



newTRENDS

D8.7 – Report on the 2nd Stakeholder Meeting





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Executive Summary

The 2015 Paris Agreement has as the central aim to strengthen the global response to the threat of climate change by keeping global temperature rise in this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius. To reach this ambitious goal, two central strategies have to be implemented in all countries: (i) enhancing energy efficiency (EE) and (ii) decarbonizing remaining energy supply and demand, in particular by large penetration of renewable energy sources (RES). Scenarios with different focuses and assumptions have been developed to map this development until 2050. While these scenarios present a major step forward beyond previous modeling approaches, much more progress is necessary. newTRENDS aims to contribute to this progress by identifying relevant trends and improving their modeling based on recent empirical findings. In this context, the project newTRENDS is developing the analytical basis for a "2050 Energy Efficiency Vision" taking into account new societal trends in energy demand modeling.

The following report describes the results of the 2nd stakeholder meeting covered in four sessions. The purpose of the workshops was to present the enhancement of the modelling as well as to discuss the biggest challenges encountered in the process and knowledge gaps to be tackled. Four focus studies were focusing on enhancing the modelling of each one trend. Thus, the workshop was split into four sessions which took place on:

- 3rd November 2022– Circular Economy;
- 8th November 2022– Prosumaging;
- 10th November 2022– Shared Economy;
- 15th November 2022– Digitalization.

The report presents a summary of the discussions during the workshops. The main objective was to discuss the work conducted within the project with fellow modelers and receive their feedback. Each of the focus studies was discussed during a separate meeting and led by sectoral modeling experts. The structure of each workshop consisted of a short presentation at the beginning. The main focus was to have interactive discussions with participants.



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1. Introduction to the Stakeholder Workshops

The engagement of different groups of stakeholders within the project is important as the modeling aspects should include policy barriers and present relevant scenarios. The aim is to overcome such barriers to realize the energy transition in the EU (European Union) Member States. The newTRENDS project's goal is to enhance energy demand models to be able to assess the effects of new societal trends on future energy demand and ultimately communicate to decision-makers the modeling findings. As such, the project's outcomes can inform future policy decisions and assist decision-makers. newTRENDS aims to assess governance and policy concerns that affect how the EU chooses to use energy more efficient in the future and participate in dialogue with representatives about the results. Additionally, newTRENDS aims to improve interactions with energy sector professionals in particular to:

- access the best independent expertise in energy practice;
- contribute to more effective and targeted communication with energy sector professionals;
- explore opportunities for engaging with energy professionals in research and applied areas;
- improve understanding of the role and activities carried out within the newTRENDS project by energy professionals' organizations;
- and enhance interactions with other energy sector professionals.

With these goals in mind, a stakeholder invitation was prepared by Wise in close cooperation with the modelers involved in newTRENDS and was sent to stakeholders as well as to project partners for further distribution in their networks. The invitation was sent out to stakeholders mapped beforehand for internal project needs in a unpublished database including researchers, PhDs, professors, analysts, specialists, heads of units working in the scope of the focus studies and representing institutions such as universities, research centers, institutes, EIT Urban Mobility, international organisations (e.g. European Commission) etc. The invitation was also extended to modelers with whom the partners have direct contacts, other than those initially mapped in the stakeholder database.

The main aims of the 2nd stakeholder meeting were to:

- ensure two-way communication and allow gathering of relevant information, identify knowledge gaps and verify modeling assumptions and early results of the new modeling approaches;
- present the results from focus studies work and discuss it with fellow modelers;
- enable newTRENDS to gain a better understanding of the barriers in energy demand-related modeling and comprehend the concerns of the modeling community.

The workshops' focus was on discussing the findings of WP5, WP6, and WP7 regarding the challenges in reliable and sound energy transition pathways modeling. The report is organized to show chronological order of the sessions: Circular Economy; Prosumaging; Shared Economy; Digitalization.

The general structure of each workshop was as follows:



1. short presentation of the agenda and the speakers,
2. brief introduction of the newTRENDS project with its scope and aims,
3. presentation from the modelers,
4. interactive discussion.



2. 2nd Stakeholder Workshops

2.1 Circular Economy

The event was opened and the speakers and the agenda of the event were presented. The newTRENDS projects was briefly introduced. The Focus Study – Circular economy for industry decarbonization – was presented. The session results from WP6 Focus Study: Circular economy and digitalization in energy demand models related to the sectors industry and tertiary. The modelling and results were described in Deliverable 6.1 - Focus study report on decarbonization and circular economy in industry.

The discussion that followed can be shortly summarized within 3 topics:

Top-down and bottom-up data on material use

In general, it is challenging to align bottom-up and top-down data on material use in buildings. As long as the values of the bottom-up data are lower than the top-down data, there can be several explainable reasons for the difference, such as varying scope. It was described how the bottom-up and top-down data are compared within newTRENDS - sector distributions (shares) are used to allocate material use. The shares come from literature and personal communication with industry associations. A second issue concerns the efficiency of the use of the material that should be included for validating bottom-up material use. The production statistics material intensity is also one of the key input parameters for this type of analysis of a product – buildings in this case. Other modelers commented on their experience with the comparison of bottom-up vs. top-down approaches. It is hard to find information on how materials are used on the construction side. For example, in data from the Building Information Modelling (BIM), there can also be gaps. In addition, residential and non-residential buildings will be covered differently as BIM is more commonly applied during construction of non-residential buildings. Overall, other modelers are dealing with similar difficulties. In conclusion, bottom-up modelling is advantageous but has high uncertainty. In contrast, top-down data are less uncertain but do not display the “real material use”. To deal with data uncertainty in top-down modeling, a semi-qualitative scoring approach can be used (Pedigree matrix). Maybe such an approach could also be used for bottom-up data as well. In addition, it could be helpful to compare bottom-up and top-down data in future studies. Discussing the differences could bring new information.

Building areas not covered in modeling

The fact that underground parking lots have a large contribution to what is considered a building and that they are usually overlooked was commented. It would be beneficial to use empirical data and estimates for such spaces for future studies.

Further relevant materials

The construction industry promotes the use of additional wood, for example, replacing the roof with this material but also for multistory buildings. In future studies, it would be relevant to consider wood from a climate relevant point of view but the question remains if it is a sustainable material. Such discussions are important



in aspects of negative emissions and greenhouse gases (GHG) balancing or competing wood uses. Another unaddressed area is further impacts of wood use (e.g. land use). Additionally, glass and insulation materials were considered relevant from the participants.

Finally, it was explained how the research is made useful for other researchers by publishing the focus study and the model code. The workshop was wrapped up with the conclusion that the researchers face similar problems in modeling. Before ending the workshop, social media channels were mentioned and participants were encouraged to visit them.

2.2 Prosumaging

The topic and presenters were briefly introduced, and the start of the workshop's discussion period was also announced. The project's models and modelling tools were explained, along with the core theme of newTRENDS. In the session, "Prosumagers and big data related to the built environment", prior project findings were applied and a modelling approach was presented. The session is connected to the WP5 Focus Study: Prosumagers and big data (new data sources) in energy demand models related to the built environment and Deliverable 5.2 - Modeling of prosumagers and energy communities in energy demand models.

First, the FLEX model was introduced and a case study on the impact of prosumaging in Austria was presented. The load-shifting impact of prosumaging for the Austrian building stock was presented.

Second, another bottom-up approach for prosumaging modeling was presented, from the individual household perspective. The suggested questions for discussion were revealed at the end of the presentation.

After the two presentations, the discussion started using a summary of the challenges and questions proposed by the presenters. The discussion was mainly centered on:

Models and regulatory framework

The first discussion topic for the workshop was the usefulness of the presented model from a policy perspective. During the conversation, one of the raised issues was whether there are estimates on the impact of prosumaging behaviors on the national stock. The presenter stated that the results are not limited by grid constraints, thus they are expected to be overestimated. However, the potential to shift loads on a national level is large. The economic benefits for single households are small, thus from a policy perspective additional incentives are needed to tap into that potential. The potential conflict between the financial optimization of individual users and optimization focused on grid constraints was noticed. On the other hand, it was mentioned that demand response from individual buildings can be beneficial as it will reduce grid expansion.

Problem of data aggregation

The question how to aggregate data for electrical loads to the national level was discussed. Since the bottom-up model reflects one type of household, the approach taken was to use historical data at country level for calibrating the dataset applied at household level and then aggregate the model results.



Sufficient resolution

There was a doubt if the hourly resolution is sufficient. Questions were raised on whether modelers have looked at the tendency in the power market to offer flexibility in the short term and power balancing market that could bring a bigger advantage. Also, if they could offer flexibility at time resolution under one hour to provide financial benefits for the users informed or regional level as aggregated load current. The model was designed to be resistant to small/minimum changes that cannot be predicted as they are linked to small appliances connected to lifestyle, for example, coffee machines. Therefore, this option of participation in short term flexibility markets was not modeled.

Electric vehicles (EVs)

A participant raised the question to what extent EVs are relevant to this project since they have a high energy consumption. They were not included as the driving profile is not representative for multiple buildings because they depend heavily on user behavior. For example, EVs can be charged outside the household and it is challenging to predict that behavior and it is hardly representative for multiple buildings. Also the investment decision on EVs are not considered. Even though optimizing the hourly operation of the EV battery for flexibility is technically feasible to be added to the model, it would not be used as a dynamic variable like a battery energy storage system, as capacity will decline over time through degradation due to cycling. Therefore, it can simply be considered as another type of load characterized by a specific hourly profile.

Finally, before ending the workshop, social media channels and the webpage where the outcomes and the latest reports Deliverable 5.2 and Deliverable 5.3 on modeling were mentioned.

2.3 Shared Economy

The event was opened and the topic of the workshop dedicated to Sharing Economy, and in particular to the case of shared mobility was presented. Next, the newTRENDS project and its aims, as well as the different foresight methods and models used in the project were introduced. Information on the deliverable connected to the Shared Economy on the project's webpage was disseminated. Sharing economy and how it is modeled in the newTRENDS models, and in particular PRIMES-TREMOVE (and the module PRIMES-SHAREM) and GEM-E3 were described. To trigger the discussion some topics/issues were mentioned by the presenter. The discussion went as followed:

Mobility-as-a-Service

The first question from the chat was related to the term Mobility as a Service (MaaS), which was explained as a mobility service that covers several types of transport modes (e.g., renting a scooter, taking the bus) with a single fee system (service payment). The distinction between MaaS and car-service (in the PRIMES-SHAREM model) was underlined to avoid potential confusion, as the latter were considered in the model, and it is one of the shared mobility options.

Differences among services means of transport



The difference between car-sharing and car-pooling was another discussion topic. Car ownership was pointed out here as the main difference and platforms supporting those two services were mentioned to illustrate it. The cost of the shared car and e-bike were mentioned. Moreover, such means of transport do not compete on the same basis (e.g. as there are different distances and trip types covered by those services, various infrastructure). The cost per mile was discussed but not quantified yet it was mentioned that the cost can also be related to the cost of the time aspect of the mobility service.

Long distance and short distance

In the PRIMES-SHAREM model, there is a distinction between trip types including also different services (also mentioned e-bikes, which are not explicitly covered in the modelling). Considering the interests of the drivers and how to raise acceptance not to own a car, the participants mentioned various aspects - cost, status, and availability. Sharing does not have to be cheaper than owning, as you can choose different quality like a cheap used car. An aspect that was further elaborated was “pride of ownership” being considered in the model as a benefit, together with the value of time. These are hidden cost components, which can reveal why even though the car-pooling has lower actual costs: hidden cost component can impact the decision of drivers. It was also contemplated whether economic aspects are the main driver or maybe those can also be environmental drivers and the need for a car in urban vs rural areas. It was explained that the key issue is the likelihood of consumers’ reaction if the car-sharing option becomes cheaper and categorize consumers into diverse groups to better anticipate the reaction.

Finally, before ending the workshop, social media channels were mentioned and participants were encouraged to visit them.

The session results from WP7 Focus Study: New Societal Trends in Transport and Tertiary Sector – The Impact of the Shared Economy and Deliverable 7.1 - Focus Study Report: Model development to simulate sharing economy and new trends in transport.

2.4 Digitalization

The event was opened with brief introduction of the newTRENDS project with its scope and aims, as well as the foresight methods, representing policies and running quantitative models in the project to hand over to TEP – organizers of the session. It is connected to WP6 Focus Study: Circular economy and digitalization in energy demand models related to the sectors industry and tertiary.

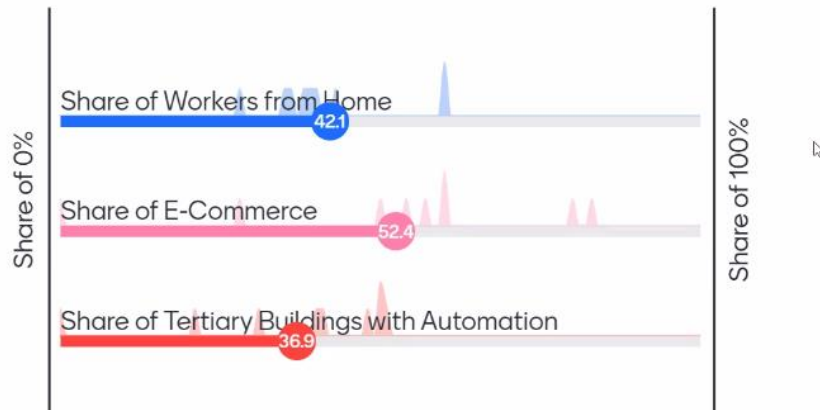
The agenda and presenters for the workshop dedicated to "Digitalization in Tertiary Sector" were introduced. It was followed by overview of the digitalization in the tertiary sector impacting the energy demand, which was an introduction to four sections on: Teleworking, E-Commerce, Building Automation, and Data Centers. All areas were presented. Then a poll was organized to see how participants of the workshop estimate the share in presented digitalization trends in 2050. The results of the poll were commented and stated a moderate, but notable diffusion of the new trends. The results of the poll are presented below. The results reflect workshop participants’ voting in *Mentimeter* regarding the estimated share of the trend in their everyday life in three categories: work from home, e-commerce, and automatization in tertiary



buildings. The average for each trend is presented in the circles on the axes in the picture below.

Diffusion of New Trends in 2050

Mentimeter



The open discussion pivoted on the scenarios used for modelling. It was explained that the scenarios were part of modeling in newTRENDS project and that different diffusion rates are applied. Four scenarios were considered, one set with high and low diffusion rates of the new trends, and others with high and low activity to achieve decarbonization.

Finally, the audience was encouraged to get familiar with the reports and webinars in newTRENDS and to follow the project on social media.



3. Conclusions

The workshop enabled the modeling community to meet and discuss the challenges connected to the four focus studies investigated in the newTRENDS project:

- Circular Economy;
- Prosumaging;
- Shared Economy;
- Digitalization.

The progress of the models as well as the difficulties and knowledge gaps were discussed in a series of sessions devoted to the modelling in the four newTRENDS focus studies. The majority of the queries posed by the workshop attendees have already been addressed by the newTRENDS modelers, indicating that similar problems are faced by the community. The participants also found the assumptions used in the newTRENDS models and the reasons why some scenarios were eliminated fascinating. The workshop demonstrated the necessity for discussion of energy demand side modelling and its difficulties, as well as the modelers' interest in the methodology, supporting computations, and underlying assumptions utilized to arrive at the conclusions. The primary takeaways from the sessions that relate to the particular topics are shown below.

Circular Economy

Modelers learned that the community working on implementation of material flow and circular economy models has similar problems also outside the newTRENDS project. An interesting approach for future studies would be to assess the data uncertainty with semi-qualitative scoring and compare bottom-up with top-down data.

Prosumaging

The participants of the workshop were interested in ways of transforming aggregated data for electrical load from the national level in the single household calibration and including EVs in the load-related modeling. It showed modelers different areas of their work that have not been in the spotlight in the newTRENDS project but had to be considered in the preparation stage. Those aspects could be described to show the obstacles connected to them and the reason for not including those straightforward in the models.

Shared Economy

The workshop confirmed that drivers have different attitudes and motivations to use car-services depending on the character of the area, in which they live (rural/urban). It was also often confirmed that people choose not only between owned and shared car, but bike/e-bike should be considered as the competitive means of transport, especially for the short distance mobility.

Digitalization

Modelers got confirmation of new trends diffusion among the workshop's participants and positive feedback regarding their approach to evaluate changes in energy demand and use of living/working areas after the pandemic.



4. Appendices



A.1 Workshop invitation



Workshops

Modelling the influence of new social trends on energy needs demand

Join our workshops, a series of sessions dedicated to the modelling in the four newTRENDS focus studies. In each session, the model advancements will be presented, and the challenges and knowledge gaps will be discussed interactively. We count on you to help shape these important results

The online sessions have been planned over lunchtime, from 12 to 1 CET and will cover one focus study each. Join 1, 2 or all of them and register by clicking on each session topic below!

November 3 – [Circular Economy](#)

November 10 – [Shared Economy](#)

November 8 – [Prosumaging](#)

November 15 – [Digitalization](#)

About the sessions

Circular economy for the deep decarbonisation of industry. The session will focus on the developed stock-driven material flow model for buildings and selected circularity measures.

Prosumagers and big data related to the built environment: The session will be focused on modeling prosumagers in bottom-up models and their impact at a national level.

Shared economy in transport: The objective of the session is to provide insights on modelling sharing mobility in a bottom-up approach and links to large scale applied CGE modelling (GEM-E3).

Digitalization and new market trends in the tertiary sector. It will provide insights on how newTRENDS is modelling the impact of digitalisation and new market trends in the tertiary sector on energy demand and energy- efficiency potentials, as well as how to improve the modelling of selected digitalisation policies in the tertiary and industry sector.

About the project

newTRENDS, a project funded by the Horizon2020 programme, analyses and models the influence of new social trends on energy demand, and develops scenarios of their future development. The trends covered by the focus studies are expected to have a significant impact on increasing or reducing energy demand in the European Union in the coming years. For more information on newTRENDS, visit our website <https://newtrends2020.eu>.



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A.2 Workshop email invitation

The graphic is a green-themed invitation for workshops. It features the newTRENDS logo in the top left. The main title is 'Workshops Modeling the influence of new social trends on energy demand'. Below this, there is a paragraph of introductory text and a list of four workshop topics with their dates. At the bottom, there are four circular icons representing the workshop themes: circular economy, digitalisation, transition to prosumers, and shared economy. A detailed description of each workshop is provided in a large text box at the bottom, followed by the website URL and a funding acknowledgment.

Workshops

Modeling the influence of new social trends on energy demand

A series of sessions dedicated to the modeling in the 4 newTRENDS focus studies. In each session, the model advancements will be presented, and the challenges and knowledge gaps will be discussed interactively. We count on you to help shape these important results.

The online sessions have been planned over lunchtime, from 12 to 13 CET and will cover one focus study each. Join 1, 2 or all of them and register by clicking on each session topic below!

November 3 – Circular Economy
November 10 – Shared Economy

November 8 – Prosumaging
November 15 – Digitalization

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

Circular economy for the deep decarbonization of industry. The session will focus on the developed stock-driven material flow model for buildings and selected circularity measures.

Prosumers and big data related to the built environment. The session will be focused on modeling prosumers in bottom-up models and their impact at a national level.

Shared economy in transport. The objective of the session is to provide insights on modelling sharing mobility in a bottom-up approach and links to large scale applied CGE modelling (GEM-E3).

Digitalization and new market trends in the tertiary sector. The session will provide insights on how newTRENDS is modelling the impact of digitalization and new market trends in the tertiary sector on energy demand and energy- efficiency potentials, as well as how to improve the modeling of selected digitalization policies in the tertiary and industry sector.

www.newtrends2020.eu

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A.3 Presentations from the workshops

[Intro](#)

[Circular Economy](#)

[Prosumaging](#)

[Shared Economy](#)

[Digitalization](#)



Imprint

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