Fifth International Forum on Long-Term Energy Scenarios (LTES) for the Clean Energy Transition

Session 7: Incorporating Behavioral Dynamics and Lifestyle Changes into Energy Demand Modeling
Co-hosted with the European Commission Joint Research Centre

1. Description

Long-Term Energy Planning aims to ensure a just energy transition. It requires countries to model and plan for both supply and demand while including behavioural dynamics as these impact demand from the end-use sectors specifically transport and building sectors. Behavioural change contributes to energy efficiency for industry and buildings, through its impact on the rate of adoption of low-carbon transport options and building efficiency (IRENA, 2024). To ensure a just and comprehensive transition LTES should account for the impact of behavioural and lifestyle change in energy demand and these scenarios should be used to inform positive policy and industry actions.

According to the 2021 European Commission Joint Research Center's Mobilizing Citizens to Invest in Energy Efficiency report energy efficiency decisions and investments are influenced by economic, behavioural drivers and barriers, and the conditions of everyday domestic life. As such energy efficiency investment decisions should be explored through a combined approach that quantitatively assesses theory-driven hypotheses over identifiable variables, and through the elicitation of inputs from citizens through engagement activities and qualitative methods.

Further, the World Energy Transitions Outlook 2023: 1.5°C Pathway Report's 1.5°C Scenario, highlights that total final energy consumption is projected to decrease by 6% between 2020 and 2050 due to efficiency improvements, and changes in behaviour and consumption patterns. Therefore, it is vital for scenario practitioners at the national level to incorporate the impact of behavioural changes in LTES when planning for the energy transition.

During this session, participants will share their insights and experience on incorporating behavioural aspects into long-term energy models, the methodologies used, the different scenarios and narratives generated and the impact on policy and practice.

2. Objective

This session will provide a comprehensive overview of how countries are incorporating behavioural dynamics and lifestyle changes into Long-Term Energy Scenarios (LTES). This session aims to achieve the following objectives:
   i.   Explore the methodologies used to incorporate behavioural dynamics and lifestyle changes into LTES
   ii. Discuss new developments and interdisciplinary practices in incorporating behavioural dynamics in LTES modelling at a sectoral level;
   iii. Discuss challenges arising and potential solutions to incorporating behavioural dynamics into LTES.

3. Expected outcomes

During this session, participants will explore the methods and ideas behind incorporating behavioral dynamics and lifestyle changes into energy scenario modeling. Enhance understanding of methodologies and narratives for integrating behaviour and possible lifestyle changes into energy plans

4. Proposed Agenda (120 minutes)

Time	Content
7 min	Welcome remarks and introduction to the topic Moderator: Marija Miletic, European Commission Joint Research Centre
15 mins	Scene-setting presentation (~10 slides) (virtual) Presenters: • Hazel Pettifor, Environmental Change Institute, University of Oxford • Alessio Mastrucci, IIASA
15 mins	Scene-setting presentation (~10 slides) Presenter: • Alexandra O'Sullivan Fretloft, Danish Energy Agency
15 mins	Scene-setting (~10 slides) Presenter: • Hannah Daly, UCC
50 mins	Panel discussion Panellists: • Hazel Pettifor, Environmental Change Institute, University of Oxford (virtual) • Alessio Mastrucci, IIASA (virtual) • Hannah Daly, UCC • Alexandra O'Sullivan Fretloft, Danish Energy Agency Moderator: Marija Miletic, European Commission Joint Research Centre
15 mins	Q&A
3 mins	Closing remarks

5. Suggested guiding questions

- How can the results from incorporating behaviour and lifestyle changes be used to influence policy and/or impact transitions to lower-emission behaviours and lifestyle choices?

- What challenges related to incorporating behavioural dynamics, such as citizen participation and access to relevant data exist?
- How can inter-disciplinary interaction in energy modelling ensure better representation of demand-side behaviours and profiles? (good practices)