Highlights of Energy Research 2018

OPEN HEAT GRIDS IN URBAN HYBRID SYSTEMS

Simon Moser
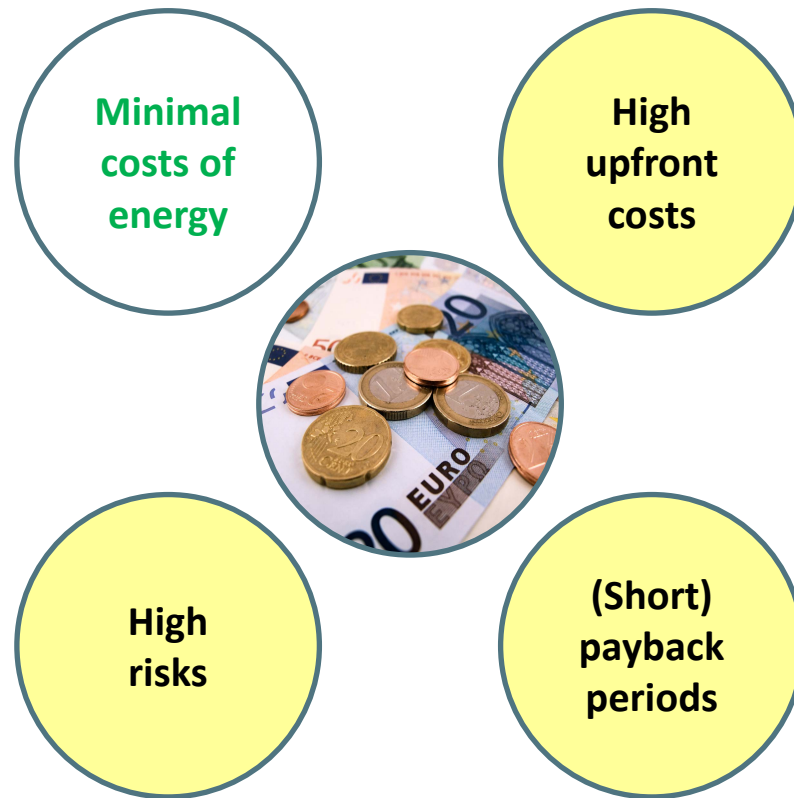*System Integration and Sector Coupling, Vienna, March 20th 2018*

Motivation

- Call „City of Tomorrow" (Federal Ministry of Transport, Innovation and Technology)

  – Optimisation of electricity, gas and heat network charges & regulation

  – Taking into consideration the ever-closer link between these networks.

- Open Heat Grid

  – Prime interest: how to enforce the feed-in of alternative heat sources in existing DH networks
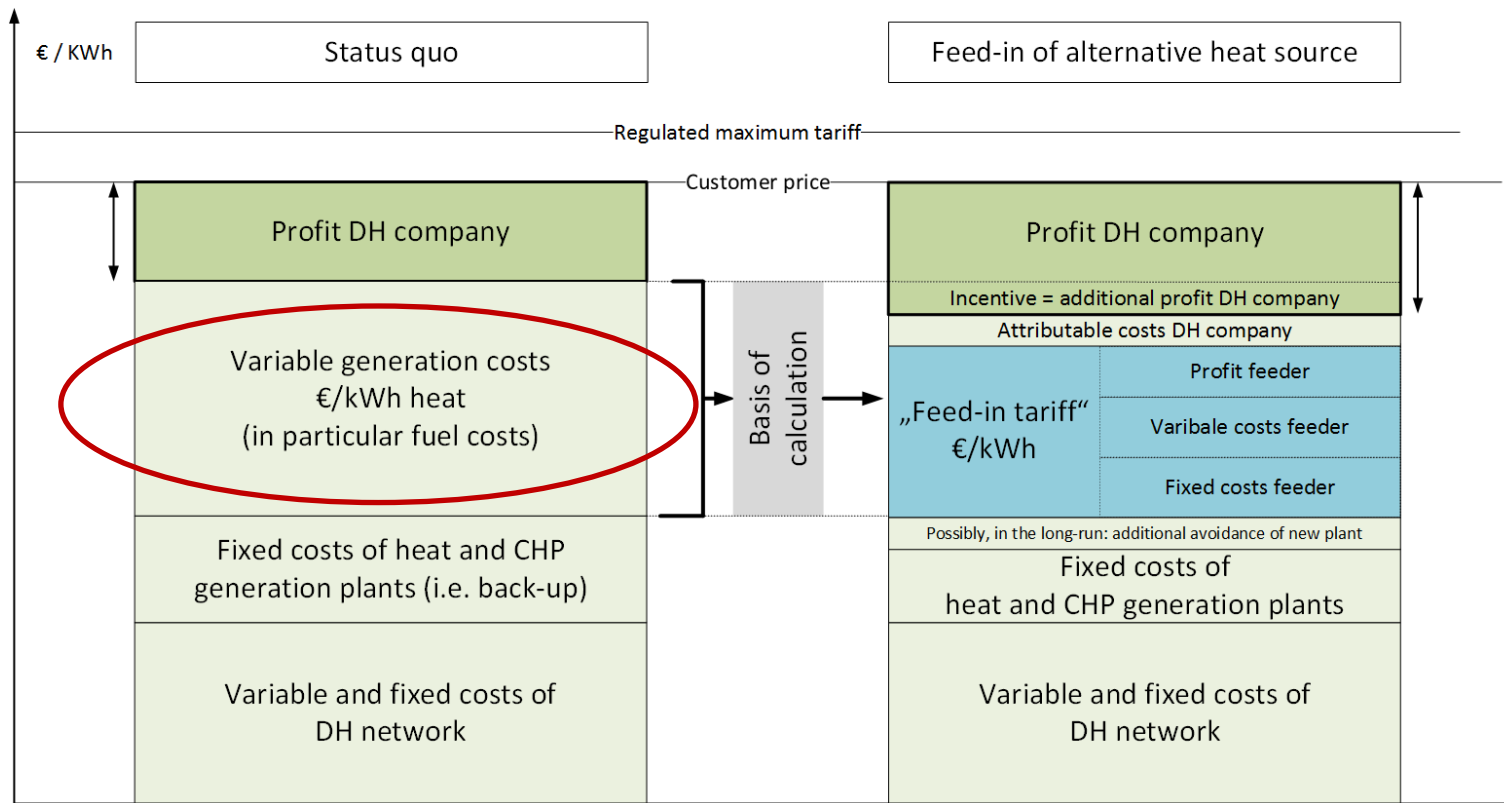
  – Focus on industrial excess heat

Results #2
Heat generation plants compete.

€ / KWh

| Status quo | Feed-in of alternative heat source |

Regulated maximum tariff

Customer price

Profit DH company | **Profit DH company**

Incentive = additional profit DH company
Attributable costs DH company

Variable generation costs
€/kWh heat
(in particular fuel costs)

Basis of calculation

„Feed-in tariff"
€/kWh

Profit feeder

Varibale costs feeder

Fixed costs feeder

Possibly, in the long-run: additional avoidance of new plant

Fixed costs of heat and CHP
generation plants (i.e. back-up)

Fixed costs of
heat and CHP generation plants

Variable and fixed costs of
DH network

Variable and fixed costs of
DH network

Note: The relation of the heights of the bars does not correspond to the relation of actual costs.

© Energieinstitut an der JKU Linz, „Open Heat Grid", 2016.
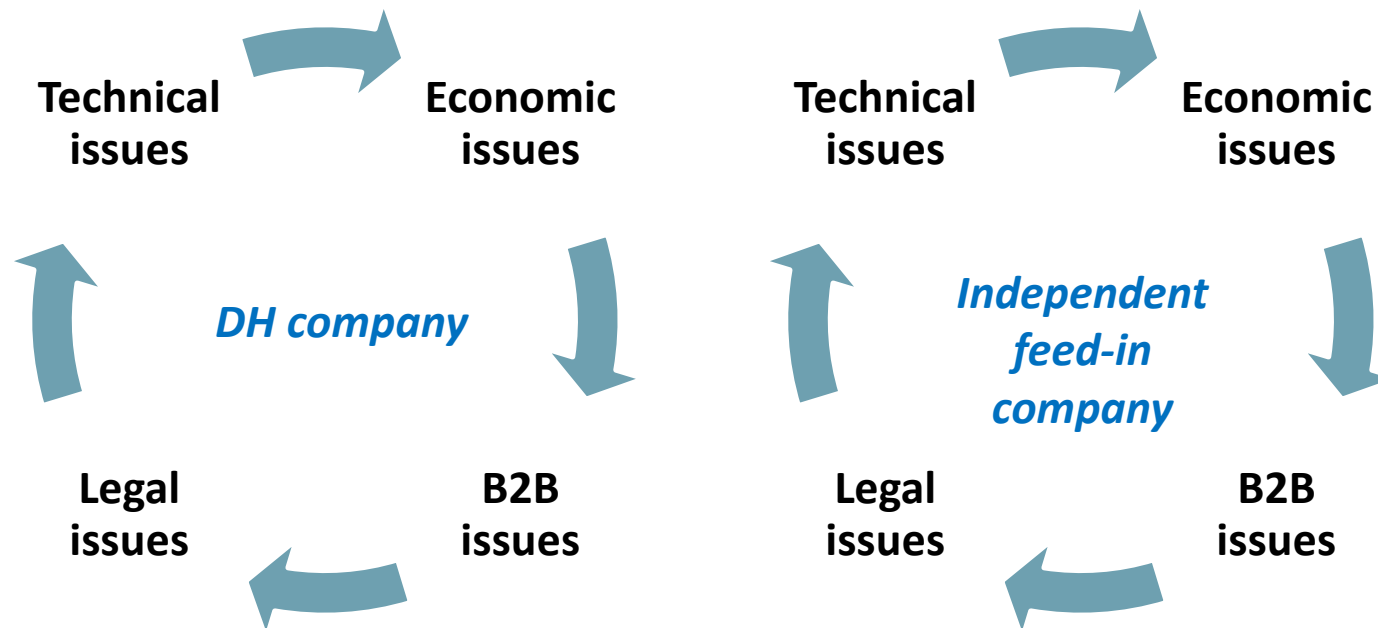
Conclusion #1
Feed-in regulation is inappropriate.

- From an economic theory point of view, i.e. assuming rational decisions:

- DH company-owned and external heat generation plants compete like on a free market

→ Feed-in obligations (duty to grant access / duty to feed in) are inappropriate.

→ DH market liberalisation (e.g. electricity and gas markets) is inappropriate.

(Weighing up the pros and cons supports these results. → find the final reports (in German only) here:
https://nachhaltigwirtschaften.at/de/sdz/projekte/open-heat-grid-offene-waermenetze-in-urbanen-hybridsystemen.php)

Information asymmetries are the main barrier.

Technical issues

Economic issues

DH company

Legal issues

B2B issues

Technical issues

Economic issues

Independent feed-in company

Legal issues

B2B issues

# Reduce complexities with guidelines

- Information asymmetries lead to inefficient decisions

  – High complexity of negotiations due to interacting, interdisciplinary parameters

  – Lack of information exchange

→ Develop *negotiation guidelines* to overcome information asymmetries.

  → "FURTHER RESEARCH IS NEEDED"

→ Swedish district heating law represents a motivational instrument.

  – Independent heat suppliers my access the network.

  – But DH company is definitely not worse off.

  – The law has not been applied in practice yet.

The "heat merit order"
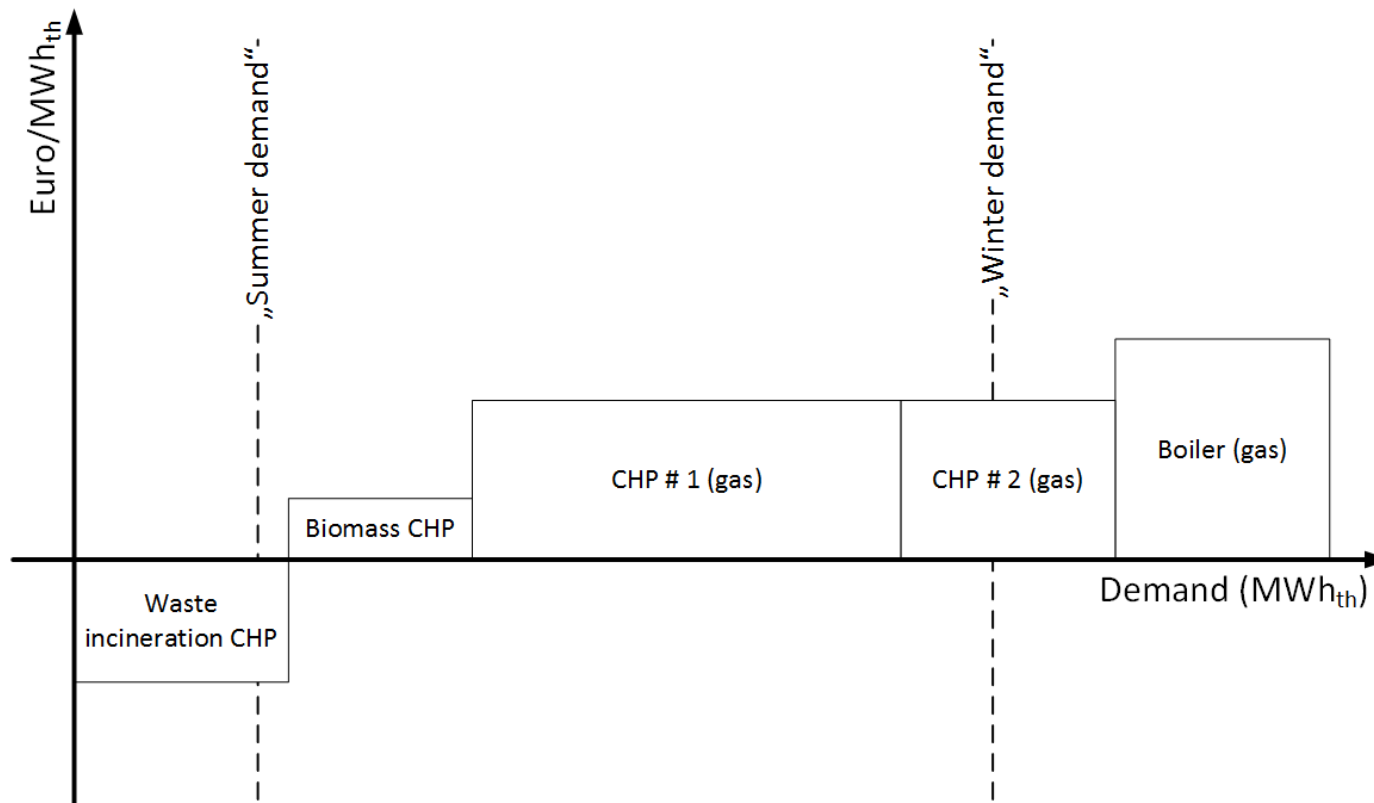
© Energieinstitut an der JKU Linz, „Open Heat Grid", 2016.
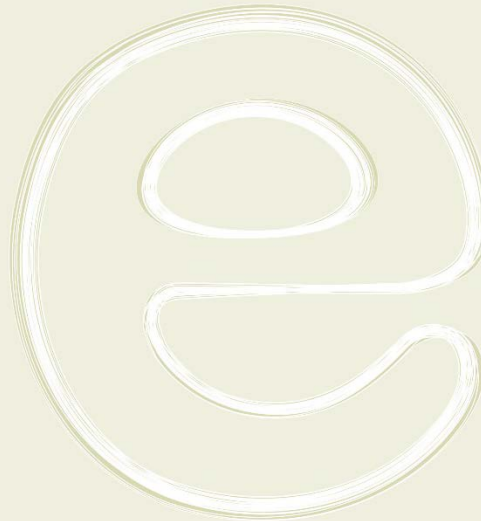
Energieinstitut an der Johannes Kepler Universität Linz

Simon Moser   moser@energieinstitut-linz.at   http://at.linkedin.com/in/mosersimon
https://nachhaltigwirtschaften.at/de/sdz/projekte/**open-heat-grid**-offene-waermenetze-in-urbanen-hybridsystemen.php