Legislative analysis for the 4th generation district heating in Latvia

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Research Goal

To remove existing legislation barriers for the switch to the 4th generation DH systems based on analysis of the existing system.
CURRENT SITUATION FROM LEGISLATIVE ASPECT
Background:

- **Energy Law**: Owner of each building is entitled to choose the most appropriate heating for its building (Article 50).

- **Court ruling**: in 2013 the Supreme Court of Latvia ruled, that individual ownership rights of building owners supercede the district heating plans of municipalities.

- **Articles 48 and 49 of Energy Law**: In case there is more than one heat producer unit connected to one and the same DH system, the system operator is ordered by law to buy heat under weekly tenders from that producer who offers the lowest price.
Entry of market by new investment (2):

- Under current legislation state cannot prohibit new investment.

- Practical outcome: in case investor enters existing DH market and is able to sell heat weekly for the lowest price, investor squeezes out of the market existing heat producers, as they loose their heat off-take.

- However, state aid was granted to the previously built facilities. Investment is not yet returned and beneficial result of state aid is not yet achieved.
DH TECHNOLOGICAL SOLUTIONS AND INVESTMENTS
DH System Load. Existing and Future

\[ Q, \text{ MW} \]

\[ Q_3 \]

\[ Q_{sd} \]

\[ Q_{CHP} \]

\[ Q_2 \]

\[ Q_1 \]

Existing situation

Future sustainable development

\[ \tau, \text{ h/year} \]
4 GDH System development. Scenario 1: three energy sources & accumulation

\[ Q_{sd} \, d\tau = Q_1 \cdot \tau_1 + Q_2 \cdot \tau_1 + Q_3 \cdot \tau_3 \]
Contradiction

- Investments
- Sustainable development of DH systems
Methodology Algorithm

STEP 1: Analysis of the existing situation. Stocktaking

STEP 2: Load development forecast

STEP 3: Selection of alternative scenarios

STEP 4: Economic analysis of alternative scenarios

STEP 5: Environmental and climate analysis of alternative scenarios

STEP 6: Analysis of the advantages and shortages

STRATEGY

Information about technology

Initial data DH system

Existing legislation restrictions

SC1  SC2  SC3  SC4

Legislation improvement alternatives
Three policy tools:
1. Subsidies
2. Risk reduction
3. Efficiency improvement

International Conference on Smart Energy Systems and 4th Generation District Heating, Copenhagen, 25-26 August 2015
LEGISLATIVE SUPPORT FOR 4GDH
Essence of the proposed value-driven changes to legislation:

Consumers are not only interested to pay less for heat energy, but also in the long-term economicality and sustainability of system.

Also in regulated market, several free market and competition tools can be introduced and employed by DH systems to become competitive.
Policy tools

- Legislative support
  - efficiency improvements and RES share
  - risk reduction
- Financial support through subsidies
- Information package
What could be used as value driven criteria

- Sustainability criteria
- Tarifs for introduction of 4 G DH systems
  - Euro/unit of thermal energy
  - Euro/unit of exergy
  - Euro/unit of emergy
- Increase of CO$_2$ price
- Life cycle analysis. Indicators
Conclusions

- New criterias which express SUSTAINABILITY has to be defined for introduction of 4 GDH systems in Baltic States.
- Legislative support is needed for development of sustainable energy systems with high share of renewable energy resources.
Additional information: www.videszinatne.lv

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Environment and Climate technologies Conference - CONECT conference in framework of ENERGY PROCEDIA
www.conect.lv
October 13-16 each year
Exergy factors

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