

# Modelling the influence of new social trends on energy demand

The goal of newTRENDS was to recognize and model the influence of new social trends on energy needs demand, and improve the modelling of energy demand, energy efficiency and policy instruments

*Why?*

The digitalisation of the economy and private lives (including new and smarter ways for private households to consume, produce and manage their own energy), the circular economy, the creation of a low-carbon industry, and the sharing economy particularly in the transport and the tertiary sectors (including investments in autonomous electric cars) – **these four trends (societal developments) are expected to have a significant impact on increasing or reducing energy demand in the European Union in the coming years as well as operate cross-sectoral demand shifts.** New social trends may affect not only the amount of energy consumed, but also its preferred form by consumers, or the time period of the greatest burden on the energy grid.

newTRENDS researchers used **qualitative methods with quantitative cross-sectoral modelling**, a combination not widely applied so far and a great strength of the newTRENDS project. **Scenarios** with different focuses and assumptions have been used to map this development until 2050. While these scenarios present a major step forward beyond previous modelling approaches by integrating societal trends as increasing climate awareness or circular economy, much more progress is necessary to enhance the empirical basis for such New Societal Trends and their representation in models. Such trends include:



**Towards a circular economy and a low-carbon industry**

**Digitalisation of the economy and private life**



**Transition from consumers to prosumers**

**Towards a shared economy**



*What?*

*Goals*

- 1** identifying and quantifying how New Societal Trends affect energy demand (its structure and patterns, including cross-sectoral interdependencies)
- 2** investigating how energy demand models are to be improved to represent New Societal Trends and to represent policies that can influence such trends in the light of the Energy Efficiency First Principle in energy demand models
- 3** integrating recent empirical findings on the impacts of New Societal Trends as well as information from detailed data sources such as smart meter data available from recent technical advances into energy demand models, in order to improve the empirical basis for such investigations

From a methodological perspective, 3 major aspects:

- The combination of foresight methods with quantitative model runs implemented to select appropriate trends and work out, how such trends can be quantified. For this purpose relevant trends are selected and their relevance for the energy system assessed during a deep dive analysis. A condensation of those trends in clusters as well as the translation to model parameters and modelling gaps is carried out.
- Investigating how existing, well-known energy demand models are to be improved to represent New Societal Trends, e.g. through agent-based and cross-sectoral approaches and how policies are represented in the demand models. For this, an initial scenario run of the existing demand models is carried out. Based on this a gap analysis of modelling structure as well as empirical data and an analysis of necessary model adaption is implemented. After realizing the model adaptations, a second scenario run is carried out for the comparison with the initial results.
- A focus on the data perspective to integrate recent empirical findings on consumption patterns and policy impacts, analysed statistically and integrated in the models focusing on prosumer behaviour. Useful for policy analysis!

*How?*

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