HOW USERS AND ENERGY EFFICIENT BUILDINGS/TECHNOLOGIES INTERACT AND WHAT WE CAN LEARN FROM THIS IN A DANISH CONTEXT

KIRSTEN GRAM-HANSSEN, DANISH BUILDING RESEARCH INSTITUTE, AAU-CPH

ENERGY EFFICIENCY AND BEHAVIOUR WORKSHOP - INTERNATIONAL ENERGY AGENCY HEADQUARTERS, 11-12 MARCH 2015, PARIS, FRANCE
What I want to say….

- Energy efficiency is not enough – user practices matter as much
- Energy efficient technologies and buildings influence practices – maybe the wrong direction
- How to understand user practices?
- What to learn for energy policy?
Energy consumption in households…

…not much is happening

Energy efficiency is not enough when the number of appliances continues to grow…

And still more square meters are heated…

Index 1990=100

![Graph showing heated floor space and final energy consumption over years]


Square meter per person

Statistics Denmark, 2013
Efficient homes versus efficient practices….

Based on 230,200 detached Danish houses with an energy label.

Please note: this figure is preliminary as some data need to be checked. Please do not cite or reuse without permission by the author.
Heat pumps – an efficient technology?

Change from direct electric heating to Air-to-air heat pumps:

• In ordinary homes (n=138) 20% of potential savings were used for improved comfort

• In summer residences (n=42) on average no savings – but much improved comfort

• New technologies go together with changes in practices – technology cannot be energy saving in itself

(Gram-Hanssen, Christensen, Petersen, 2012)
How to understand user practices? Practice theories

- *Not a finished and commonly agreed upon approach*...

- Practices are collective – practitioners are carriers of a practice

- Practice theory mediates between a structure and an actor perspective

- “Sayings” and “doings” are held together by certain elements
Understanding and maybe changing a practice

Know-how, embodied habits

Technology and infrastructure

Laundering practice

Engagements

Knowledge and rules
Energy consumption is *not* a practice

- …but a precondition and a by-product for most of our everyday practices

- Cooking, computer gaming, laundering etc. are practices

- These practices are all structured by technologies though also by routines, engagement, rules, knowledge…
Policy *can* change practices

- **Knowledge and rules**: how can building regulations and energy labels include a practice perspective?

- **Routines** can be changes: make it easy to do the right - nudging

- **Engagements**: economic policy, campaigns, local citizens projects… not promote buying efficiency but changing practices in a broader sense

- **Technology R&D**: not only supporting efficient technologies – but technology development including user-appraoches
THANKS FOR YOUR ATTENTION

KGH@SBI.AAU.DK

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