



CITIES

Centre for IT Intelligent Energy Systems

Technical University of Denmark



Welcome to the WP3 Workshop on Buildings and Flexibility

Presenter:

(AI)Fred Heller

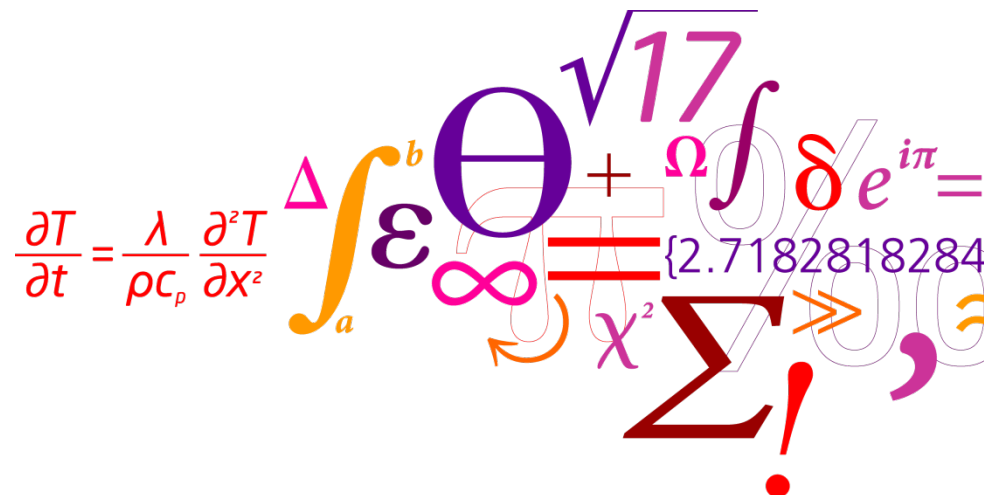
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The WPO – leadership
promotes such events
by all WPs



CITIES

The big picture in Pixi format

- Driver: Sustainability
- Energy Plans

ENERGY POLICIES – THE SOCIETAL MOTIVATION

Government's energy policy milestones up to 2050

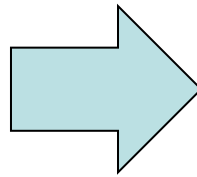
To reach 100 pct. renewable energy in 2050 the government has several energy policy milestones for the years 2020, 2030 and 2035. These milestones are each a step in the right direction towards 2050.

2030	2035	2050
Coal is phased out from Danish power plants	The electricity and heat supply covered by renewable energy	All energy supply - electricity, heat, industry and transport - is covered by renewable energy
Oil burners phased out		

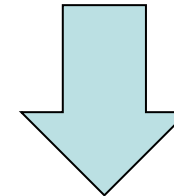
Source: 'Our Future Energy', the Danish Parliament, Nov. 2011

100% of RE in the heating sector by 2035

- Energy efficiency and savings

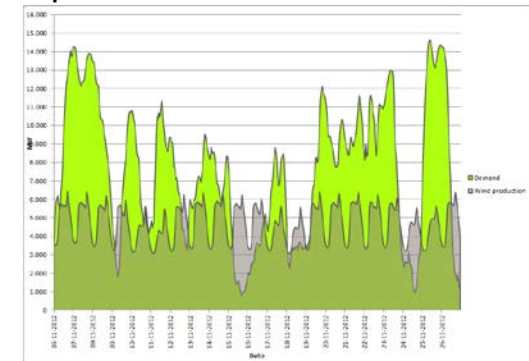


& Renewables



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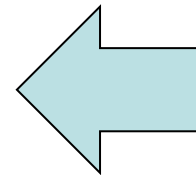
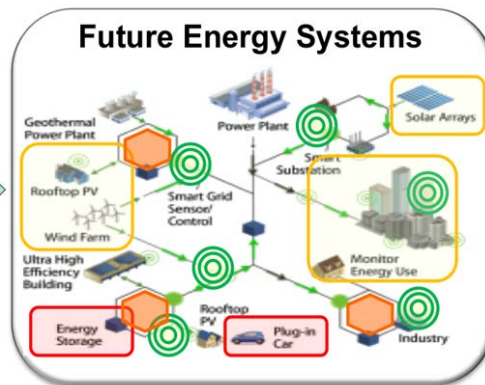
Mismatch between production and demand



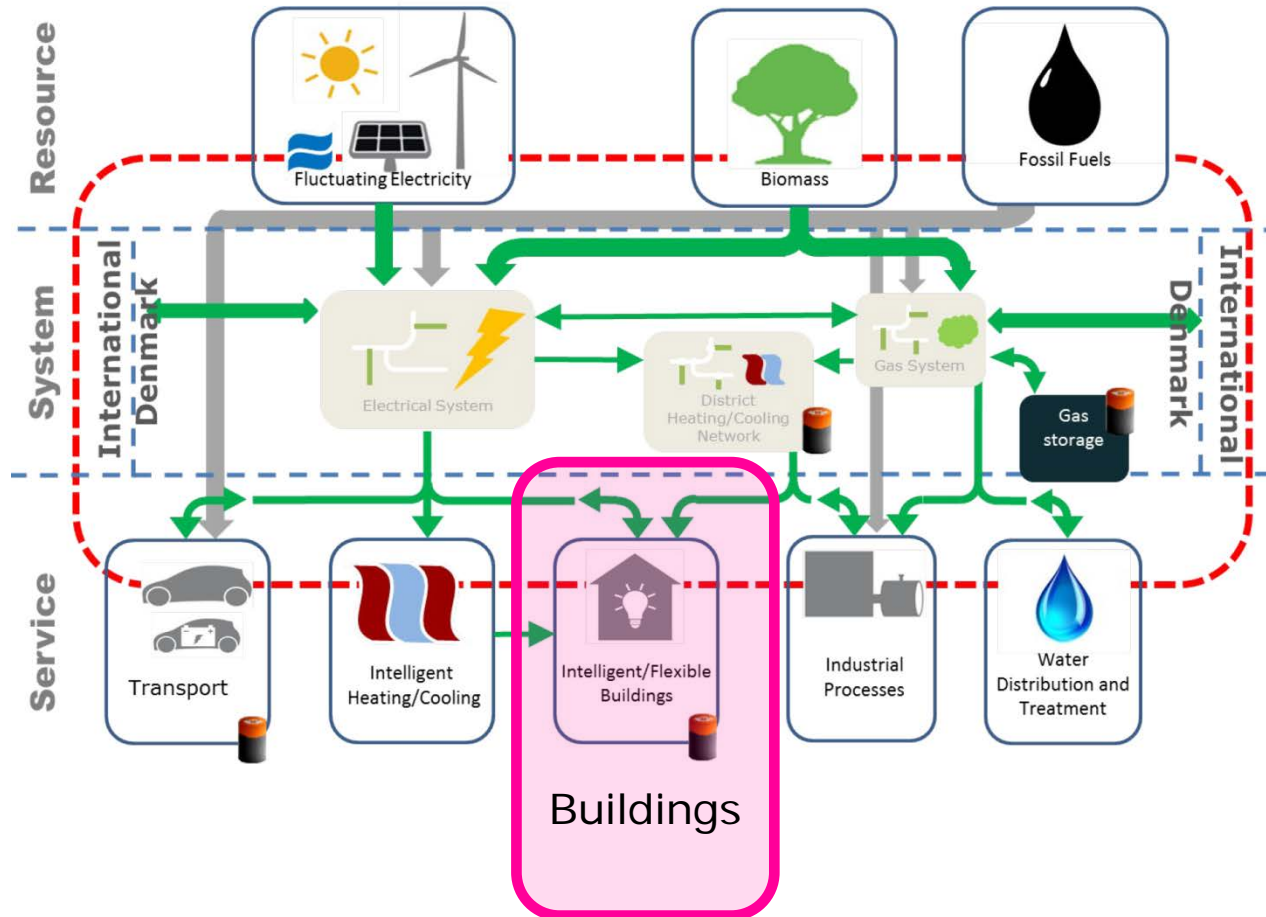
How?



Solution: Smart Grid



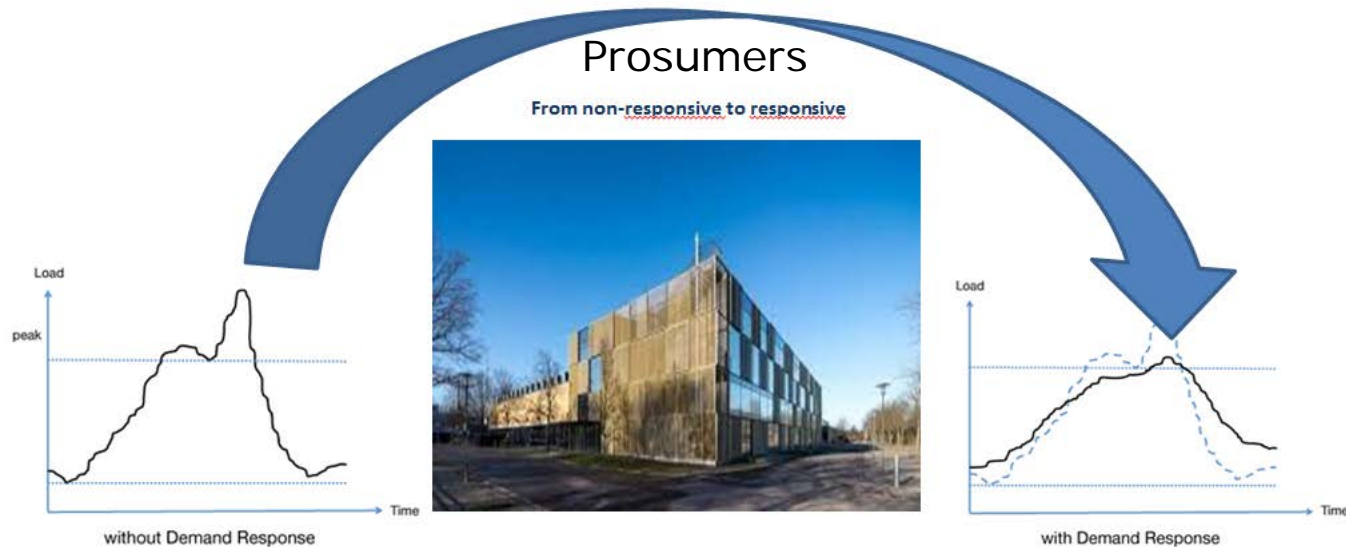
- The CITIES Holistic Energy System Research



Current Hot Topic - Flexibility

Workshop Topic of today (Thanks to all participants and WP3) Carsten and Panagiota

- Inspiration for Building Research



Research question:

Can a more proactive building energy management help stabilize the overall energy system?

Can we shift demand within buildings?
Can we offer “flexibility”?
How?

Welcome

Purpose of the day - Flexibility

Nowadays, the high penetration of renewables calls for flexibility options more than ever.

This need is expected to be realized partly within the building stock, so that energy generation and demand are matched thus contributing to the overall stabilization of the energy grid.

This workshop, organized by CITIES - Work Package 3, aims at getting people together within the CITIES project, who are working with flexibility in building energy and city scale modelling, to get an overview of the different researchers' activities in this area, exchange experiences and identify areas of cooperation.

Moreover, it is expected that some clear research directions will be defined through constructive discussion of how flexibility can be introduced to building energy.

Program

10.00-10.20: Alfred Heller & Carsten Rode, DTU Byg,
'Getting the perspective of flexibility for CITIES WP3'

10.20-10.40, Per Bromand Nørgård, DTU Elektro,
'Characterisation and quantification of flexibilities in the energy exchanges between buildings and the energy system(s)'

10.40-11.00: Peder Bacher, DTU Compute,
'Guidelines for modelling the heat dynamics of buildings'

11.00-11.20: Pierre Vogler Finck, NeoGrid Technologies,
'Towards a more optimised control of heating in households'

11.20-11.40: Steffen Petersen's group, Aarhus University,
'On the smart energy potential of buildings'

11.40-12.00: Christian Holm Christiansen, Danish Technological Institute,
'Retrofitting Existing Buildings for Energy Flexibility'

12.00-13.00: Lunch

Program - afternoon

13.00-13.30:

Per Heiselberg, Aalborg University, *'Potential heating demand flexibility in residential buildings using the thermal mass for short term heat storage'*

Anna Joanna Marszal, Aalborg University, *'Flexible buildings in low-voltage network environment – preliminary studies and ideas for future work'*

13.30-15.00:

Per Dahlggaard Pedersen, NeoGrid Technologies, *'TotalFlex demonstration'*

15.00-15.10: Break

15.10-16.00: Discussion of possible cooperation and follow-up, conclusion

Participants

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Flexibility in CITIES

