS in Ukraine, North Macedonia, Serbia,
- In some countries there is a procedure of confirmation of allocated quantities (BiH, Serbia, Georgia, North Macedonia, Moldova) in some not (Ukraine, Albania),
- Allocated quantities are used for imbalance calculation in Ukraine and Turkey (in most of the analyzed countries daily balancing is still not in place).

- In case one customer has more suppliers for one delivery point from TS quantities are allocated by TSO in most of the countries but in different way - according to specific agreement in Ukraine (between the customer and suppliers) Georgia, Turkey and according to metered and nominated quantities in Serbia. In some of the analyzed countries this situation is not recognized (Albania, BiH),
- Allocation of quantities on entry point to DS is done by TSO in Ukraine, according to Allocation protocol in Turkey, according to rules defined in network code in Serbia (by DSO) and BiH, pro rata in Georgia,
- There are also delivery points on distribution system with daily metering in most of the countries (Albania and Armenia exception), but they are not numerous,
- For non daily metered delivery points on DS DSO makes forecast in some countries.

- Interconnection (technical) agreement between TSO and DSO are envisaged in network codes in Ukraine, Serbia, Georgia, BiH, Moldova (draft), Turkey- but not in Albania, Macedonia, Armenia,
- It is already signed just in Ukraine, BiH and Turkey, Georgia had deadline 1st of September,
- Connection capacity available for connection to either TS or DS is not publicly available in Ukraine, Albania, Serbia, Moldova, Macedonia, Georgia, Armenia,
- There is a threshold defined who can connect to transmission system (sometimes system users connect to TS in order to avoid distribution network charges), in Ukraine, BiH, not Serbia, Albania, Moldova, Macedonia, Georgia, Armenia, Turkey.
- No intensive power production from gas that would influence variability of gas flows in observed countries, except Georgia and Turkey.

Conclusions

- There is a need to intensify coordinated network planning not just by Strategy or Energy Law but by more active engagement of TSO and DSO -in terms of deadlines for submission that provide coordinated planning, demand scenario preparation, participation in public hearing and provision of consent and procedure for solving the situation in case consent does not exist (very often this procedure is not defined),
- Providing information in the process of planning maintenance periods should be assured, consent of neighboring system operators should be provided, communication with system users should be improved (e-mails, sms, website),
- Procedure for maintenance programme changes exists only in some countries (not in Georgia, North Macedonia),
- Communication and data exchange regarding gas quality necessary to be established or improved (in case TSO has the information about gas quality he should be obliged to forward it to DSO),

- Balancing regime not introduced in most of the Energy Community countries (Ukraine exception),
- With regards to the future DSO and TSO relationship general principles applicable to both SOs could be further exploited,
- Significant differences related to the size and infrastructure development and structure of the DSOs should be observed when defining requirements in order to achieve certain results,
- Exploit the whole system approach at every level of responsibility (NRA, TSO, DSO)-cooperation and efficiency in system operation and network planning,

- Roles and responsibilities should be clearly allocated,
- Entry-exit tariff system not in place in all countries- still no observation about it`s impact on distribution tariffs and subsequent need for changes of pricing on distribution level- still in some countries the need for compliant regulatory regimes for transmission and distribution systems is observed,
- Challenge regulation in place- whether control of revenue recovery should incentivize system as a whole, not separately for TSOs and DSOs.



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