



ETSAP WS series
Current practices

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Teams

Survey: Human behaviour

Current practices: Human behaviour

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Energy behaviour



- “Energy behaviour is often characterised as a set of individual actions that influence energy consumption and production” (Lopes et al., 2015).

Survey on current modelling practices



Review

Integrating Behavioural Aspects in Energy System Modelling—A Review

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- “Despite this large range of options and the potential implications for the future energy system, little has been done to adequately depict human behaviour in ESMs. This has so far limited the ability of ESMs to produce more robust projections or policy evaluations [5]. ESMs should therefore adopt a broader perspective, since the construction and operation of technical infrastructure depends on markets, institutions and consumer behaviour [11,12].”

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Behavioral aspects

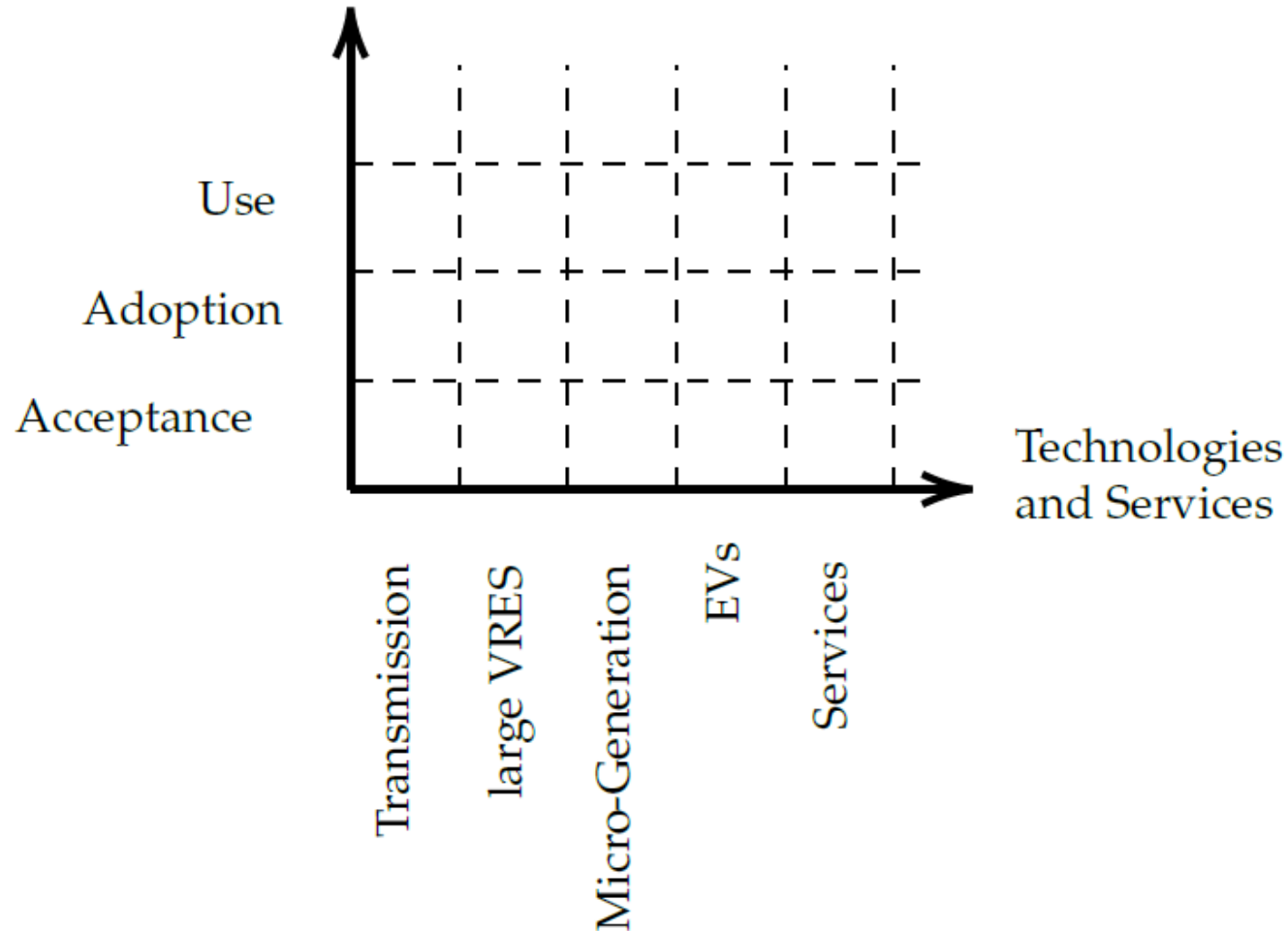


Figure 1. Behavioural aspects and technologies considered in this study.

- [Energies | Free Full-Text | Integrating Behavioural Aspects in Energy System Modelling—A Review \(mdpi.com\)](#)

Survey on current modelling practices – Human dimension

How does your TIMES model(s) and analysis consider the following behavioural aspects related to:

- 1. Acceptance** of investments in energy supply and infrastructure?
 - 2. Adaption** of demand technologies and energy efficiency?
 - 3. Use** of demand technologies?
- Please specify what technologies and in what sectors.

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Summary of survey contributions:

Human behaviour assumptions are scenario-dependent

- VTT: The behavioural aspects have mainly been considered by creating different storylines, which reflect peoples norms, values, social and cultural changes, etc
- UCC: We have developed an alternative scenario named the 'Irish Low Energy Demand' (ILED) that accounts for behavioural changes and societal transformations that can be expected in the future.
- LTU: we do not consider human dimensions IN the model, while consider it when creating scenarios. E.g. varying the different transportation demands.
- RSE: Behaviour assumptions are in most cases included to our TIMES_RSE model, as a part of the scenario description and are highly depends on the analysis that is conducted.
- IFE: Behaviour assumptions are in most cases included to our Norwegian TIMES model IFE-TIMES-Norway, as a part of the scenario description and are highly depends on the analysis that is conducted

Summary of survey contributions:

- **Example of modelling approaches**

- Constraints on capacity expansion
- Change in energy service demand projections
- Growth constraints on new technologies
- Market share constraints
- Hurdle rates/ Technology specific discount rates
- Availability factors

Summary of survey contributions:

- New Methods

- PSI: The adaptation and use of demand technologies are addressed in STEM by coupling it with an Agent-Based Model (ABM) specifically designed to interact with STEM.
- IFE: In the following years, IFE will test and evaluating various methods for coupling results from the agent-based model with IFE-TIMES-Norway with focus on building applied PV, energy efficiency and flexible demand
- VITO: In a more experimental approach we aim to use insights from Discrete choice experiment (DCE) on e.g., the adoption of smart EV chargers and the provision of EV charging flexibility to put a cost on end-use flexibility.
- VTT: The storylines are typically created using some foresight methods with stakeholders, experts, policy makers, etc. The views of different consumer groups are often reflected by large surveys, which reflect their willingness and/or ability to invest and take into use new technologies.

Reflections?