Contracts in District Heating

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The Importance of Contracts

• Lay out legally binding arrangements between two or more parties.
• Careful contract design can reduce risk for all parties.
• However, all contracts are imperfect, i.e. they don’t cover all possible contingencies.
• Contracts should try to cover as many of the most important contingencies as possible
• Contract disputes can be highly costly
Designing contracts

• Standardised contracts mean parties do not have to build contracts from scratch.
• Increases confidence in the contract writing process.
• Reduces costs since process is sped up.
• Standardised contracts can be tailored to include more complex arrangements.
• Trust between parties is an important factor in contracts.
• Parties with an existing relationship likely to value goodwill towards each other. Risk is therefore reduced.
Typical Elements of District Heating Contracts

- Supply
- Construction
- Operation
- Maintenance
- Pricing
- Insurance
- Mitigation of risk

- Quality Assurances
- Monitoring
- Billing
- Changes of roles
- Compensation
- Renegotiation
- Disputes
Contracts and Risk Transfer

• Contracts can be considered tools with which to transfer risk and value.
• Risk transfer can be between project partners or to external parties.
• Contracts can be used for risk allocation.
• Effective risk transfer and risk allocation can reduce the costs of a project and improve its viability.
Risk Transfer: example

- Scenario 1: Energy company pays owner of heat source a regular fixed fee for excess heat.
- Scenario 2: energy company pays for heat based on end-user demand. Heat source demands higher return in exchange for heightened risk.
Stakeholder Interviews

- In ReUseHeat, interviews were conducted with 5 different type of stakeholder in a range of European countries:
  - DH operators
  - Policy makers
  - Investors
  - Customers
  - Owners of urban waste heat
- Some questions regarding contracts.
- Aim to capture recurring themes regarding how things are done/difficult issues etc.
Stakeholder Interviews

• Lack of legal framework for low temperature WHR → contracts often have to be built from scratch.
• Standardised contracts used in some cases but often need to be tailored significantly.
• Price of heat depends on season/weather conditions in some cases.
• Feasibility studies often not done due to small scale of project. This makes contract negotiations more difficult.
• Energy companies believe that suppliers of heat often overestimate the value of their heat.
• Long term contracts needed → High degree of trust is required. This is a business risk.
Case study: Brunswick

- Heat pumped from a data centre to a new housing and commercial.
- Development connected to existing network.
- Data centre will provide baseline demand.
- CHPs will cover rest of demand.
- Data centre will save around 10 percent on cooling costs.

Stakeholders:
- Braunschweig Energy – an ESCO (75 percent owned by the city and 25 percent by Veolia).
- Data centre owners
- Property developer
- Customers
Contractual Arrangements

• **Energy Company – Data Centre**
  - How much (if anything) should be paid for heat?
  - What happens during an outage?

• **Energy Company – Property developer**
  - What incentives, if any, should be provided to the property developer to connect the new properties to the network?

• **Energy Company – End users**
  - What tariff should be paid for heat?
  - Should the tariff depend on demand?

• **Property developer – End users**
  - What options do the end users have in terms of energy supply? Alternatives to district heating?
Model Based Contract Design

• KPIs and contract design should be closely linked.
• E.g. the temperature of excess heat produced might impact the price paid.
• Exact temperature likely not known at contract stage.
• Contracts can be conditioned on realised KPI values.
• Modelling can be used to calculate price that should be paid.
• Modelling can be used to perform sensitivity analysis, assess bias etc.
• Working on how exactly modelling should relate to contract design.
• Which sorts of models should be used (simple techno-economic, more complex physical models)
• Specialist software such as EnergyPro or traditional data analysis software such as R, Matlab and Python?
Thanks for listening!

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