

# 4th generation district heating – the consumers are a key to success

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## Qualitative study of consumers involvement in the transition to 4<sup>th</sup> generation district heating

– With at focus on single-family homeowners

### Work in progress – should be see in context of;

- Part of a larger project “Energisynkronisering”
- Build upon analyses prior to this study: Focus group interviews
- Will be followed by a questionnaire – reaching out to more consumers



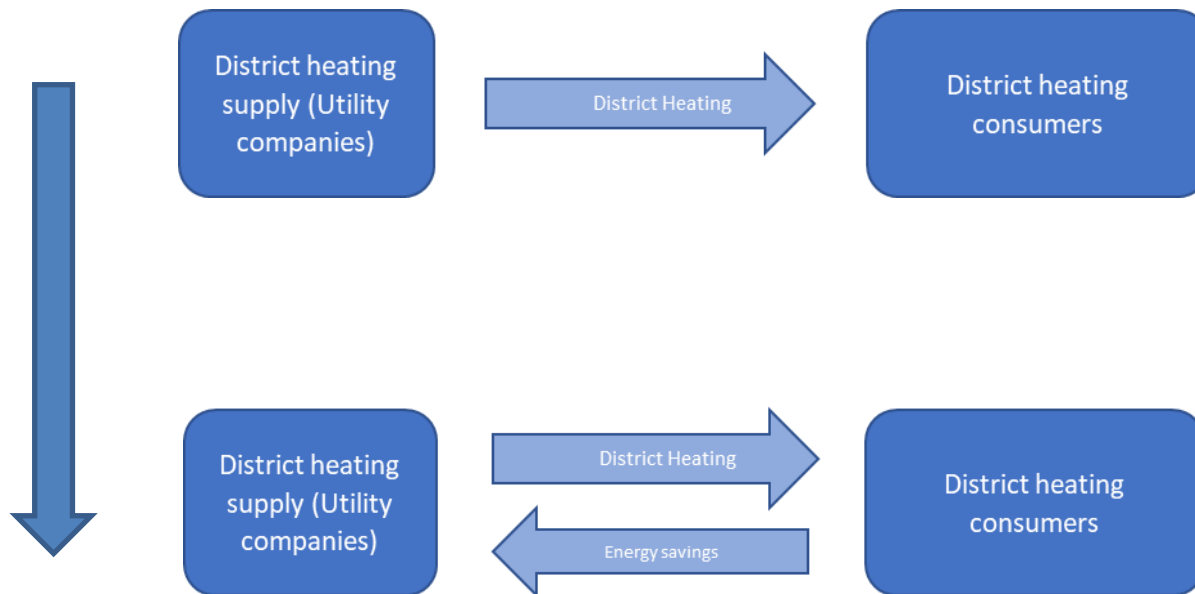
## Aim of this study

- To identify how single-family homeowners can be motivated to invest in energy renovations and energy savings in their homes.

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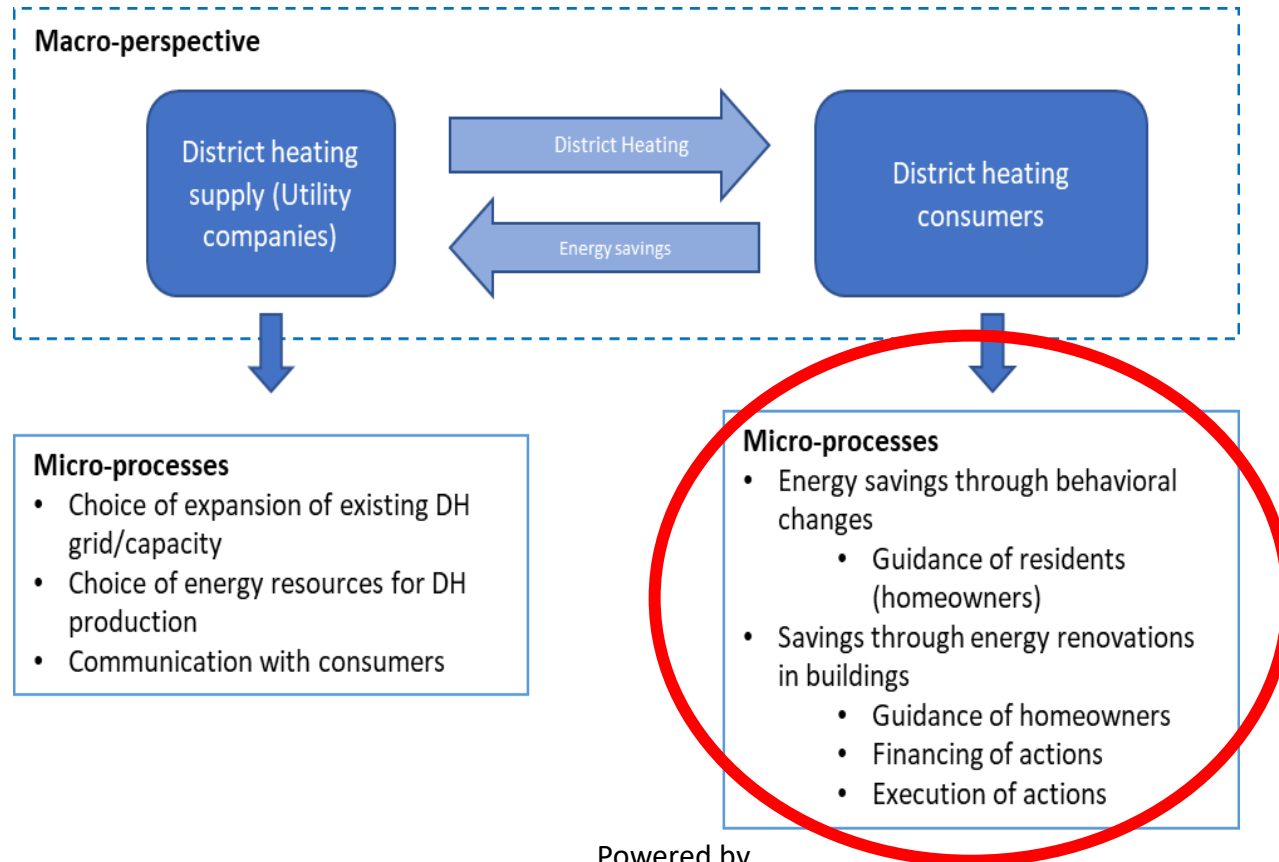


# Changes in relationship between supply-side and demand-side



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# Macro and micro planning perspectives



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# Methodology

- Interviews

ID	Gender	Age	No. of persons in household	House age	House size (in m <sup>2</sup> )	No. of levels	Occupation (adult in the household)	Use of mobile app	Energy renovations
C1	Male	39	4	1974	164	1	Researcher	Not active	Yes
C2	Male		4		300	4	Building constructor	Medium active	Yes
C3	Male	51	4		180	2	Taxi driver	Medium active	Yes
C4	Male	37	3 + 2 part time	1977	163	1	Planner at Municipality	Active	Yes
C5	Male	50	1 + 1 part time	1930	200	3	Employee at Utility company	Medium active	Yes
C6	Female	46	3	1921	256	3	Employee at the school administration at a Municipality	Active	Yes

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# Learnings from interview with consumers

## What is important for the consumers in order to make energy renovations

- **Economy, Comfort and Climate** are given highest priority – but weigh differently from family to family

### Climate

*“Societally, we all need to do a little so that we can improve the environment and emit less CO<sub>2</sub>.”*  
[Interviewee, C5]

### Comfort and Economy over climate?:

*“The price on district heating... the low price means that we do not compromise comfort or start doing larger investments in energy improvements.”* [Interviewee, C1]

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## Who are the consumers in contact in dialog with when making energy renovations

ID	Energy renovations	Been in contact with in relation to renovation
C1	- Changed windows and doors - 200 mm insulation on loft	None
C2	- Insulation on loft - Extra insulation in conservatory	Not clear
C3	- Installed smart control of heating devices (Danfoss Link)	Craftsmen – not specific enough
C4	- Energy-efficient lightbulbs	Have had a professional to look at their house to identify potential investments. However, did not find it useful.
C5	- New roof - Floor heating - Insulation	
C6	- Energy-efficient lightbulbs	None

**The interviewees mostly decide on actions based on own knowledge and experience!!**

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## What information are the consumers missing to make decisions about energy renovations

- **Access to calculations on feasibility of different energy efficiency actions**
- **Access to data;**
  - Comparison to other similar houses or houses in neighbourhood
  - Comparison to how much they ought to use (How low should they go!)
  - Access to “realtime” data
  - Knowledge of when the energy is “green”
- **Specific guidance;**
  - Mix between online and personal

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## Key findings

- Different target groups/persons have different needs
  - In person counselling
  - Online counselling/information
  - Feasibility calculations/overview of potential actions
  - Follow consumption in “real-time”
  - Knowing their ideal consumption
- Those who have had counselling – did not find it satisfying enough
  - Not specific enough for their house and situation

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# Next step – how to meet the needs

Need	Potential actions (examples)	Potential actors (examples)
- Feasibility calculations	<ul style="list-style-type: none"> <li>- Specific counseling on actions</li> <li>- Support schemes</li> <li>- Climate loans</li> <li>- Online access to information (e.g. sparenergi.dk)</li> </ul>	<ul style="list-style-type: none"> <li>- Energy counselors</li> <li>- National/local authorities</li> <li>- Financial institutions (Banks)</li> </ul>
- Knowledge of the “right” actions	<ul style="list-style-type: none"> <li>- Specific energy counselling</li> <li>- Online access to information</li> <li>- Campaigns</li> </ul>	<ul style="list-style-type: none"> <li>- Energy counselors</li> <li>- Craftsmen</li> <li>- National/local authorities</li> </ul>
<ul style="list-style-type: none"> <li>- Comparison to other similar houses</li> <li>- Comparison to how much they ought to use (How low should they go!)</li> <li>- Access to “fresh” data</li> <li>- Knowledge of when the energy is “green”</li> </ul>	<ul style="list-style-type: none"> <li>- App’s???</li> <li>- Legislation on sharing data with consumers</li> </ul>	<ul style="list-style-type: none"> <li>- Utility companies</li> <li>- National authorities</li> </ul>

6<sup>th</sup> International Conference on Smart Energy Systems  
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# Thank you for your attention!

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