Third Party Access to Existing Municipal Energy Infrastructure:
Lithuanian Centralized District Heating Case Analysis

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Framework of the conducted research

Objective:
◦ to present and assess the impact of regulatory reform conducted in DH sector in Lithuania, suggest further regulatory steps to complete the reform;

Subject:
◦ Lithuanian district heating sector reform, enabling effective third party access to existing infrastructure and essentially transforming the architecture of the sector;

Academic and practical novelty of the work:
◦ recent regulatory reform of DH generation market is analyzed and impacts of the fresh reform are assessed;

Practical applicability:
◦ may be considered in terms of reforming further Eastern European markets of countries under transition as well as reforming other municipal sectors introducing market based principles;

Methods:
◦ Systemic analysis;
◦ Statistical analysis.
Market Organization Scenarios

Market organization types by Openness-to-competition and Regulatory Measures applied:

- No-competition full-regulatory control;
- Intra-sectoral intervened competition;
- Inter-sectoral intervened competition
- Inter-sectoral non-intervened competition.

Model of market Organization:

- vertically integrated monopoly – no TPA;
- Single buyer model – negotiated TPA;
- Single buyer model – regulated TPA;
- Network access mode (network neutrality) – full TPA.
Preconditions for reform in Lithuania

Wider context in 2010:
- Reluctance of municipalities to act
- Postponed investment decisions
- Skyrocketing natural gas prices
- Significantly lower prices for and availability of biomass
- National “anti Gazprom” policy at its peak
- 3rd EU package widely regarded as salvation

DH in Lithuania:
- DH market size >50% of entire heating market;
- Heat demand – 7.5 TWh/year
- Total production – 8.9 TWh/year
- Heat losses in pipelines – 15.5%
- Length of pipelines – 2515 km
- Primary fuel consumption – 89.2 kg.o.e./MWh
- Fuel structure 2017: biomass (64.2%), natural gas (33.3%), other (2.5%).
Design of regulatory framework

Pillars of conceptual model:

- **Technical** - Ensure technical abilities for newcomers to enter the sector & stay in – model of rTPA – GridCode by Regulator;
- **Economic** - Instrument to contract thermal energy with guarantee of no final (system) price increase and guarantee of technical reliability (SS) – model of Single buyer – wholesale price algorithm by Regulator;
- **Competitive** - Prevent anticompetitive behaviors and reimbursement of damage and sanction in case of anticompetitive action – model of ex ante competition regulation – Market supervision rules by Regulator

Contracting thermal energy model:

- Monthly auction;
- Price is the determinant of winning bids;
- In case of equal bids, priorities are pre-established by Regulator;
- Variable costs as price limit (I phase);
- Reserve capacities;
- Publicity / transparency and historical information accessibility – mandatory;
- No secondary market is allowed.

Phases of reform:

- Transitional phase – IHPs competing on partial costs and incumbent is secured;
- Target market model – competing on full prices.
DH competitive reform implementation in Kaunas

Figure 3 Market opening in Kaunas DH system 2013-2017
DH competitive reform implementation in Klaipeda

Figure 4 Market opening in Klaipeda DH system 2016-2017
Finalizing competitive market design and moving forward

Candidates for non-competitive terms:
- Peak load capacities (1/3 operational capacity, spec technical regulation) – less 1000 hours/year;
- Balancing.

Sub-markets to be constructed:
- Operational generation capacities sub-market shall move into full-scale competition over total costs;
- Peak load generation capacities sub-market shall be kept as a monopoly secured by Regulator;
- Balancing function & reserves (back-up capacities) sub-market - shall be kept as a monopoly secured by Regulator for the time being, however potentially subject to reconsider at later stage.
Finalizing competitive market design and moving forward

Figure 5 Design model of fully liberalized DH generation market

Peak load capacity can be adjusted according to the sum of installed IHP capacity

Monopoly services that could (should) be kept in new market design:

1) Peak load capacity (~1/3)
2) Reserve (system "n-1" < 30%)
3) Balancing capacity (market "n-1")
4) Balancing capacity should be maintained on "hot" regime

- monopoly
- competition (full cost)
Results and Conclusions

Conclusions:
- DH competition transformation is possible and delivers benefit to final consumers, numbering to million EUR annually;
- Transition implemented in phased approach ensures security of supply, albeit may be considered as discriminatory approach;
- Three major conditions were decisive:
  - dependability on gas;
  - high gas prices;
  - potential of alternatives.

Discussion:
- Long lasted theoretical discussions considering possible (or not) competition in DH now has a real case: pros and cons;
- Analysis of Stakeholders positions;
- Lessons learned from the process and recommendations for the reform replicability.
Thank you!