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UserTEC - User Practices, Technologies and Residential Energy Consumption

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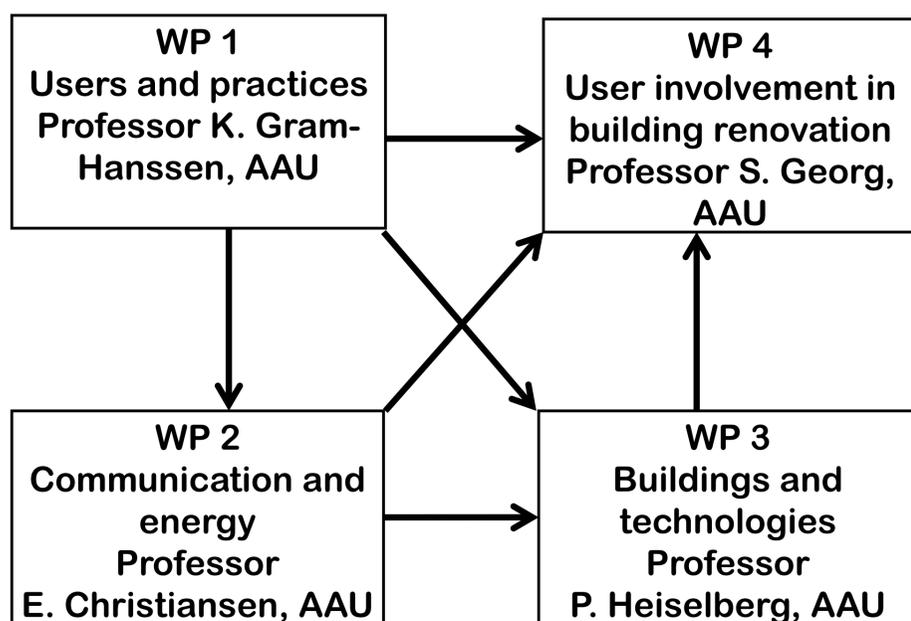
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UserTEC

User Practices, Technologies and Residential Energy Consumption

Idea of the project

The aim of the project is to use unique data to analyze in detail the everyday life practices of households in relation to energy consumption. Furthermore, the aim is to use these insights to enhance communication on energy consumption amongst actors within the energy sector as well as to develop energy efficient building technologies and renovation processes that are more aligned with the way ordinary people actually live in their homes. By following these goals the project seeks to provide new knowledge which can help build a carbon-neutral housing sector.



The structure

The project is divided into four work packages (WPs), each with a particular theme and with four different WP leaders.

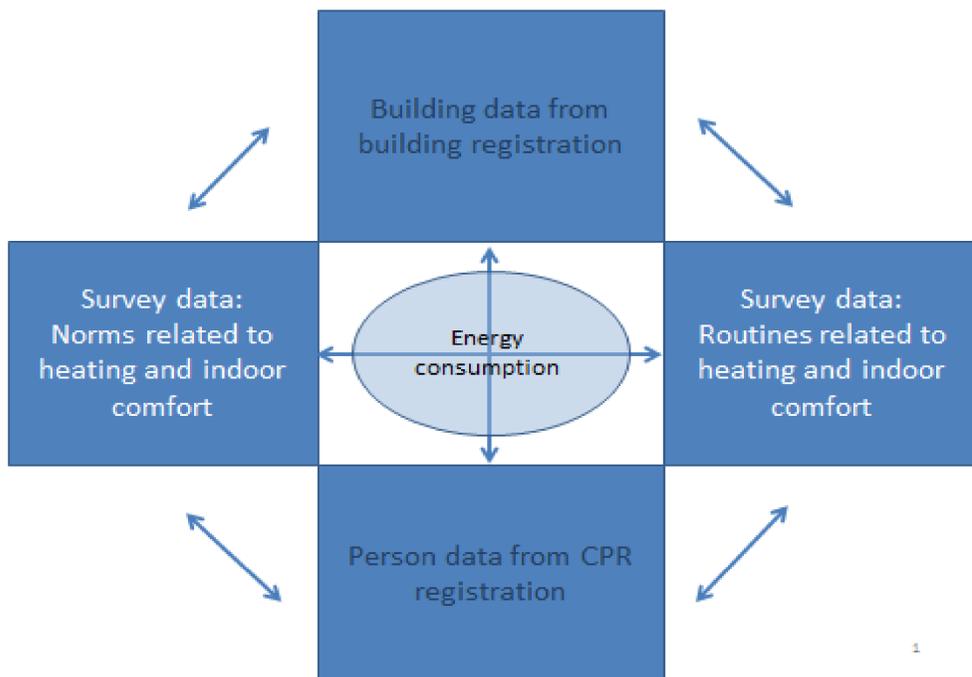
WP1 on users and practices and WP2 about communication will run the first three years and results from these two WPs will be used in WP3, which is focuses on developing new building technologies and WP4, which focus on integrating users in renovation processes. These two WPs will run the last three years

Activities

Two times a year all partners meet and make plans, discuss progress and results. These meetings are also actual working meetings, where we e.g use and elaborate on toolboxes developed to facilitate discussions between different types of actors.

In 2015 the project will host a PhD course for its own PhD students, including those from four international partner universities, and in 2016 we will hold an international workshop presenting and discussing the first result.





A homeowner survey

In February 2015, a survey among 3500 Danish households was carried out. The response rate was 70%, and hourly-based data for district heating for these households are combined with:

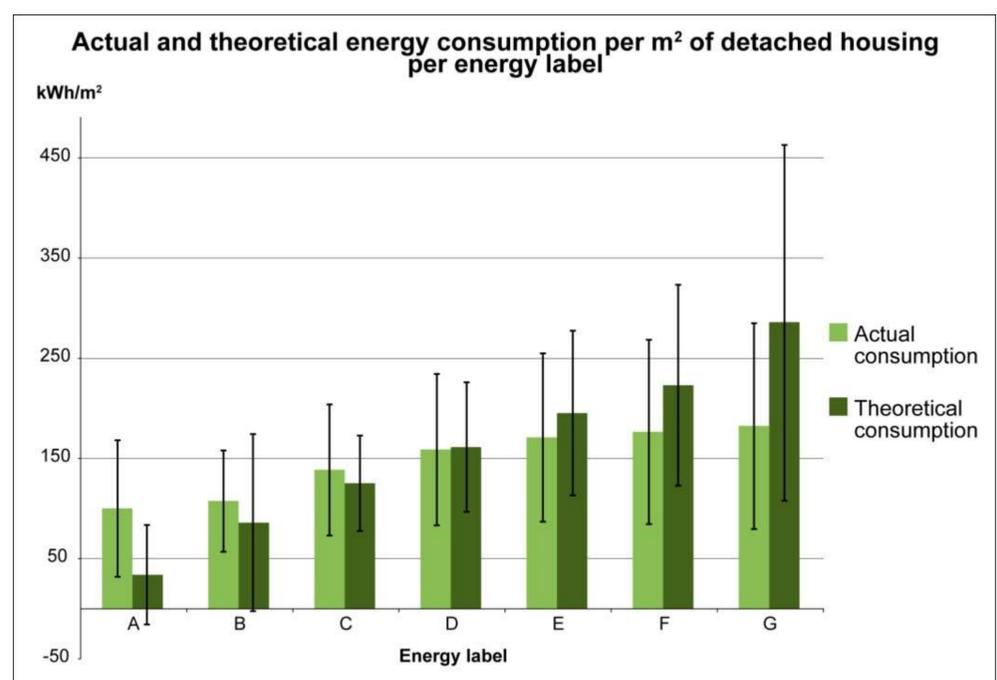
- Socio-economics and building data from registers
- Survey questions about householders daily habits as well as their norms of comfort

Research questions:

We will search for new relations between buildings, people, their habits and how norms of comfort may relate to building characteristics and possibly guide some of the daily habits.

Analysis of energy labels

Information on energy consumption and energy labels of more than 230.000 detached homes in Denmark reveals that in real life, householders living in homes with the worst energy label on average use less energy than the theoretical calculations predict, whereas the opposite is true for the homes with the best energy labels – they use more. It seems thus that people adjust their norms of comfort to the energy efficiency of the home they live in. The more efficient the home - the higher indoor temperature.



Eight PhD-projects or subprojects

WP 1: *Anders Rhiger Hansen, PhD Scholar, MSc in Sociology.* Quantitative sociological methods on extensive register data on end-use energy consumption and household characteristics.

WP 1: *Line Valdorff Madsen, PhD Scholar, MSc in Geography and Planning Studies.* Qualitative interviews to explore the practices related to everyday routines and notions of comfort and home.

WP 1 *Mette Hove Jacobsen, PhD Scholar, MSc in Sociology.* Quantitative sociological methods to examine clusters based on differences in households' possession of and practices related to electrical appliances.

WP 2: *Pernille Viktoria K. Andersen, PhD Scholar, Master of Arts (MA).* Study communication between the various stakeholders in a building project, where energy saving is part of the agenda.

WP 3: *Kim Trangbæk Jønsson, PhD Scholar, Msc in engineering .* Study dynamic building facades in relation to the user, including possible automation control strategies and communication sources

WP 4: *Daniel Pihl, PhD Scholar, MSc in Technology.* Investigating engagement of building users in design and planning processes related to projects where low energy consumption is on the agenda

WP 3: *Rune Korsholm Andersen, Researcher.* Exploring possibilities of influencing user behavior related to indoor climate and energy consumption based on direct feedback .

WP 1 *Toke Haunstrup Christensen, Senior researcher.* Flexibility and comfort related to the use and control of heat pumps for heating detached homes by the use of existing metering data and qualitative interviews

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