

# Changed norms of comfort in different energy cultures. The case of heat pumps

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# About the project

- Title: «Energy saving technologies in households: The heat pumps» (2012 – 2014).
- Financed through the RENERGI-program in the Norwegian Research Council.
- Builds on a previous Danish project on heat pumps and electricity consumption.
- Main objectives:
  - Develop an understanding of energy behaviour in Norwegian households.
  - Employ practice theory in a specific consumer research context.

# Practice theory

*A 'practice' (Praktik) is routinized type of behaviour which consists of several elements, interconnected to one other: forms of bodily activities, forms of mental activities, 'things' and their use, a background knowledge in the form of understanding, know how, states of emotion and motivational knowledge (Reckwitz 2002).*

*Practice theories are a set of cultural and philosophical accounts that focus on the conditions surrounding the practical carrying out of social life (Halkier et al. 2011).*

# Practice theory in empirical research

Gram-Hanssens summing of «elements holding practices together» and are «relevant and appropriate for an empirical study of households' energy consumption»:

1. Know-how and embodied habits
2. Institutionalized knowledge and explicit rules
3. Engagements
4. Technologies

# What do we gain from using theories of practice?

- To observe the interplay between know how/habits, engagements and technologies in households give us a realistic perspective on how consumers deal with questions of temperature/comfort, environmental concern, new technologies and potential economic benefits.
- Studying practices will contribute to the development of more specified policy instruments for reducing energy consumption in households.
- Like STS/ANT, theories of practice focus on the «man-machine interplay» where technology both shapes society and is shaped by it.

# Beyond statistics?

- A piece of consumer technology is not finished with the design and manufacture process. Users contribute in making the product.
- Ideally, with the use of practice theory, phenomena like the discrepancy between potential savings and actual savings in households could be addressed.
- Likewise, rebound effects could be observed almost in «real time».

# Methods and data material

- Combining quantitative and qualitative approaches to study the heat pump market, heat pumps effect on electricity consumption, as well as the actual use of heat pumps in households.
  - Danish data: questionnaire survey, qualitative interviews, analysis of electricity metering data, and technical inspections of heat pumps.
  - Norwegian data: existing statistical material (both externally and internally), qualitative interviews before and after heat pump installations.
  - Data collection autumn 2013: Stakeholder interviews.

# Heating and comfort practices in Denmark

- Influenced by the energy crisis in 1970s, raising awareness on the use of resources.
- Results from the survey shows that:
  - Respondents wants to save money and energy.
  - One third wants to improve indoor comfort.
  - Overall, we only find moderate changes in comfort practices: 30 % increase their indoor temperature, and 23 % reduce the length of the heating season.
- In the interviews, saving money was not emphasised, rather the non-economic benefits (air quality, circulation etc.).
- The electricity consumption increased in 4 of 8 dwellings after the installation of a heat pump.



# Heating and comfort practices in Norway

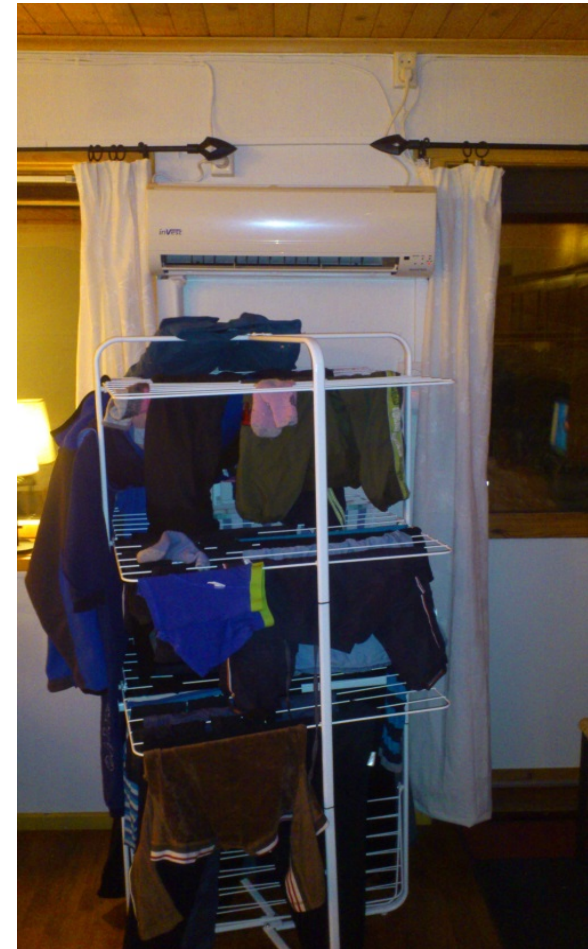
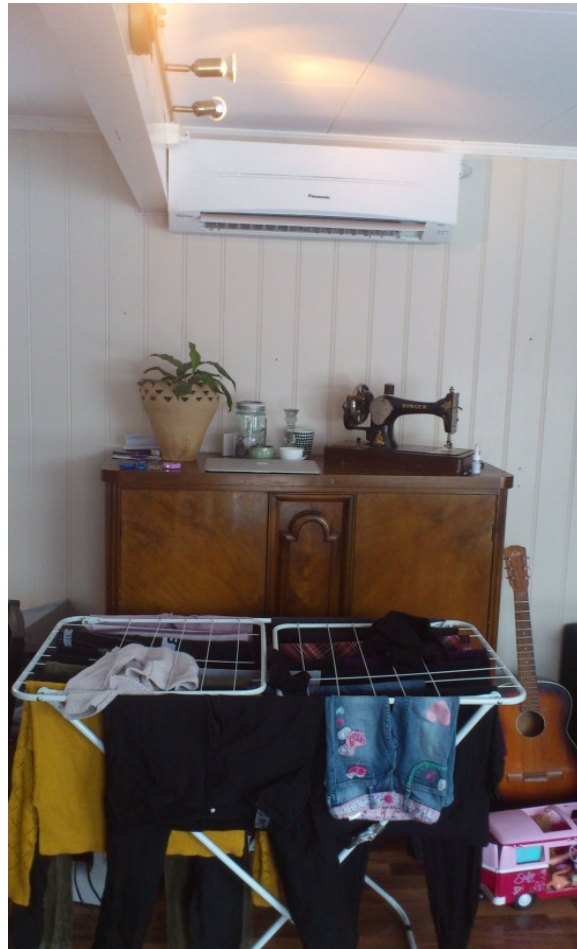
(findings before qualitative interviews)

- Norwegian consumers are used to cheap and clean electricity (hydropower), seen as a public good until the liberalisation of the electricity market in the 1990s.
- Heat pumps have in many ways become an answer to an electricity market with fluctuating prices and availability, changing households' heating practices.
- However, households seem to increase their comfort level when installing a heat pump.
  - 25 % increased their indoor temperature, 33% heated more rooms than before, and 17% used the air condition (source: Statistics Norway 2009).
  - Results from SIFOs focus groups show the same tendency:
    - *"(...) the electricity bill wasn't reduced as much, but it is so nice that when you're cold you can just turn it up a degree"*
    - *"It helped a lot on the comfort, not on our electricity bill"*
    - *"20 degrees in winter and 23 degrees in the summer months [is a good indoor temperature]. You need to be able to wear shorts indoors"*

# Preliminary results from interviews with Norwegian households

Using the heat pump for  
drying clothes!

“Right now, my wife is  
using it [the heat pump]  
mainly to dry  
clothes” (Male 37, Oslo)



# Preliminary results from interviews with Norwegian households

Heat pumps will be used as a replacement for (modern) wood burners to ensure even indoor temperature throughout the day.

*“That’s why we’re thinking of buying a heat pump, so that it’s warm here when we get home. Now, we have to spend our whole evening heating up the apartment” (Male, 37, Trondheim)*





# Preliminary results from interviews with Norwegian households

22 degrees seems to be the ideal indoor temperature. Households without a heat pump are struggling to achieve this temperature during the winter months.

*“We are trying to keep the indoor temperature at 22 degrees” (Male 35, Trondheim)*



# Concluding remarks

- Air to air heat pumps have played a significant role for new energy saving policies in both countries.
- The main difference between NOR and DK is energy system, culture and traditions, but what happens when households install a heat pump is quite similar:
  - Parts of the potential saving is transformed into increased comfort; a common “comfort culture”.
  - Comfort seems to be more important than saving money.
  - Heat pumps in summerhouses is more common in DK than NOR, but the market seems to be growing in NOR as well.
- What's next?
  - Analysing how heating practices might change before and after installing a heat pump.
  - Analysing the concept of “comfort”, what are households actually doing when they increase their comfort level?

# Thank you for your attention!

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