

newTRENDS

Stakeholder workshop

Prosumagers and big data
related to the built environment

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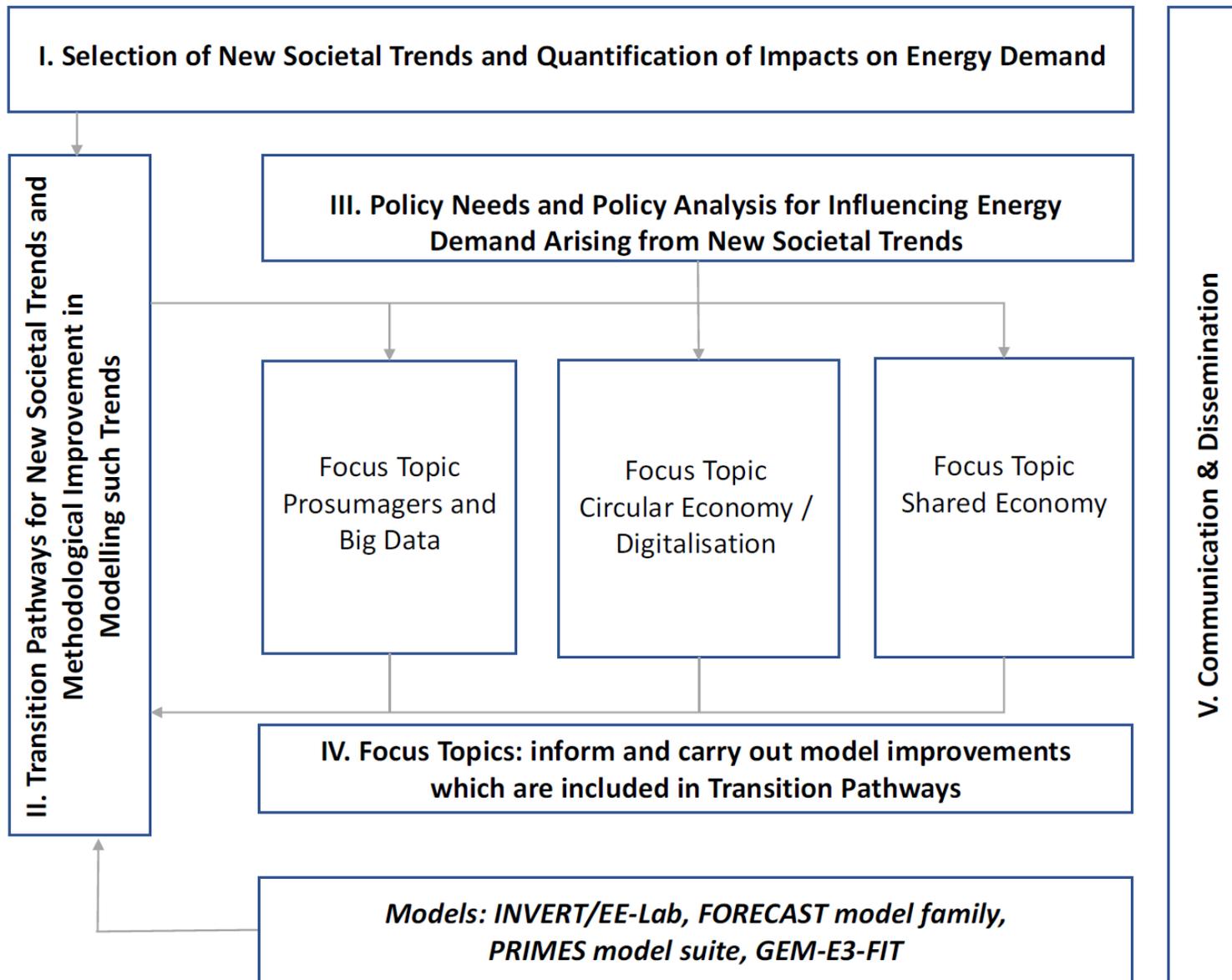
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AGENDA

- Tour de table- Introduction
- Context of the topic in the whole project
- Improvements in the analysis of new data sources and modelling of prosumaging in the built environment
- Policy dimension of prosumaging in the built environment
- Questions for discussion
- Use of MIRO infrastructure and Open discussion





- Timeline: the work package has started in spring 2021 and will continue until summer 2023
- Room to take up ideas and recommendations from our discussion today

Prosumagers and big data in energy demand models in the built environment

WP5 on prosumagers modelling and big data is one of three focus studies related to New Societal Trends and analyses the impact of prosumaging in residential buildings

- Prosumaging: renewables self-consumption, storage and management; (more or less) active participation of households in the energy system
- Objective: enhance energy demand modelling in the context of the built environment regarding the transition of consumers to prosumagers and – for that purpose – better understand new data sources (such as data obtained from smart meters in residential buildings)
 - New empirical and statistical basis for prosumager modelling
 - Modelling prosumagers and Energy Communities: prosumager behaviour in bottom-up demand models
 - From consumers to prosumagers: modelling household choices and their active participation in the energy market
 - Demonstrate the new methods and model developments by modelling policy cases



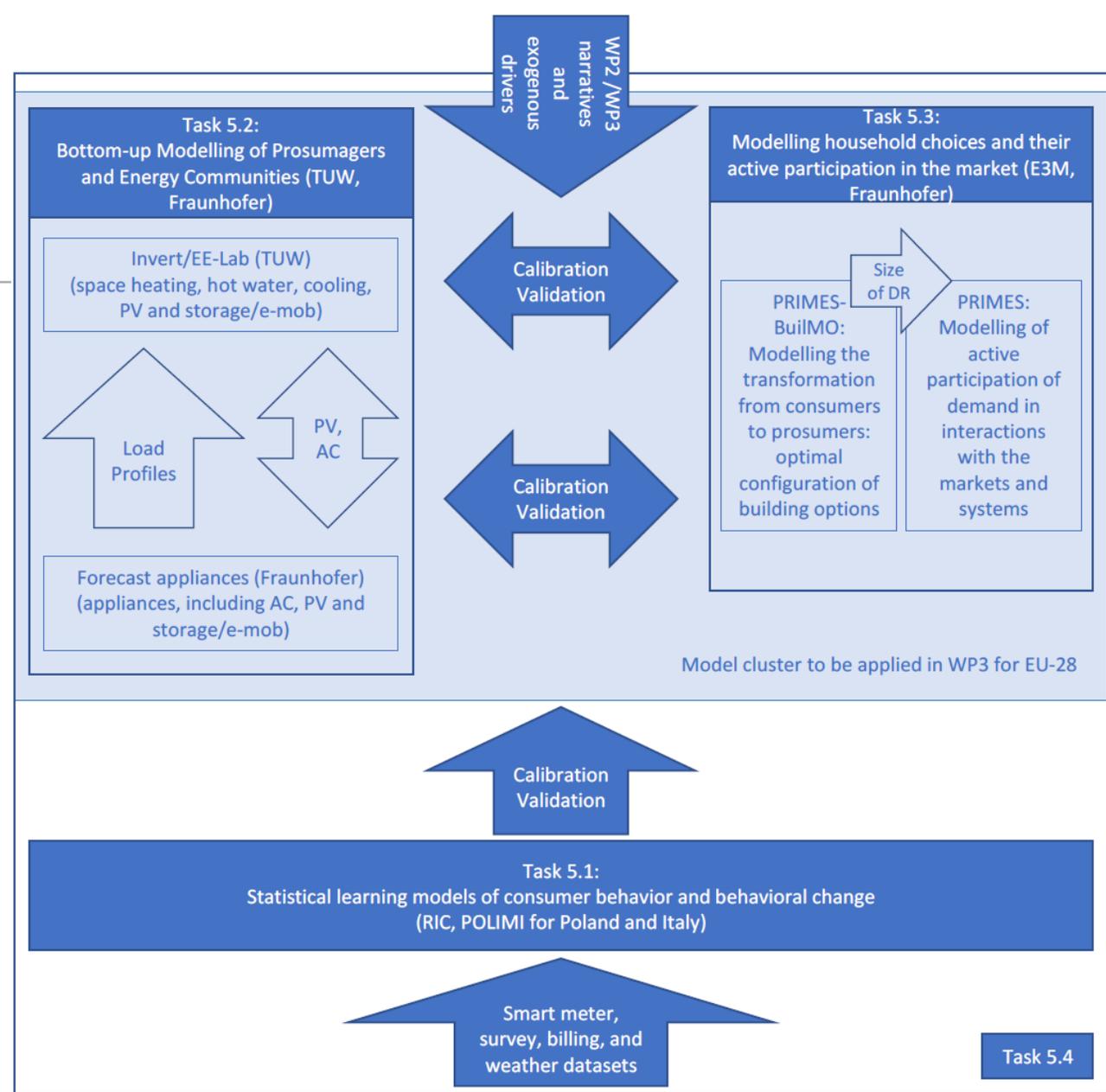
Possible policy questions to guide the modelling work

- How high are flexibility potentials from the building sector?
- How could load profiles modify due to prosumer-behaviour of households?
- How to engage customers towards energy efficiency measures and prosuming behavior?
- How to design policy interventions to increase energy efficiency and prosuming?
- To which extent could buildings impact the exploitation of the building stock's flexibility?
- What can be the impact of prosuming of buildings and uptake of decentralized energy systems on possible trade-offs between load shifting and energy production?
- What is potential impact of the uptake of flexibility potentials from the building stock on the overall energy system and prices (and in particular price peaks)?
- What are current and expected diffusion rates from prosuming related technologies (including storage) and how could policies affect them?

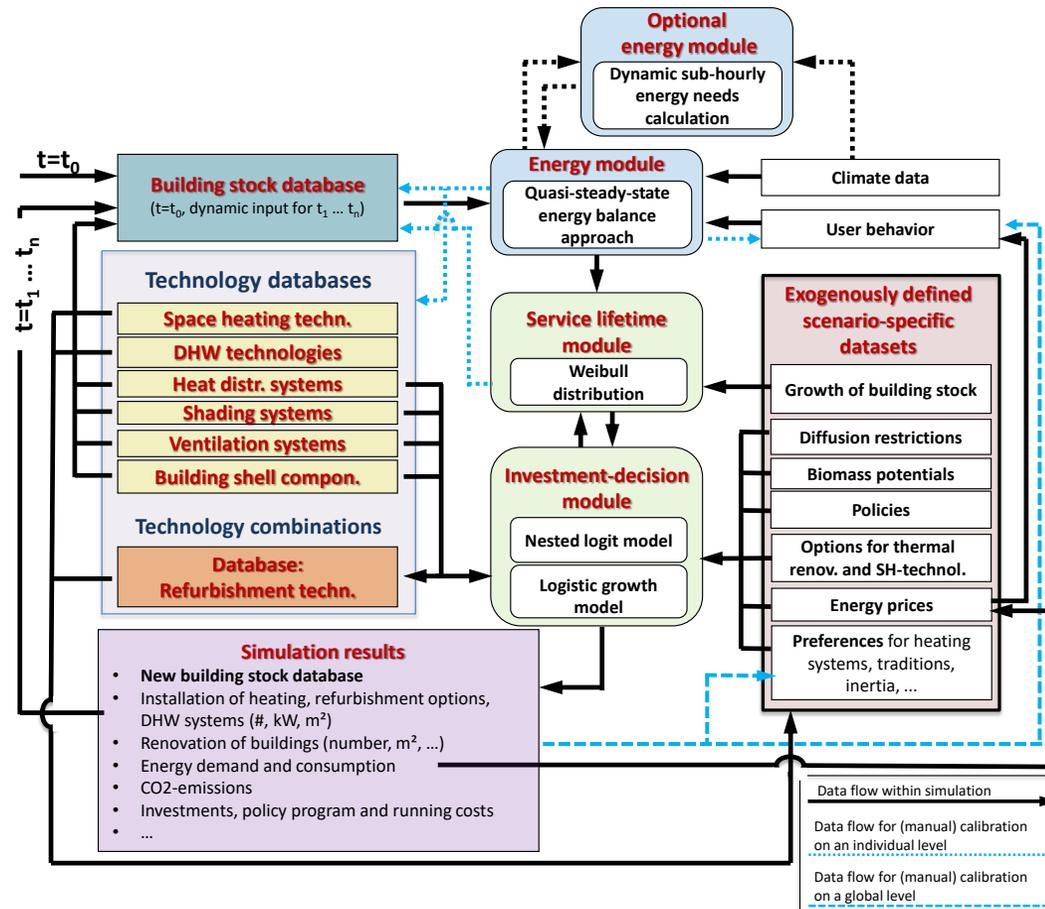
To be further discussed ...



FOCUS STUDY: PROSUMAGERS AND BIG DATA IN ENERGY DEMAND MODELS RELATED TO THE BUILT ENVIRONMENT



Starting point: building stock models without prosumager aspects (e.g. Invert/EE-Lab)



Prosumager model introduction

Operation optimization

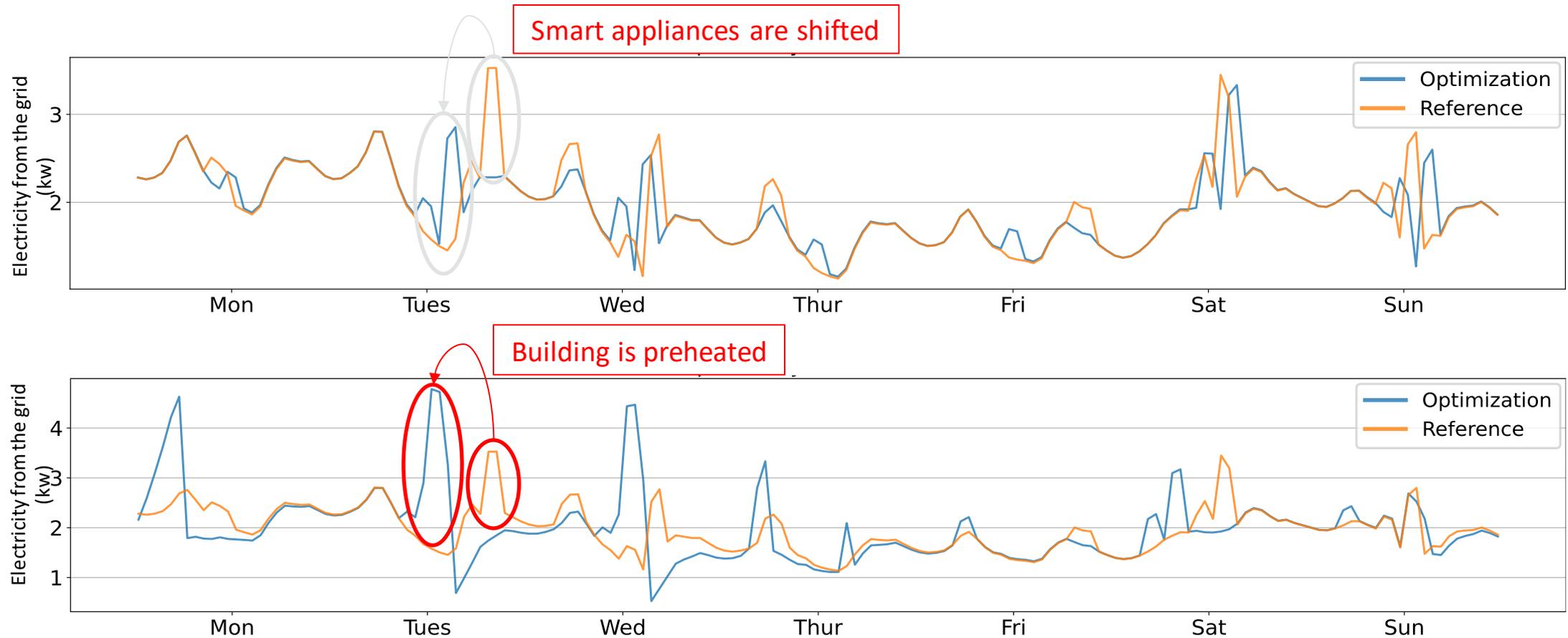
(hourly)

- Building (incl. building type, age class, and components)
- Smart appliances (e.g. washing machine, dryers, dish washer.)
- Space heating and cooling (incl. heat pump, thermal tank, and building mass)
- Hot water
- PV
- Battery
- Electric vehicle

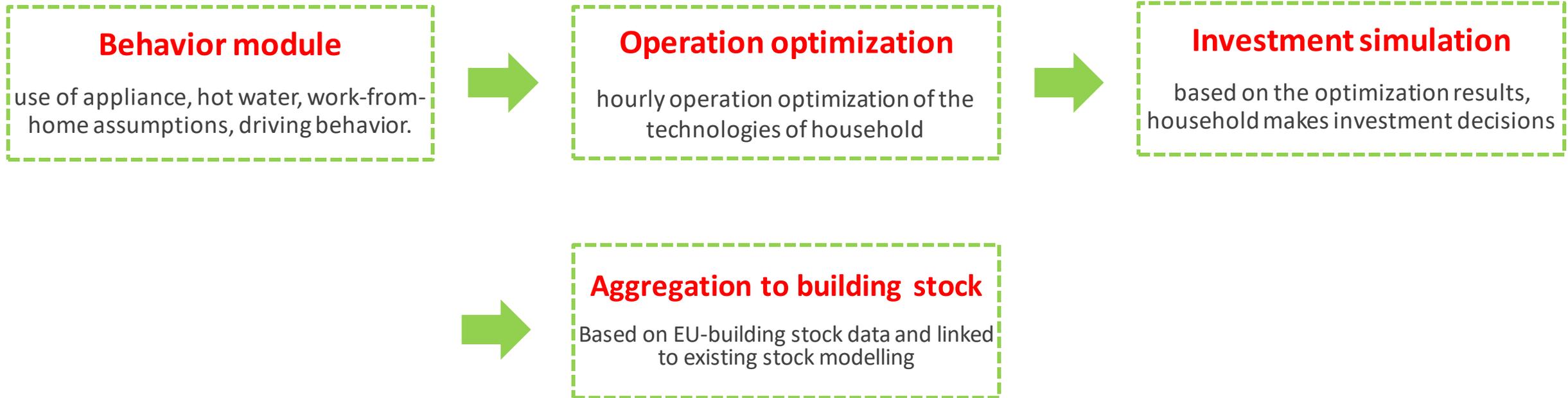
- Perspective: household
- Objective: minimize the operation cost (s.t. hourly demand of electricity / heating / cooling / hot water.)
- Decision variables:
 - hourly operation of technologies
- Scenario parameters:
 - fuel price
 - electricity price and feed-in tariff (hourly)
 - radiation and temperature (hourly)
 - lifestyle (e.g. WFH) and demand profiles (hourly)
 - driving behavior of electric vehicle



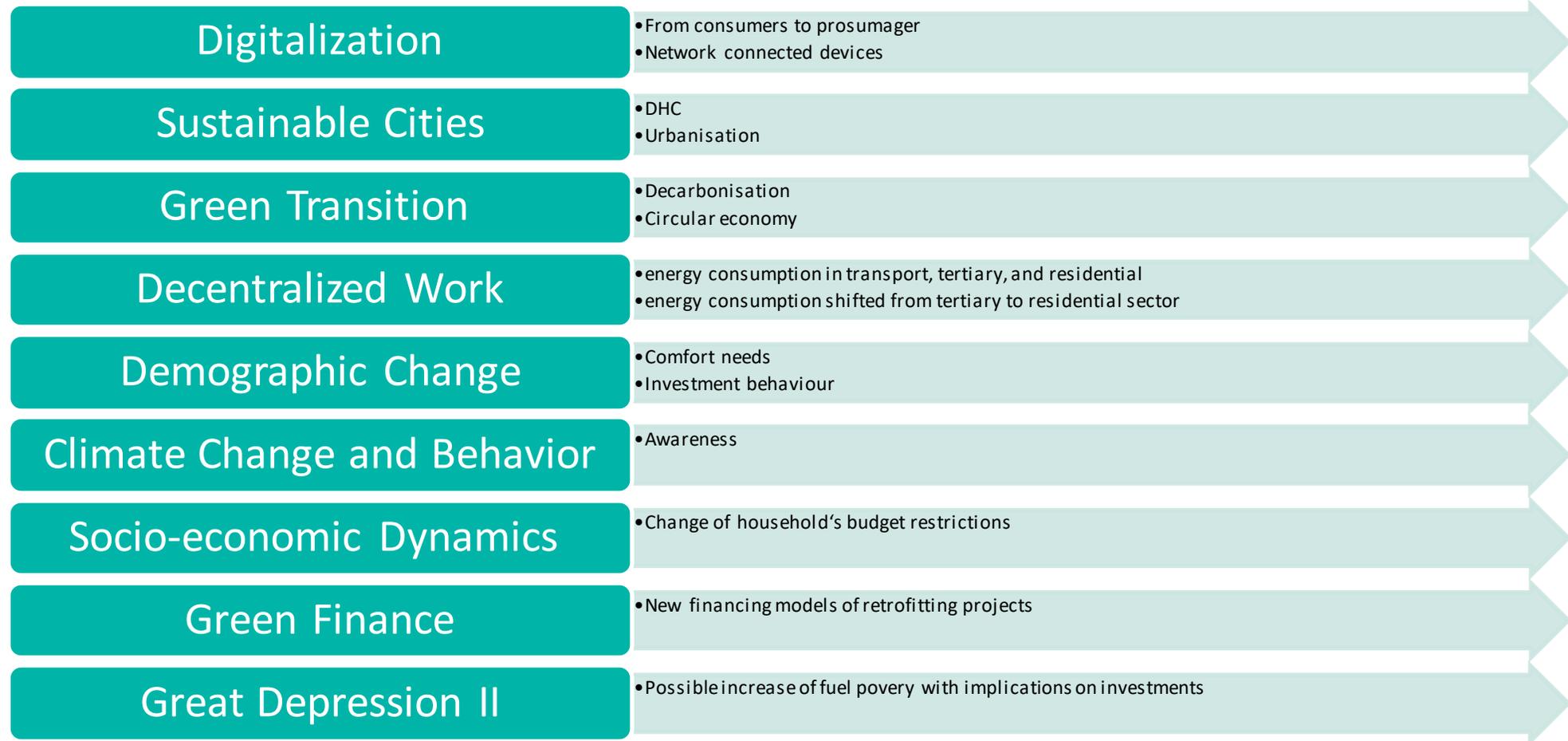
Preliminary results - scenario comparison for selected buildings



Next steps



Societal Trends with potential impact



Questions to structure our discussion

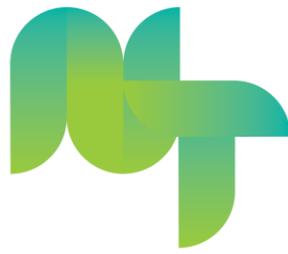
- What are key drivers for people to become prosumagers?
- What are differences between rural and urban areas regarding conversion of households from consumers to prosumagers?
- What is potential impact of prosumager behaviour on the energy system (in rural and urban areas)?

- What are relevant links to other sectors which need to be considered?
- Which general societal trends will have an impact on building related energy demand and supply patterns?

- Wishes regarding the modelling activities: which questions should our model(s) be able cover? Which type of results should our modelling deliver?



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Looking forward to the discussion!

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