D6.2 | Transition Practice

Backcasting Workshops' Report

Deliverable:	**Transition Practice Backcasting Workshops' Report**
Authors:	Giovanna Giuffrè, Carlo Sessa; (ISINNOVA); Thomas Pellerin-Carlin, Emilie Magdalinski (JDI); Mária Bartek-Lesi (REKK); Karina Standal and Hege Westskog (CICERO); Madeline Werthschulte (WWU), Alessandro Silvestri, Elena Lopez (BC3)
Contributors:	ENABLE.EU team is grateful to have had the commitment of a wide range of households, coming from diverse backgrounds, who have dedicated themselves to the project with enthusiasm and patience, overcoming linguistic and cultural barriers to find common ground for moving forward.
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Coordinators:	Silvia Gaggi and Stefano Proietti (ISINNOVA)
E-mail:	sgaggi@isinnova.org sproietti@isinnova.org

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Introduction

*"Using solar panel technology enables me to put my desire for change into action, but it is the **face to face discussions** with fellow human beings in a peaceful, creative environment that has most influenced me to make the changes."*

Courtesy of @melten (ENABLE.EU-EU Forum participant)

With an uncertain future on the horizon, many of us wonder how our actions today might impact our world in the short and long term. Can our choices really determine what will happen ten, twenty, or thirty years from now? Foresight is a way for us to understand our options, and how the choices we collectively make will impact us. It is not a crystal ball, showing us a definitive future, but a tool that allows us to explore a number of possible futures. It can help us identify what will affect our lives over the next few decades and envisage potential changes in policies, strategies and behaviours, creating roadmaps that detail what we need to do today to shape our tomorrow.

The aim of the ENABLE.EU foresight exercise is to understand **how to encourage people to make better and more sustainable energy choices**. In the energy sector, targets are set and technologies are often available, but a radical change towards sustainable consumption patterns seems far away from reality. It is now recognised that citizens play an active and fundamental **role in producing new social practices** that can increase both social wellbeing and the sustainability of the energy transition. In this perspective, the ENABLE.EU Transition Practice Workshop aimed to elicit the opinions of 60 households invited from 11 countries to canvass their experiences on what drives their energy choices and **how their energy needs might be satisfied in a more sustainable way in the future.**

In the first day of the Transition Practice workshop, we asked participants about **their daily energy practices** to understand **what might facilitate or hinder these changes**. The workshop aimed to identify shared challenges and possible **social practices that can be adopted and replicated** in different European contexts. Participants worked in small groups, divided by the four ENABLE.EU energy themes, and had the opportunity to discuss the research results and share their experiences and ideas.

On the second day, we called participants **to imagine what kind of social, technological and organisational practices could promote more sustainable energy consumption** in the next 20-30 years. The revised transition storyline that emerged in the first ENABLE.EU workshop served as the basis for identifying those changes they would like to be part of in the future. Participants were involved in a world café that allowed them to work within a limited time frame on three topics: energy production, energy consumption and mobility.

The following sections present the whole foresight objectives, process and results achieved so far (section 1), the Transition Practice workshop participants and agenda (section 2), the results of investigating the current most promising practices (section 3), and the future energy needs and practices imagined by the participants (section 4).

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1 Overview of the foresight process

1.1 Using participatory foresight to enable the energy transition

ENABLE.EU is using foresight to understand how to encourage people to make better and more sustainable energy choices. Its three transition workshops bring together European experts and citizens to create a realistic roadmap for the future. To begin with, 60 experts were asked to envision future energy scenarios. Then, 60 citizens refined these scenarios based on their experiences, offering their feedback on enablers and barriers to adopting sustainable energy behaviours. Finally, the third workshop will bring these experts and citizens together to create a roadmap for the future.

1.2 The transition objectives and process

Objectives of the transition workshops are to:

✓ Inspire a debate among European stakeholders aimed at identifying practices and possible behavioural shifts to promote the transition from a "business as usual" scenario towards a more sustainable one;

✓ Build energy scenarios by interpreting existing trends, drivers, and practices that influence individual and collective energy choices;

✓ Get inputs from a small but qualified group of European households (including some early adopters of new energy technologies) on the most important enablers and barriers that could help them move further towards more sustainable practices and behaviours;

✓ Refine the energy scenarios by evaluating possible changes in energy behaviour and looking at the wider implications of these changes;

✓ Engage European experts as well as households in a constructive debate to identify the most important policies, strategies, and measures to promote sustainable practices;

✓ Create a roadmap out of these scenarios, setting out goals and measures to get us where we want to be in 2030, in 2040, and in 2050.

Combining the top-down approach of the initial visioning phase with the bottom-up approach of the practice phase, the final roadmapping phase will lead to the identification of the better social practices to recommend for inclusion in a coherent strategy to promote the transition to low carbon energy the ENABLE.EU project will eventually contribute to devise (in WP8).

The Transition Visioning Workshop was held on 14-15 June 2018 in Sofia, Bulgaria. Interactive work in small groups allowed all participants to speak and share their knowledge. Taking into consideration the targets set by Europe 2020 and the Energy Union Initiative, the workshop addressed the following questions:

- What are the desired end results or functions of energy practices?
- What are the emerging actions and practices that are considered marginal but could shape our energy behaviours in the future?

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- What are the most promising actions related to technologies, policies, and behavioural changes that will have the highest impact on individual and collective energy practices in the future?

The Transition Practice Backcasting Workshop was another two-day workshop held in November 2018 in Rome, Italy. Interactive work in thematic sessions has allowed all participants to speak and share their experiences. Taking into consideration the scenarios, the workshop was focused on the following questions:

- What are your energy needs?
- What are the sustainable practices you can think of today? What energy practices are you implementing today?
- What influences your energy choices the most?
- What do you want to see in the future, and what will you do in your own daily practice?
- What will you need, and how can decision-makers/politicians make it easier for you to adopt these practices?

The ENABLE.EU foresight process will be completed with the Transition Roadmapping Workshop to be held in March 2019 at the Economic and Social Committee in Brussels. Up to 60 participants will be invited from the group of households (about 30 people from the 11 countries), experts and representatives of the European civil society based in Brussels (about 15 people) and ENABLE.EU experts (consortium partners and Advisory Group members) to develop together an action roadmap for the adoption of sustainable practice and energy behaviours in energy saving, production, consumption at home and mobility. Aiming to achieve an Energy Union sustainable household practice scenario, the roadmap will include the most promising practices identified in the foresight exercise, and provide a timeline for their possible implementation. The ultimate aim is to promote the translation of sustainable practices across Europe (from where it is applied to where it is not, whenever possible).

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2 The Transition Practice Workshop: Agenda and participants

2.1 The participants

Sixty-four pioneer citizens from 11 countries participated in the Transition Practice Workshop, discussing from their own everyday life perspective today and tomorrow sustainable energy practice.

Transition Practice Workshop targeted a group of 60 households, which were selected by ENABLE.EU partners taking into consideration the following criteria:

- Country representation with the aim of representing the 11 ENABLE.EU countries;
- Approximately 20 households per each of the 4 ENABLE.EU fields;
- Participants' experience with technology (some early adopters);
- Engagement in local communities/ability to promote change;
- Gender balance;
- Willingness to participate in an online forum prior to the conference.

The households' selection started three months before the event and required many interactions between the partners in order to ensure the balanced representation among participants. The challenge as well as the most interesting aspect of the process was to look for those households active in their daily energy behaviours and involve them in a European process.

In terms of the geographic origin of the respondents, households from 11 European countries participated in the workshop, including 3 non-EU countries (Ukraine, the Republic of Serbia, Norway). The geographical representation of households was ensured as 33% of participants were from Eastern Europe (Bulgaria, Hungary, Poland and Ukraine), 28% from Northern Europe (Norway, and United Kingdom), 25% from Southern Europe (Spain, Serbia, Italy) and 14% from Western Europe (Germany, France).

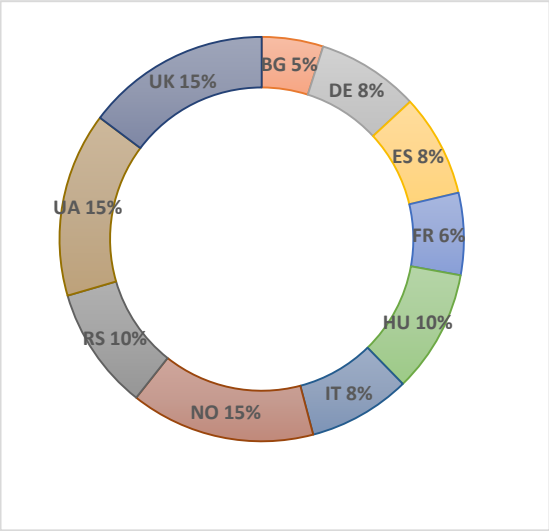

Figure 1 Participants by regions

The criteria of the thematic representation of the four ENABLE.EU fields was also satisfactory.

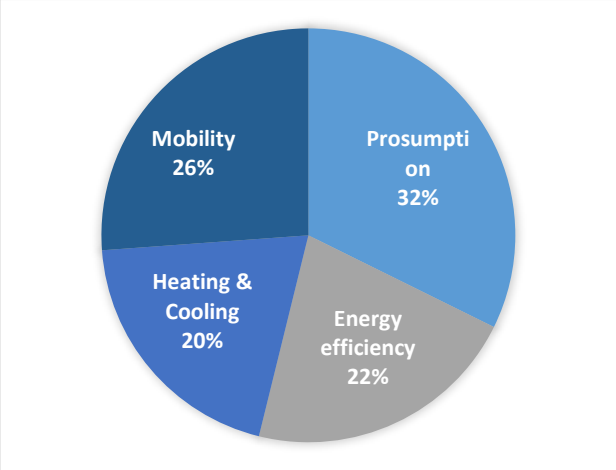

Figure 2 Participants per field

The higher number of participants to the prosumer theme is because it was decided to invite both partners (male and female) in the household, to ensure the different gender perspectives are properly represented and addressed in the discussion, covering a wider range of barriers and drivers of the choice to become prosumers. The gender dimension was perceived of particular importance in

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contexts were several of the prosumers (often men) are strongly motivated by technical interest and where partners/spouses are more side-lined in the decision and process of becoming prosumers (i.e. Norway and Ukraine).

The attention placed by the organizers to ensure gender balance made it possible to have a very balanced representation of men (44%) and women (56%).

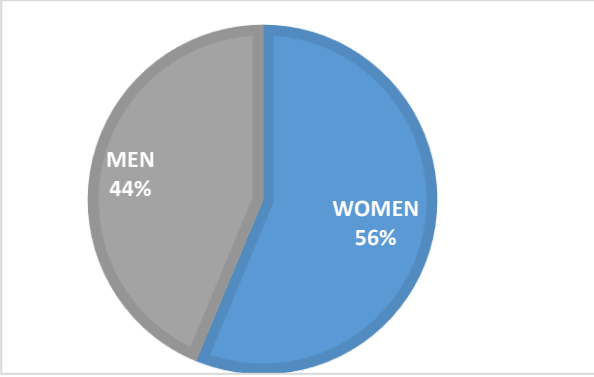

Figure 3 Conference participants by gender

Participants showed commitments and enthusiasm to share experience on energy transition as it was shown by the lively discussion on the forum launched prior to the workshop.

The forum was created so that participants could register for the workshop, ask questions and share their experiences. It also will give them the opportunity to stay in touch and continue their discussions over the next several months (the forum will stay online for at least one year after the project's end). It presently has 86 members and a total of 38 posts on topics such as how and why energy consumption has changed over the past 30 years. One of the most interesting and active conversations asked why, even if we are aware of our energy consumption and ways to reduce it, we do not always make the most energy-efficient choices. Some answers indicated that this is because humans are not rational, while others explained that making environmentally sound choices is frequently inconvenient or expensive, or involves unclear trade-offs, such as when the only available organic product is imported. The most popular topic was one covering people's personal energy consumption, and how this has changed over the years. Many spoke here of how helpful tax incentives for the purchase of solar panels have been, and of how much their awareness has increased regarding both their energy use and the importance of reducing it.

A video recorded during the workshop (including interviews to some participants) is available here:

http://www.enable-eu.com/citizen-perspectives-on-the-energy-transition-enable-eus-transition-practice-workshop/

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2.2 The agenda

The final agenda of the ENABLE.EU event, as presented below, provides an overview of the various sessions and topics addressed on November 29-30, 2018.

29.11.2018	Topic
14.00 -14.30	Registration
14.30- 15.00	Getting to know each other Session moderated by Giovanna Giuffrè - ISINNOVA
15.00 - 15.20	Introduction to the ENABLE.EU project and overview of drivers of individual and collective energy choices Presentation by Thomas Pellerin-Carlin and Emilie Magdalinski- JDI
15.20 - 18.20	Your contribution to the energy transition: today's most promising practices Thematic workshops: ✓ Prosumption moderated by Hege Westskog and Karina Standal - CICERO ✓ Energy efficiency at home moderated by Madeline Werthschulte and Jan Tamcke – WWU ✓ Heating and cooling moderated by Mária Bartek-Lesi – REKK ✓ Mobility moderated by Alessandro Silvestri and Elena Lopez - BC3
18.20-18.30	Closing

30.11.2018	Topic
8.30 - 9.00	Registration
9.00 - 9.10	Welcome and introduction Session moderated by Giovanna Giuffrè - ISINNOVA
9.10 - 9.40	Today most promising practices: report from the working groups Presentation by CICERO, BC3, WWU, REKK
09.40 - 10.00	Energy Transition Scenarios Presentation by Carlo Sessa and Giovanna Giuffrè – ISINNOVA
10.00 - 12.00	Tomorrow's practices: Imagining new ways of meeting energy needs. World café
12.00- 12.45	Clustering of the practices by theme Session moderated Giovanna Giuffrè - ISINNOVA
12.45 -13.00	Closing

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3 Investigating today's most promising social practices

3.1 Introduction

Giovanna Giuffrè (ISINNOVA) opened the conference illustrating the energy transition practice foresight special purpose, process and timing (www.enable-eu.com/wp-content/uploads/2018/12/Intro_transition_workshop_30Nov_GG.pdf).

Thomas Pellerin-Carlin (JDI) introduced the whole objectives and methodology of the project, based on an overall approach integrating qualitative and quantitative methods. With this approach, storylines (scenario narratives) are developed and then used to generate policy recommendations (backcasting). The main objective is to get a better understanding of the interaction between individual and collective energy choices and the regulatory, technological and investment prerequisites of the Energy Union transition in order to provide strategic policy recommendations (http://www.enable-eu.com/citizen-perspectives-on-the-energy-transition-enable-eus-transition-practice-workshop/).

Emilie Magdalinski (JDI) presented the findings of the literature review on drivers of individual and collective energy choices, helping the participants to start reflecting on and recognise the drivers that influence our behaviours the most (http://www.enable-eu.com/citizen-perspectives-on-the-energy-transition-enable-eus-transition-practice-workshop/).

3.2 Conceptual framework

The framework developed by Westskog, Winther and Strumse[1] (2011) for understanding energy use and how it is influenced by different factors and levels in society was taken as a point of departure to frame four group discussions. Drawing on insights from economics, psychology and anthropology, four factors are defined as important determinants for energy use: i) skills and knowledge; ii) attitudes and norms; iii) beliefs, values and identities and iv) material conditions:

[1] Hege Westskog, Tanja Winther and Einar Strumse "Addressing fields of rationality: a policy for reducing household energy consumption?", 2011, Handbook of sustainable energy

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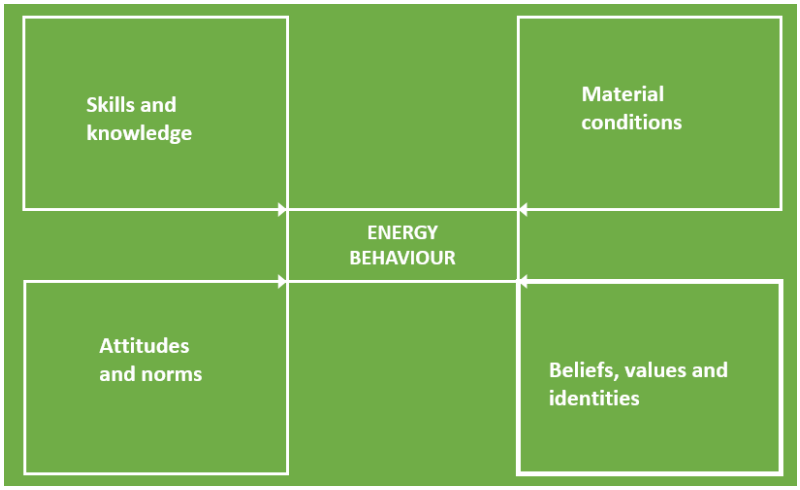

Figure 4 Factors influencing behaviour on the individual level (source Westskog, Winther and Strumse 2011)

These four factors are also considered within approaches referred to as practice theory. Theory of practices or social practice theory explore how people make and transform the world which they live in, by incorporating a broad set of aspects that include both the conscious and more 'un-conscious' acts of everyday life. The theory thus transcends earlier debates of agency vs structure (as it encompasses both).

According to Sewell[2] (1992), practices are conditioned by structures that come in two forms. First, they are "cultural schemas" that are codes for interaction between humans. These are ideas, conventions, values and norms. We might separate these "cultural schemas" into two main factors: social norms (how things should be) and cultural values (what is valued). Further, structures could also contain elements that Sewell refer to as "real". Real structures both include human and non-human resources, where the former are exemplified by bodily strength and knowledge and the latter by factors like natural resources, regulations, material objects and formalized procedures, or in short material conditions.
The four factors are present at different levels of society; the individual, group and societal level. For instance, a material condition at the individual level would be the income level of the individual, while at the societal level energy prices would constitute a material condition. The model thus incorporates the social structures and elements on the group and societal levels that surround and affect individuals when performing a given behaviour/practice.

3.3 Results from the prosuming session

Rapporteurs: Hege Westskog and Karina Standal – CICERO (www.enable-eu.com/wp-content/uploads/2018/12/Transition_workshop_presentation_CICERO.pdf)

3.3.1 Background - factors influencing prosumption practices

Prosumers are people who have invested in and installed household solar systems on their houses and who both consume and produce electricity. In addition, prosumers sell excess produced solar electricity to the transmission grid and therefore provide renewable energy for others connected to the grid. The ENABLE.EU case study on prosumers aims to understand what motivates people to become prosumers and how they use electricity in everyday life. In addition, this study paid attention to how gender relations and cultural factors influenced motivations and practices. By understanding the drivers of and barriers for becoming prosumers, as well as sustainable energy practices of prosumers, policy can directly, target these drivers while implementing measures that promote

[2] Sewell, W.H. (1992), 'A theory of structure: duality, agency, and transformation', American Journal of Sociology, 98 (1), 1–29

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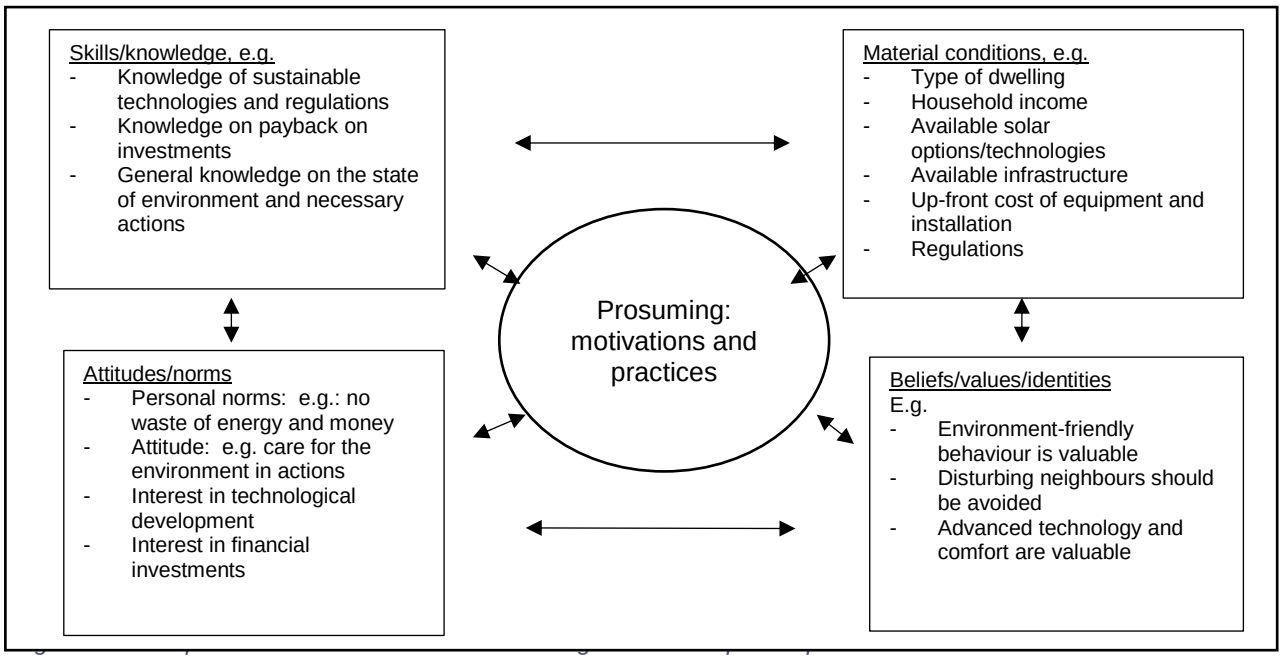
prosuming. The case study draws on an analysis of prosuming regulations and media coverage of prosuming, as well as in-depth interviews with prosumers in five countries: Italy, Norway, Serbia, Ukraine and UK.

As mentioned in section 3.2, factors influencing peoples' motivations and practices related to the prosuming can be categorized according to the framework elaborated by Westskog, Winther and Strumse (2011).



According to this framework, drivers and obstacles to becoming prosumers and everyday energy use practices relate to people's and household members *skills and knowledge*, *material conditions* that determine the technology options they can choose from, while their daily energy using practices and willingness to invest in solar systems can be largely influenced by their *beliefs, values and identities*, as well as the *attitudes and norms* shaped by their interactions with the group of people and the society they belong to. Gender relations and cultural factors cut across these dimensions. These factors are interrelated and jointly evolve over time. Listed below is the study's main findings:

- ***Belief, values and Identities***: The main motivations are environmental and financial benefits. Countries with feed-in tariffs (United Kingdom, Italy and recently Ukraine) have developed stronger markets for household solar systems and increased the share of prosumers nationally.
- ***Skills and knowledge***: A significant group of prosumers are also motivated by strong technological interest and/or work in the energy sector, and they are more often men. The decision to become prosumers are taken by the household members, but the process is almost always driven by men. Among 66 households, only 3 women drove the process and they worked in the energy sector.
- ***Attitudes and norms***: There is a gendered division of energy-related labour in families. Women on the other hand do the lion share of energy related housework such as the laundry and cooking dinner. This is also how prosuming is displayed in media.
- ***Material conditions***: All the prosumers interviewed owned their own detached or semi-detached house. Several also had higher education, which influence their economic status. This indicates that prosuming to a large extent is driven by resourceful citizens with a middle- to high socio-economic position and who have private property (detached or semi-detached house). This reinforces inequality as they are in a position to lower their energy costs, while the energy poor cannot.

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3.3.2 Looking back: energy needs and function

In the prosuming workshop, we presented the participants with an example of a kitchen from the 1930s and a kitchen from 2018. The first kitchen had an electrified stove, as well as a traditional stove for coal/firewood, heated warmwater and electric light. The kitchen from 2018 had an integrated refrigerator, integrated television and speakers, electric lights and a large stove. Both illustrations represent 'modern' kitchens of their time. Interestingly, the appliances of the kitchen from 2018 are much more energy efficient than those from the 1930s, but we still consume much more energy as we keep using energy for new things such as television and stereo in the kitchen area, larger refrigerator/freezers than before etc.

We asked the participants what their energy needs are and whether their needs were different from what drives their energy use in the home. An issue that was raised was that people's basic energy needs are not that different across the world; we need energy for heating and cooking. Still there are geographical differences, and one's life situation (large families, families with small children etc.) also influence how much energy you need. The issue of technology was also raised as some participants felt that implementation of new technologies, such as smart meters with detailed information on electricity consumption provide a new understanding of basic needs and drivers of energy use. Several pointed to the need for more information on the actual electricity consumption (real-time) of appliances in order to be more aware. Also, the issue of policy and incentives to decrease energy consumption was seen as important. However, some also stated that they only used the energy they needed and therefore decrease in consumption was difficult.

3.3.3 Today's promising practices

We asked the participants to provide us with examples of the three most sustainable energy practices in the home in their country/context. We also asked them if they had changed energy practices after becoming prosumers. Most of the issues raised related to implementation of new technologies that would enable sustainable energy practices, including:

- Being a prosumer/household PV system
- Batteries /storage of solar energy
- LED bulbs and light sensors
- Insulation/new windows
- Building standards (for energy efficiency and insulation)
- Heat pumps
- Electrical Vehicles
- Smart meters
- Shifting load
- Timers on appliances (delayed start)

The last two points are also related to being a prosumer. By *shifting the load* to the daytime when sun is shining, households can make sure the energy they use for electricity is renewable. Timers on appliances were mentioned as important in this regard as many are not at home during the daytime because they are working, studying or at school. *Shifting load to times* of the day when electricity is cheaper is also a way to minimize the load on the central electricity transmission grid. Most households consume their electricity in the morning and in the evening (before and after work) and the grid supply must be designed to meet this maximum load. Evening out the electricity supply during daytime and night-time has positive effects on the energy supply. However, it was also discussed how changing the timing of energy consumption is difficult for those who have working hours. Here some used the timers (delayed start) to run the appliances when they are not at home. Another point discussed among the prosumers was that the *placement of the inverters or displays* that show the household solar system's production was important. If the information of the production is placed in areas of the house one passes often, it raises the likelihood of changing the load to when the sun is shining. With instant information on how much is produced one plans for electricity consumption at that time.

Using heat-pumps was discussed. These are energy efficient ways of heating houses and quite

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frequently installed in Norway due to the cold climate and existing subsidy schemes. However, as pointed out, they are not necessarily sustainable if the main electricity source comes from fossil fuels such as coal.
Some of the participants also discussed what are unsustainable practices. The centralized heating (from gas) in Serbia and Ukraine was mentioned as unsustainable. Centralised heating leaves no room or incentives to decrease the energy use, and it is derived from fossil fuels and brings with it geo-political issues (the gas is imported from Russia). In Britain, several have paved the front-side gardens to have room for their cars. This has consequences for less trees (absorbing CO2) and biodiversity. Bringing back the gardens and growing you own vegetables, fruit etc. would be the beginning of new sustainable practices.

3.3.4 What influence energy choices the most

We asked the prosumers participants what influenced their energy choices and what drove their energy use in relation to the household. We also showed them the figure concerning the impact of skills/knowledge, attitudes/norms, material conditions and beliefs/values/identities in order to promote reflection on how energy choices and drivers of energy use is immersed in different social practices and not just a result of rational choices (as understood in a rational choice economic model).

The participants pointed to aspects of their choices that fit well into the division we had sketched:

Skill/knowledge

In order to become a prosumer, it is necessary to use *a lot of time to find information and you need the interest and skill to understand this information*. For some, their educational background as engineer made it possible for them to also install the solar household system themselves. This made the decision easier as they saved a lot of money doing it themselves.

Material conditions

Income was raised as most decisive for the choice to become prosumers as the upfront costs (despite subsidies and feed-in tariffs which make it more profitable in the long run) is high in all the participants countries. *Feed-in tariffs and regulations* that make prosumption possible was also raised as an important dimension of their energy choices. For instance, in Serbia being a prosumer is still not possible since regulations are not harmonized yet. Another aspect taken up was *energy access* as in Serbia some of the participants had houses in areas where there was no central electricity supply, or it would be very costly to connect to it. Finally, *planning permissions and building regulations*, need for extra insurance etc. were taken up as important dimensions for energy choices. As one of the participants from Britain noted; he had put the solar panels on the roof turned to the backside of the house, where the sun was less, because otherwise his panels would break with the aesthetics of the housing area and would not be allowed.

Attitudes/norms

Several of the participants mentioned that they liked *competing with themselves or others on the production of solar energy*, on energy efficiency and so on. Others also mentioned the importance of the *neighbourhood effect* (seeing solar household systems other places) and they saw themselves as promoters of solar energy. However, the ideas of *comfort, a warm and modern home*, was seen as an important driver of energy choices and energy use. Finally, many were motivated by *interest in technology* as a driver for energy choices such as becoming a prosumer, having smart technology etc.

Beliefs/values/identities

This aspect partly coincides with the former. Most of the participants were motivated by their *environmental concern and values* regarding their energy use and choices. Some also mentioned their *drive to be energy independent*, i.e. producing their own renewable energy for all their consumption. This was also related to *geo-political issues* such as their country's import of gas from

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neighbouring countries (Russia) and lack of trust in their own energy system.
Another point taken up in the workshop was issues of *gender and age*. Age is often a dimension for how much income one has, but also younger are interested when there are clear incentives for becoming prosumers. Children were also seen as important as parents wanted their children to be active in their role as prosumers and learn about energy and energy consumption in a world facing climate change.
Finally, the issue of *simplified messages and communication* was also listed as an important driver for increasing the number of prosumers to include women, those without education, language issues etc. During the discussion, several noted that even though men seem to be first movers/users of new technology, several technologies have become mainstream for everyone despite gender, ethnicity, age etc. The mobile phone was mentioned as an example.

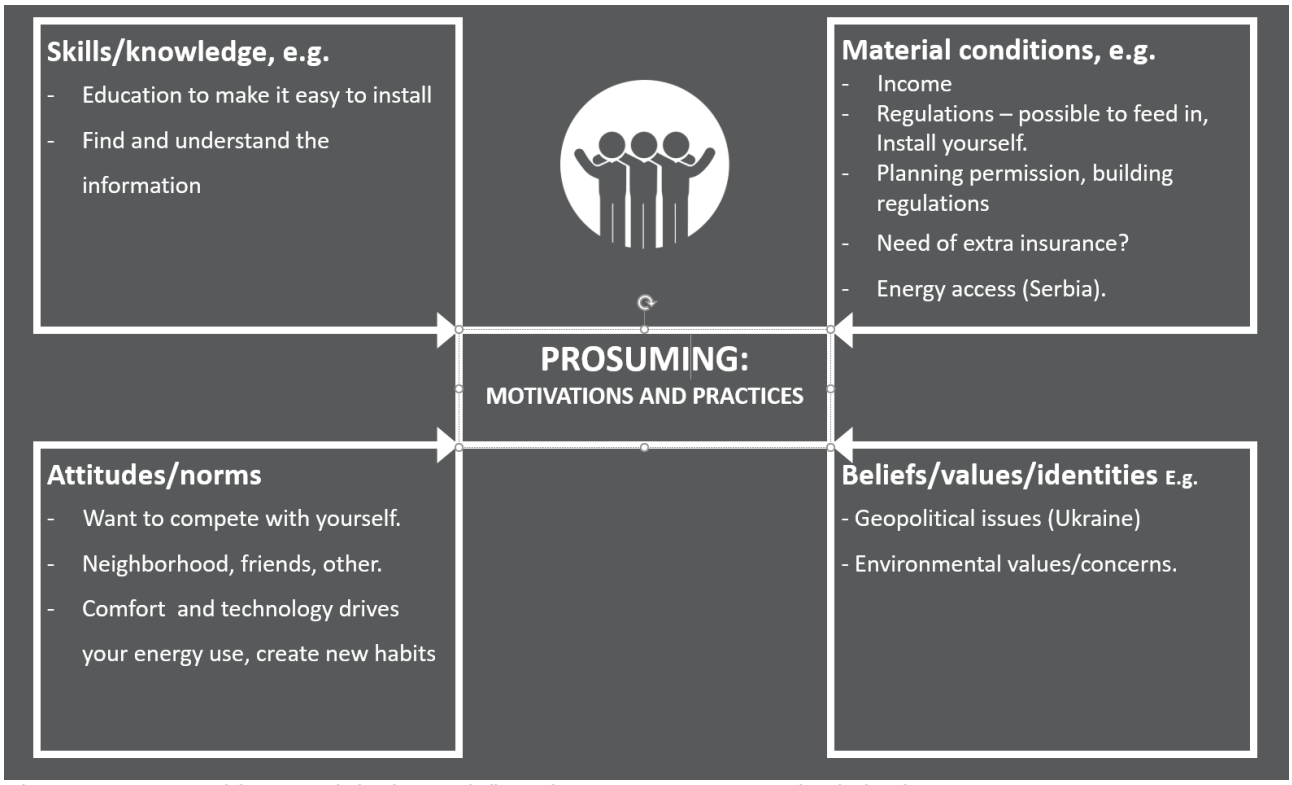

Figure 6: Conceptual framework for factors influencing consumers' prosuming behaviour

3.4 Results from the Energy efficiency session

Rapporteurs: Madeline Werthschulte and Jan Tamcke – WWU (www.enable-eu.com/wp-content/uploads/2018/12/Transition_workshop_Energy_Efficiency_Auswertun.pdf)

As mentioned in section 3.2, households' electricity practises are influenced by several factors: their *material conditions*, the *skills and knowledge* of the household itself, their own *attitudes/norms* as well as *their beliefs/values/identities*. These factors also influence and interact with each other.

In ENABLE.EU we aim to identify and *estimate the effect size* of some of these factors. By understanding the drivers of electricity practises, policy can directly target these drivers and implement corresponding electricity saving strategies. The partner countries involved are Bulgaria, Serbia, UK and Germany. Each of these countries focusses on a factor, which suits countries' needs best:

- The *Bulgarian* researchers focus on *knowledge and skills*. Utility bills are often difficult to understand and consumption is only presented as an aggregated measure. By providing a cost breakdown to different appliances, e.g. how many kilowatt-hours a fridge consumes for an hour, households are able to understand and to learn about their consumption.
- In cooperation with the national electricity supplier EPS Supply, the *Serbian* researchers gave

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energy saving instructions to participants. These instructions were supposed to increase the *knowledge* of participants on how to save electricity. However, when comparing the electricity consumption of participants with and without instructions for three months, no significant changes can be observed.

- In the *UK*, the smart meter rollout is perhaps the biggest energy policy initiative presently. Smart meters record households' electricity consumption every second, can automatically send the information to the utility and give households real-time feedback about their consumption. The question analysed is how this adoption of a new *technology* can be influenced.
- The payment of electricity consumption usually occurs sometime after consumption has taken place. In *Germany* the time lag is particularly severe: the *electricity bill* is just sent once a year. The research therefore asks how an increase in the billing frequency (possibly even daily bills) influences electricity consumption.

3.4.1 Looking back: energy needs and function

The session on energy efficiency started by showing participants a figure, encouraging them to look back. The figure lists how electricity needs have developed over time: starting with early telephones and TVs, how computers revolutionized our daily life and finally led to our usage of smart phones. Having these electricity practises in mind, the participants were confronted with three questions:

1. What are your needs?
2. Why do you consume electricity?
3. How does electricity contribute to a "good life" for you?

The questions are meant to be different formulations of the same underlying issue: to identify energy needs. Participants were asked to first answer these questions on their own, then with a partner and then in a group discussion ('snow-ball-system'). Ideas were collected on post-its and put on a flip-chart. In spite of different countries and backgrounds, participants' ideas were similar and can be classified into different daily life activities: health, leisure, work, transport and heating/ cooling.

Based on the discussion, *electricity suits essential needs in daily life*. Examples are having clean clothes (washing machine, ironing), clean dishes (dish washer), a clean house (vacuum cleaner), drinking a coffee, having light when it is dark, drying hair to not have a cold, being able to cook a meal and to cool food. Electricity is also essential when it comes to health. Dental testing, surgery, ECGs and battery driven devices (e.g. pacemaker, hearing aids) only work with electricity.

But electricity also makes our lives *more comfortable by having (and charging) smart phones and by having more time for other things, such as spending time with our children, as electricity increases our productivity*. Relatedly, this means we have more time for leisure, which is often satisfied with electricity. Electricity is used to watch films and series, to listen to music, to connect with friends and family, to plan meetings and trips, to do online shopping, for computer gaming and to use trainers at the gym.

Moreover, *electricity serves our needs at work*. Most jobs today are computer based, which needs electricity. Further, because a computer connects to the internet, information can be gathered (news, maps), money can be transferred, and communication is enabled (meetings, mails, skype, shared documents). In a broader sense, electricity can also be used to automate production processes. In addition, education and schooling increasingly rely on electricity, e.g. by having smart boards.

More related to the other sessions, electricity also serves the need of *transport and traveling* to places, when thinking of electric vehicles, and the need of keeping warm in the winter and having a hot shower, when having electric blankets or an electric heating system. In the summer, electricity serves the need of cooling the dwelling.

More controversially, it was discussed whether *there could be too much electricity in our lives. Especially, the consequence of being always available (e.g. through smart phone mailing and calls) was evaluated negatively.*

3.4.2 Today's promising practices

In a second step, we asked participants to think about today's most promising practises they are

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aware of. Therefore, we introduced again three questions:

1. What are some sustainable practices you can think of today?
2. What do you know for sustainable practices?
3. How could you be more energy efficient?

The procedure was as before, by first collecting ideas on their own and then having a group discussion and post-its on a flip-chart. The ideas can be classified in either behavioural changes or technology investments.

From the *behavioural perspectiv*e, several suggestions were made: removing charger from socket, switching-off the stand-by, using cordless vacuum cleaners which only work upon pulling the trigger, using a lid on pot when boiling water, covering dish to keep food warm (or buying Tupperware containers), doing several dishes when using an oven (e.g. baking lasagna and cake at the same time), finishing cooking with cooker turned off, using the eco-program or lower heat for dishwasher and washing machine, turning of appliances (lights/air conditioning/heating-system/electric water heater) when not at home or not in use, keeping the freezer/fridge full and defrosting regularly. With respect to embodied energy, it was suggested to use local products and to reuse products (e.g. exchange clothes at flea market, repair electronic devices instead of buying new ones). Additionally to engage oneself in sustainable behavior, family and colleagues can be encouraged to do the same. In a more extreme way, having cold showers or refrain from heating was mentioned. When it comes to saving energy costs, the participants from Bulgaria and Serbia suggested to use off-peak/night tariffs, e.g. by setting devices to work or charge at night. Related to transport, one can change the mode of transport. That is, using car-sharing, (electric) bikes and public transport or even walk.

Regarding *technology investments*, households can either change the way their electricity is produced (e.g. installing solar panels or heat pumps) or change the efficiency of using electricity. Examples of such efficiency improvements are: insulation, double glass/four season windows to preserve heat/cold, energy efficient appliances (LEDs, A+++ ratings), using (smart) thermostats for temperature regulation and using new batteries for e-vehicles. Technology can also help to monitor consumption and thus increase the knowledge about how to save energy. Therefore, one can invest in smart home, smart meter or in plug-in monitor devices, which monitor the electricity consumption of the respective socket.

3.4.3 What influences energy choice the most

The third step concerned the factors that influence households' energy efficiency choices the most. To approach this question, we started by comparing the practises actually implemented with the sustainable practises households are aware of. By analysing the reasons why some of the sustainable practises are not implemented, we can infer the factors influencing energy choices. In the same procedure as before, the following three questions were discussed:

1. What energy practices are you implementing today?
2. Which of the mentioned sustainable practices do you implement? Why? Why not?
3. What influences your energy choices the most?

The discussion proved that already many sustainable energy practices are implemented: installing energy saving light bulbs (e.g. LEDs), buying energy efficient appliances (A+ or higher), checking how much energy appliances need (either through energy efficiency labels or plug-in monitor devices), repairing appliances instead of buying new ones and buying at local producers to avoid embodied energy, insulating windows and doors, either by buying more efficient ones or by implementing low cost measures (silicone adhesive straps on windows, brush stripes for doors), wearing warm clothes, implementing new heating systems, PV or heat pumps, using alternative transport modes (bike/walk/public transport/car-sharing), contracting green electricity providers or having renewable energy tariffs.

However, many smaller sustainable behaviors, such as turning off stand-by, are not implemented because **attitudes and norms** are such that saving energy for the environment might be not the primary motivation when consuming electricity. Electricity simplifies our lives, thus value is given to

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comfort, practicability and time-efficiency. Households do not want to trade comfort against saving energy. This is particularly the case when it comes to small savings, as realized through behavioral measures, in contrast to big savings, e.g. investments, which are more likely to be implemented because they are believed to be more cost-effective. In addition, safety concerns related to using gas instead of electricity when cooking or heating were mentioned.

In addition, there is only limited **skills and knowledge** about how much sustainable behavior can actually save. There is no information about the energy consumption of specific devices and about payback periods of energy efficiency investments. Related to embodied energy, it is unclear whether existing inefficient devices should be replaced with energy efficient devices, because of the carbon emissions from the production of the new energy efficient devices.

In contrast, **beliefs, values and identities** are an important driver when it comes to saving energy. Experiencing energy awareness through parental education influences behavior when being an adult. Similarly, being a good example to children or colleagues at work is a driver to engage in sustainable practices. In general, awareness of the environmental benefits of saving energy contributes to energy saving behavior.

Finally, energy practices are determined by **material conditions**. Especially renters may not have the opportunity to invest in energy efficiency, because the decisions are often made by homeowners. In addition, income is a factor that may prohibit costly energy efficiency investments. However, electricity prices and consequently electricity costs drive households to engage in energy saving measures and to search for and switch to cheaper tariffs. High costs energy efficiency measures, such as insulation or installing PVs, demand (trusted) professionals. A lack thereof prohibits investments. Similarly, households may be reluctant to invest in energy efficient technology if energy inefficient appliances are still working.

The figure below shows these factors with some examples and their relation to electricity practises.

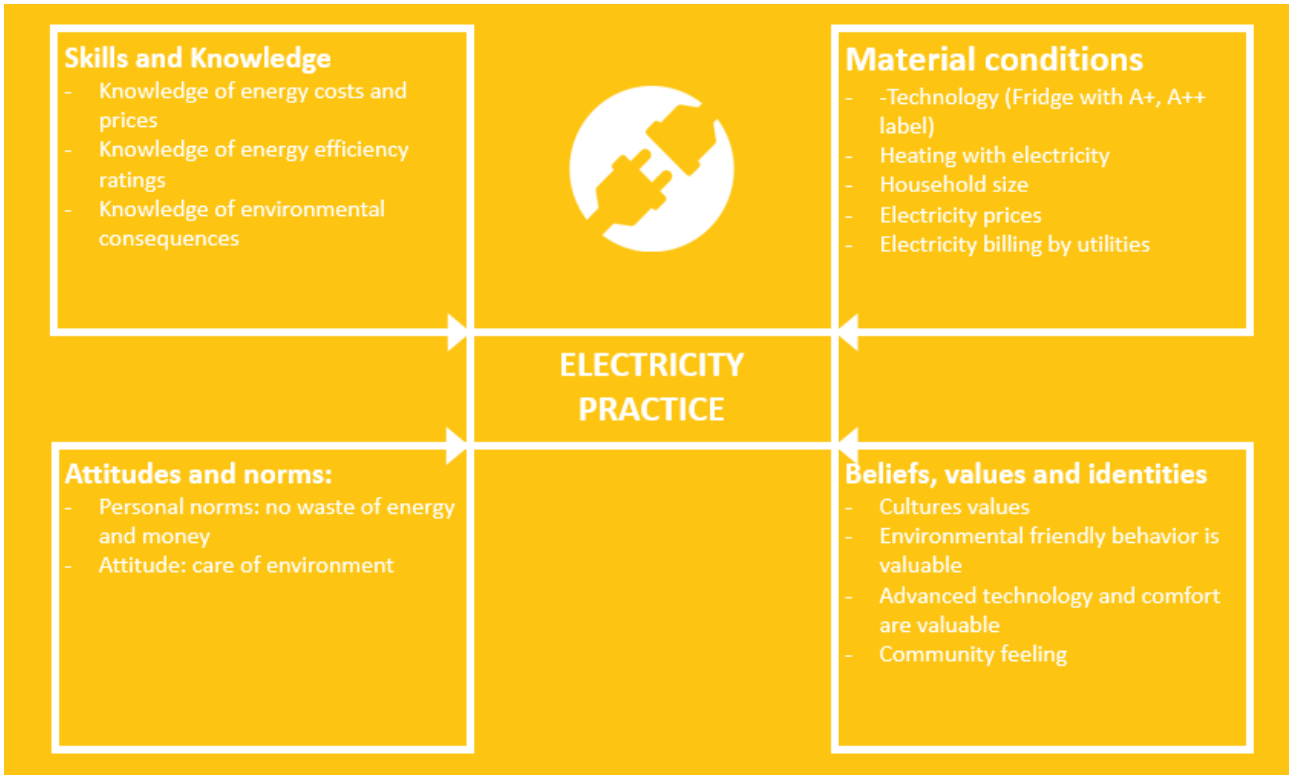

Figure 7: Conceptual framework for factors influencing behaviour related to electricity consumption

3.5 Results from the Heating and cooling session

Rapporteur: Mária Bartek-Lesi – REKK (www.enable-eu.com/wp-

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content/uploads/2018/12/Transition_workshop_results_HC.pdf)

3.5.1 Background – factors influencing heating and cooling practices

The Transition Practice Workshop related to heating and cooling energy use drew upon the results of the ENABLE.EU Case Study on Heating and Cooling (H&C) and the above-mentioned interdisciplinary model of Westskog, Winther and Strumse (2011), which serves as a framework for organising and interpreting the insights provided by workshop participants.

The H&C Case Study investigated the view and opinion of households related to energy saving opportunities in their homes, drawing on focus group methodology and data from household surveys carried out in 5 countries: France, Germany, Hungary, Spain and Ukraine. Participants of focus groups were asked to identify challenges that had to be addressed when trying to save heating energy and heating costs in households. These challenges can be interpreted as obstacles to energy conservation, including, among other factors, the age, technical status and efficiency of the heating system; the characteristics of the dwelling; the level of fuel price; as well as behavioural factors (e.g. preferring higher temperature levels in-house instead of wearing more layers of clothes). As a next step, strategies to overcome the challenges were collected by participants, as possible ways to advance energy efficiency measures and energy saving practices. Examples of strategies raised by participants include information sharing and awareness-raising of consumers; using advanced technical solutions, such as programmable thermostats; different kinds of supporting instruments promoting energy efficiency investments, etc.

To facilitate the discussion in the Heating and Cooling Transition Practice Workshop, some of the factors influencing heating energy use raised during the focus group experiments were presented to the workshop participants using the conceptual framework elaborated in section 3.2 above, as follows:

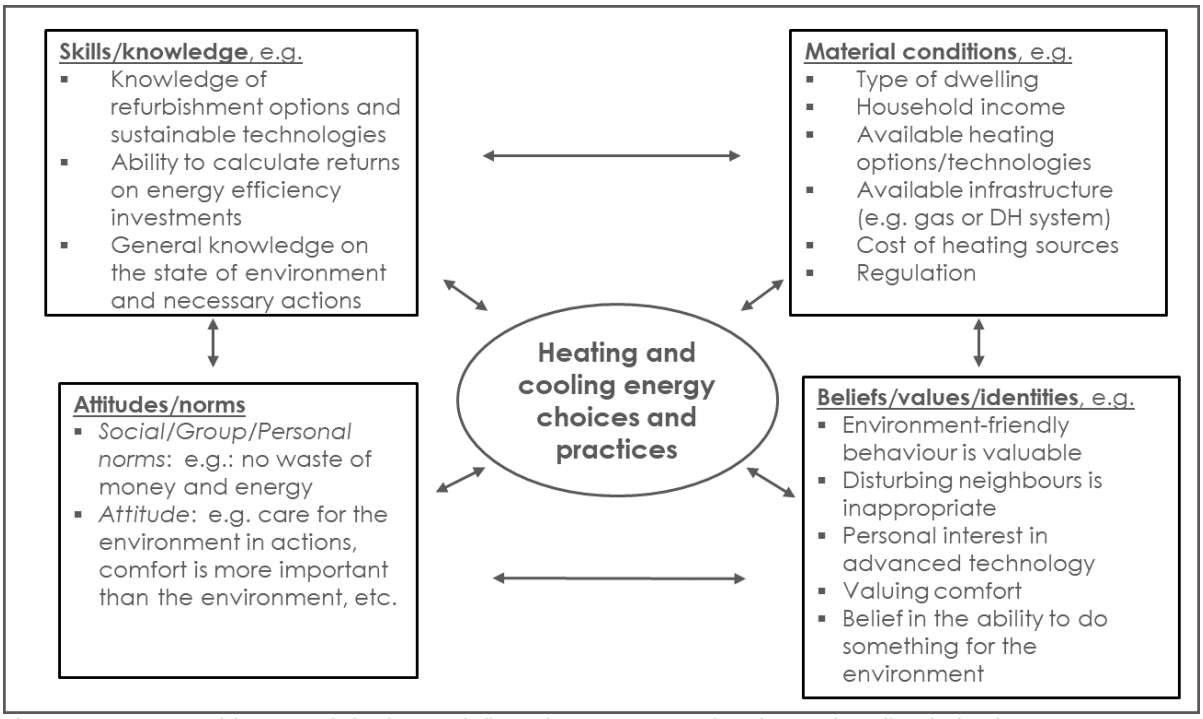

Figure 8: Conceptual framework for factors influencing consumers' heating and cooling behaviour

Drivers and obstacles to mitigating energy use can relate to the *skills and knowledge* of households and *material conditions* (non-human factors) that determine the technology options households can select from, and also affect, the level of energy consumption as lower-income households tend to be more careful about their energy use. Daily energy using practices and the willingness to upgrade homes and heating systems can be largely influenced by the *beliefs, values and identities* of individuals, as well as their *attitudes and norms* that are shaped by the interactions with the group

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of people and the society they belong to. These factors are interrelated and jointly evolve over time. The issues raised by focus group participants can be associated with the influencing factors involved in the above framework, as shown by some examples listed below:

- *Skills and knowledge:* General knowledge on the state of the environment and the ways one can avoid its degradation was considered essential for responsible behaviour. Focus group participants pointed to the problem of abundance of information on H&C technologies, while missing ready to use, unbiased practical knowledge that would help deciding on which technology to choose and how to operate heating systems in a proper way.
- *Material conditions*, especially the availability of financial resources and income, as well as the cost of energy are important determinants of energy choices. The characteristics of the dwelling and the existing heating system determine investment opportunities, while the controllability of the temperature (e.g. if no thermostat is available or control is not possible) influences the amount of energy used and wasted. The use of specific heating technologies is dependent on the availability of infrastructure (e.g. in case of district heating or gas heating). Regulation can also have an important effect, e.g. through influencing the price level (taxes/regulated household prices). In case of historical buildings' refurbishment, options might also be constrained by legal rules aiming at preserving their historic structure.
- *Personal norms/attitudes* affecting energy choices include the requirement to save energy and money, which can have a positive impact on the environment in case it results in energy conscious behaviour (e.g. setting lower temperature at night or when not at home). However, the goals of saving money might have an adverse impact as well, if cheap coal is used for heating or garbage is mixed with firewood. Lack of environmental-friendly attitude can have negative influence, e.g. if household members feel comfortable wearing T-shirts at home while heating their dwellings to higher temperatures.
- *Beliefs, values and identities* conditioning the preferences of consumers also direct their behaviour. If they value environmental consciousness, they are more likely to use less energy accordingly. Those who value quiet living conditions are reluctant to engage in refurbishment activities that would be noisy and disturb neighbours. Preference for new technology and comfort induce investments in new, intelligent technologies enabling the automatic control of the heating equipment. Beliefs might influence energy-saving behaviour substantially: some consumers consider it worthless to care about their consumption if others do not act similarly.

3.5.2 Looking back: energy needs and function

After introducing themselves, workshop participants were first asked to identify the needs and function heating and cooling energy satisfy, in order to be able to imagine various ways of satisfying these needs. Most participants mentioned *comfort and good personal mood enabled by the proper temperature level ensured*. Different aspects of maintaining health were also frequently cited: e.g. to avoid catching cold or getting a heat stroke, survival under extreme weather conditions, and to ensure the optimal level of humidity (avoid mouldiness). Some participants also mentioned *easy drying of clothes, maintaining the good condition of apartments and opportunity for socializing with other people* (in case of sharing places). Some participants raised the issue of '*heating refugees*' pointing to the problem of those individuals who cannot afford heating their homes to an adequate temperature level and go to heated public places to warm up. Heating and cooling can also provide a kind *of freedom in personal choices*, as too high or too cold temperatures do not limit the variety of activities one can do.

As regards other ways of meeting these needs, participants mentioned *personal insulation* in forms of using more layers of clothes, blankets, warm socks, drinking hot (cold) drinks, hot (cold) and spicy food. *Doing sports and exercise* can warm people up, while opening doors and windows for ventilation can cool down spaces. *Rooms can be insulated* by using shutters and shading, and by creating smaller places e.g. using curtains. Painting the walls to warm colours and using wooden floor and carpets instead of ceramic floors can enhance the feel of warmth. As a last resort, one can spend some time in warmer/colder public places or might even move to other countries having

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warmer or colder climate.

3.5.3 Today's promising practices

When asked about sustainable practices and options to use heating and cooling energy more efficiently, participants collected actions that can be associated with a) *more efficient use of existing heating systems through behaviour change,* b) *investments in renovation and efficient technologie*s, and c) *improvements achieved through social interactions.*

Considering energy saving options that can result in reduced consumption without upgrading the dwelling or the existing heating system (through *behaviour change*), participants raised several possible practices, such as turning on the heating a week later when the heating season starts, setting lower night temperature an hour earlier than usually, setting different temperatures in different rooms and turning off/turning lower the heating when not at home (the latter was associated with less energy waste). Other useful practices include wearing warmer clothes instead of T-shirts at home in the winter, use curtains and/or shading to insulate rooms, and using the heat of sun to achieve higher temperatures. If one stops smoking inside the dwelling, the frequent need to open windows to exchange air can be avoided. Participants suggested that monitoring and properly planning our own behaviour can be beneficial in terms of finding good solutions and comfortable ways of decreasing energy consumption: e.g. the heat used for cooking can contribute to raising the temperature after arriving home, while cooking on the balcony/in the garden in summer can help keeping the house cooler. Replicating our own energy-saving practices in one area of consumption (e.g. saving electricity) to other areas (using less heating energy) can also result in energy conservation.

Technological options that can contribute to more efficient energy use include the insulation of walls and roofs, installation of double or triple glazed windows, ventilation using heat exchangers, or building and moving in a passive house that incorporates all these technical solutions besides proper orientation. Optimizing dimensions of appliances can contribute to better return on investments and more efficient use of energy. Smart technics, smart meters and smart home devices used by households in their dwellings and in entire buildings can provide a convenient way to control energy use. Participants pointed to the importance of these solutions in meeting the preference of individuals for comfort and easy application. One participant raised the possibility of using weather forecasts by smart technics to control the functioning of the heating system. The option of recycling heat was also mentioned, e.g. the remaining heat of hot water used for showering can be utilized by the heating system through heat exchangers. A further option to increase the sustainability of household heating and cooling is the installation of equipment relying on renewable energy sources. As having the necessary financial resources and adequate information on investment options are indispensable for realizing investments, the options of making use of energy audits and professional help, as well as applying for available subsidies were also brought up by participants. Another important aspect cited in relation to the divergent interests of owners and tenants was the ability of tenants to rent or move to apartments where heating is more efficient.

Social interactions can have a substantial influence on the heating and cooling energy demand of households. E.g. in multi-apartment buildings fostering communication and common decision-making with neighbours can result in energy-efficiency investments that otherwise could not be performed, because there is a need for the consent and financial contribution of all owners. This was especially pronounced by Ukrainian participants, where in lack of formal representation of tenants, a union of owners must be created in larger apartment buildings to foster collective decisions and investments. Leading by example of conscious energy consumption among the people with whom we have social interactions (family, friends, colleagues, co-tenants, etc.) was mentioned as a possible way to encourage similar behaviour by others. Participants noted that new living models e.g. co-housing, sharing rooms and creating common living spaces can also advance heating energy conservation.

3.5.4 What influence energy choice the most

After collecting energy-saving options, participants were asked to list those that they have already

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implemented (investments) or apply as a daily routine (consumption practices), as well as those that they haven't yet implemented. The following table presents the examples of actions that were taken and not taken by the different participants.

Implemented	***Not implemented***
• regulate heating • replacement of windows • replacement of appliances • sharing spaces and heating system • maintaining the appliances properly • invest in more efficient appliances • insulating • decreasing the night temperature • using renewable fuel • heat only the rooms in use • separate places to make them smaller • wearing warmer clothes and using hot water bags • using smart technics • choose flat with efficient heating to move in • change the energy supplier to one which provides renewable power (for water heating)	• insulation of walls for the whole apartment building • insulation of own dwelling • use of smart systems • communal sharing of space • installation of external shading on windows • influencing the decision of other dwelling owners to change the heating regime to 21 °C (from 24 °C)* • persuading the renters to modernize the heating system and agree on rules with renters to heat common places properly • looking after supplier change options • getting involved politically in moving ahead energy conservation

Figure 9: Energy-efficiency measures implemented and not-implemented by participants

**In Ukraine, tenants need to agree on a temperature level that is maintained in the flats of a multi-apartment house.*

Answers to the question 'What influences your energy choices the most?' were categorized according to the above-presented conceptual framework, helping participants to organise their ideas and think of a wider range of aspects. The following figure illustrates the factors identified.

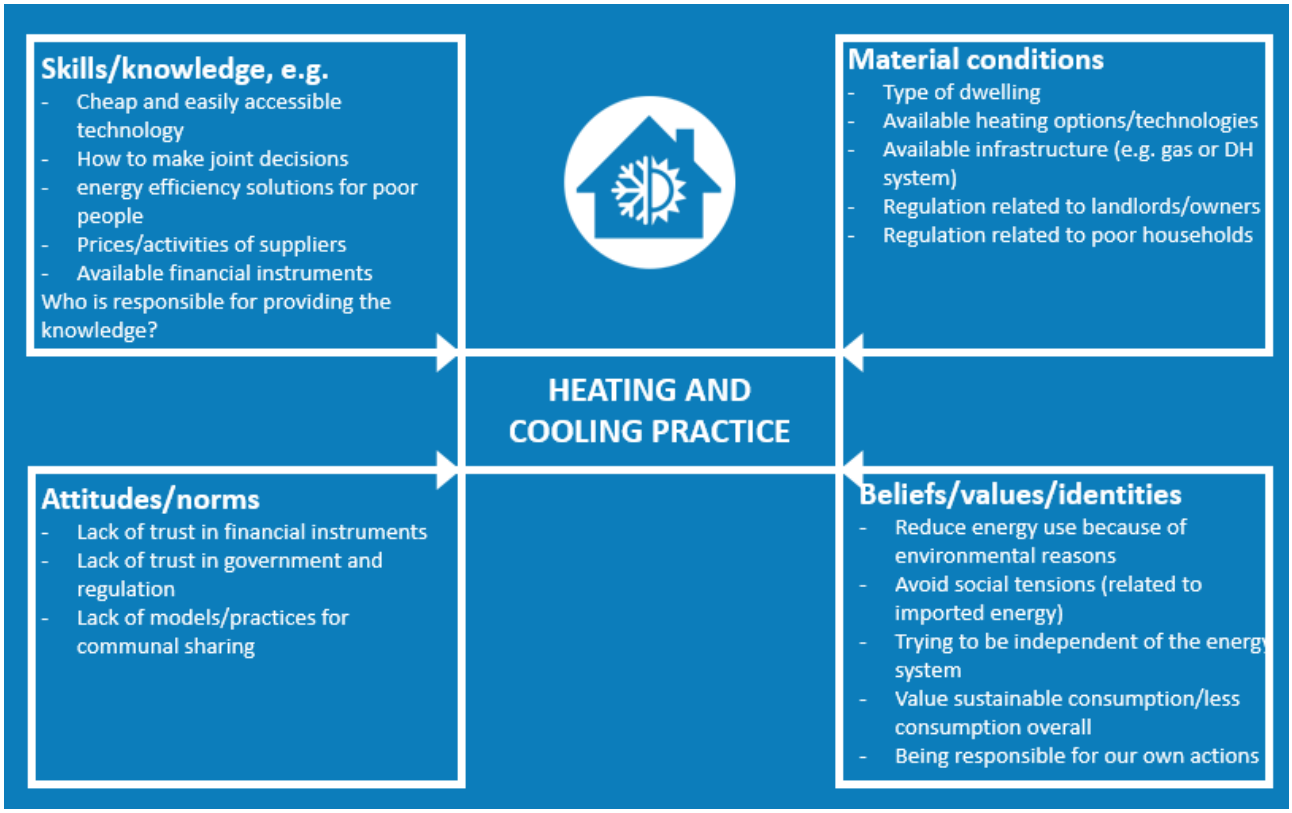

Figure 10: Factors influencing participants' heating and cooling energy choices

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Regarding *knowledge and skills*, participants pointed to the importance of receiving information related to cheap and easily accessible technologies, knowledge of the prices and products offered by energy suppliers, and information on available financial instruments supporting energy efficiency measures. They lack knowledge on the relationship between certain behavioural measures (e.g. setting a lower temperature level) and the resulting change in costs: 'I don't know how much my bill would decrease'. Participants also emphasized that most of us lack the interpersonal skills needed to involve others in joint decisions related to energy-efficiency improvements. The interesting question of 'Who is responsible for providing the knowledge?' was raised by one of the participants, pointing to the fact that obtaining the necessary skills and knowledge is quite difficult and costly, and some people are not even aware of the importance of the issue, addressing the responsibility of decision-makers.

Material conditions mentioned by participants include the characteristics of dwellings (orientation, location, structure, state of insulation, existing heating system, etc.,) that determine energy efficiency options, and the availability of necessary infrastructure (e.g. gas or district heating system), the lack of which can limit technology choice and switching among fuels. One of the most frequently cited factors was the upfront costs of investments, considered too high by many of the consumers. The availability of suppliers offering green energy was also brought up by participants, and they criticized the lack of policies regulating the responsibilities of landlords and owners. They also claimed that well-designed policy interventions improving the energy efficiency of dwellings of deprived households could not only result in lower energy consumption but healthier living conditions as well.

Attitudes and norms determining heating energy choices are influenced by the problem of lack of trust in financial instruments and lack of trust in government and regulation in Ukraine. In addition to the attitudes and norms shown to participants when presenting the conceptual framework, the issue of lack of models and practices for communal sharing was raised. They argued that good examples of well-functioning communal sharing of dwellings and/or living areas (e.g. shared TV room, library, etc.) could advance the spread of this beneficial practice. One of the participants lives in a dwelling owned by a community of people, sharing common places and a common heating system relying on sustainable fuels.

Among the *beliefs, values and identities* people mentioned environmental awareness, valuing sustainable consumption, less consumption in general, and being responsible for our own actions as positive influencing factors. Some participants aim at being independent of the energy system, partially because of the wish to avoid social tensions related to energy imports from countries having political/economic conflicts over energy sources.

In general, participants showed a high interest in the subject and a positive attitude towards energy-conscious behaviour. As it turned out from the initial introduction of people, they live in different types of dwellings (detached houses/flats in multi-apartment buildings, in cities/less densely populated areas, owning/renting their dwellings) using diverse heating systems (district heating, gas/wood/electric heating). Participants coming from different countries shared many views and ideas, albeit some aspects came up in relation to specific countries. For example, the divergent interests of owners and tenants were raised more often by participants from France and Germany, while Ukrainian consumers face special constraints due to the lack of regulation related to the representation of energy efficiency issues in multi-apartment buildings. Modern technology options were more often emphasized by participants from countries where energy efficiency policies and measures are more advanced (Germany, France, Spain). Lack of trust in financial instruments as well as the government and regulation were mentioned as a barrier to energy efficiency investments in Ukraine. Spanish participants emphasized the option of sharing spaces and the importance of communal actions.

3.6 Results from the Mobility session

Rapporteurs: Alessandro Silvestri and Elena Lopez - BC3 (www.enable-eu.com/wp-content/uploads/2018/12/ENABLE-EU_Mobility_Workshop_results.pdf)

3.6.1 Background – factors influencing mobility practices

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 727524.

Households' mobility practises are influenced by many factors. In the table below, we organised factors that affect travel behaviour in 4 main groups according to the scheme presented in section 3.2: Skill/knowledge, material conditions, attitudes/personal norms and beliefs/values/identities.

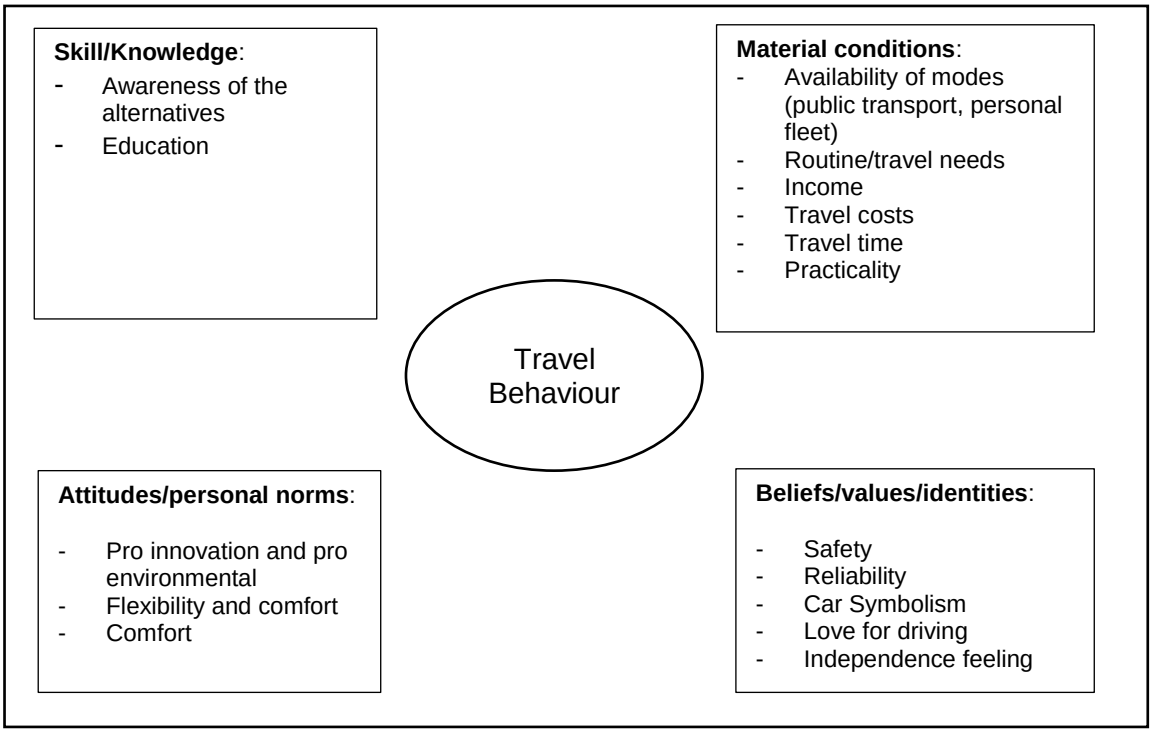

Figure 11: Factors influencing participants' mobility energy choices

The mobility case study had 3 major aims:

1) To better **understand citizen's choices**, **habits** and **preferences** regarding low carbon mobility and alternative transportation modes to private conventionally-fuelled cars;
2) **Identify key drivers and barriers**, including political, technological and behavioural ones, for low carbon mobility and alternative transportation modes to private fuelled-cars;
3) Explore **potential solutions and best practices** to shift away from private conventionally-fuelled car dependence and reduce the negative impacts of transport on citizen's health and well-being, the climate and the environment.

To this end, in all the countries a survey explored weekly routine travels along and preferences towards infrastructure investments, policies and infrastructure. Meanwhile, interviews have been conducted to explore the practice of car sharing.

It appears from the results that the factors that are more valued when choosing how to move are **safety**, **reliability** and **availability** of the mode, followed by the **travel time**, **cost, flexibility** and **comfort**. On the contrary, factors related to **reputation, privacy** and environmental impacts of **local air quality** and **CO2 emissions** are the ones valued less importantly.

Interviews also showed that travel behaviour is highly dependent on the perceived **practicality** of the mode, how much it makes it easy to reach your destination. This factor has been prioritised over travel **prices and costs,** transport **technology,** and **environmental concerns**.

3.6.2 Looking back: mobility needs and function

At the beginning of the mobility workshop, the historical evolution of mobility was presented with a specific connection to the needs that the technological innovation brought about. First, humans were moving by foot to perform their activities. Then by taming animals and riding them, people were able to satisfy needs of covering longer distances in shorter time. Later, the invention of the wheel allowed the carriage of things. More recently, the introduction of rail, road and air transport modes were connected to the satisfaction of mobility needs of independence, worldwide mobility and economic

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travel solutions. The presentation also addressed the energy needs that mobility required, which changed in forms and fuels across time. Afterwards participants have been presented with the problematic of climate change and the need of a transition to a low carbon mobility.
After this presentation, the discussion started on what are the mobility needs that we have and how mobility can enhance our daily life. In this first part of the workshop, participants were asked to present themselves one by one and answer to the following questions:

- "What are your needs that mobility satisfies?"
- "How does mobility enhance your daily life?"

The group was formed by 6 men and 10 women, who came from 6 different countries: France, Hungary, Italy, Norway, Poland and Spain.
From their contribution it is clear how mobility is instrumental to the most important activities that we are used to conduct in our daily routine. The most cited need was related to work. This includes both the trip from home to the workplace and the professional trips required by the job itself at local, national or international level.
Leisure activities have been cited by most of the participants. Mobility allows to participate to entertainment events or going shopping during the week-ends. Travel sometimes can also represent a need per se when performing leisure trips during weekends or vacations. Also with active modes, walking and bicycle, mobility can satisfy needs of doing outdoor sport.
Mobility not only satisfies individual needs but also social ones. It allows people to visit friends and take care of family members. Participants state they often need to move to visit their parents or to carry children to school or to their activities.
Finally, mobility needs can be created by the society in which we live. Several participants mentioned the fast-paced rhythm of life requires people to respect time and distance and to adopt travel modes that can guarantee this.

3.6.3 Today's promising practices

In this session, participants were asked to think about what sustainable mobility practices they are implementing today and to write them down on post-its. We then organised these results on a flipchart.
Participants mentioned some recurring modes, which can be classified in four groups: public transport, active modes, electric mobility and car sharing.
In terms of **public transport**, the modes more mentioned were train, subway, tramway and electric bus. The use of these modes, especially for short distances, have a positive effect on society for most of the participants. They considered that it contributes to reduce the number of cars in cities. Moreover, participants mentioned the need of investing in public transport. And some of the participants emphasized the option of connecting public transport with car sharing.
Most of the participants considered the idea of **active modes**, that is, human-powered transport in the form of walking or cycling for short distances. Some of the participants mentioned the practice of avoiding to use the car for short distances, because walking is healthy and comfortable. Another point participants highlighted is the need of building more bicycle lanes, in order to implement the use of bikes in the cities.
Regarding **electric mobility**, participants considered that electric cars and electric buses are environmental friendly mobility practice that are available today. Some participants mentioned hydrogen cars.
Regarding **car sharing**, several suggestions were made. Participants support the idea of using cars or motorbikes in the city by sharing them with more people. They also think that it is useful to share cars with others through a carpooling. Another practice mentioned by the participants was implementing this kind of transport modes for long distances.
In order to implement these sustainable practices, participants mentioned the need of specific policies and behavioural changes, among which stand out the following.
From the policy side, they considered that *city centre inner circles being closed* to road traffic allow having more pedestrian and sustainable spaces. Another policy option observed was the *supply of large parking spots outside the city*, in order to then use public transport within. Developing

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diversified transport schedules was another point suggested in order to facilitate the use of public transport. In addition, participants mentioned the need of *rules and regulation for on-demand e-commerce, to avoid unnecessary trips*. Another point was to provide easily *connected forms of transport*, park-and-ride connections between different transport modes. All these policies discussed by the participants addressed the most important problems with mobility practices today. In particular, they expressed the need of a *long-term political vision of carbon free society, promoting education activities at schools about environmental awareness*. Moreover, they showed the need of complying and integrating the specific regulations from European Union, national and city levels.
From the *behavioural perspectives*, the participants mentioned *teleworking and changing consumption habits*. Participants considered the fact of buying food in the local stores instead of taking the car to go to big supermarkets, or save time by doing different things on the way with public transit. Another behavioural point mentioned was driving behaviour. More specifically, they mentioned using cars only in the off-peak traffic times and diving below 120km/h to minimize the amount of fuel per km needed.

3.6.4 What influence energy choice the most

The last part of the discussion focused on what factors influence mobility practices of the participants. The discussion was conducted using the snowball method: first collecting ideas on their own, then in groups of four and finally in plenary. Participants talked about what are the means of transport they use today and the specific needs these fulfil. In addition, they mentioned what motivations can influence the adoption of specific travel behaviours. These were then collected under the table below similarly as the results of the previous case studies in terms of Skill/Knowledge, Material conditions, Attitudes/personal norms and Beliefs/values/identities.

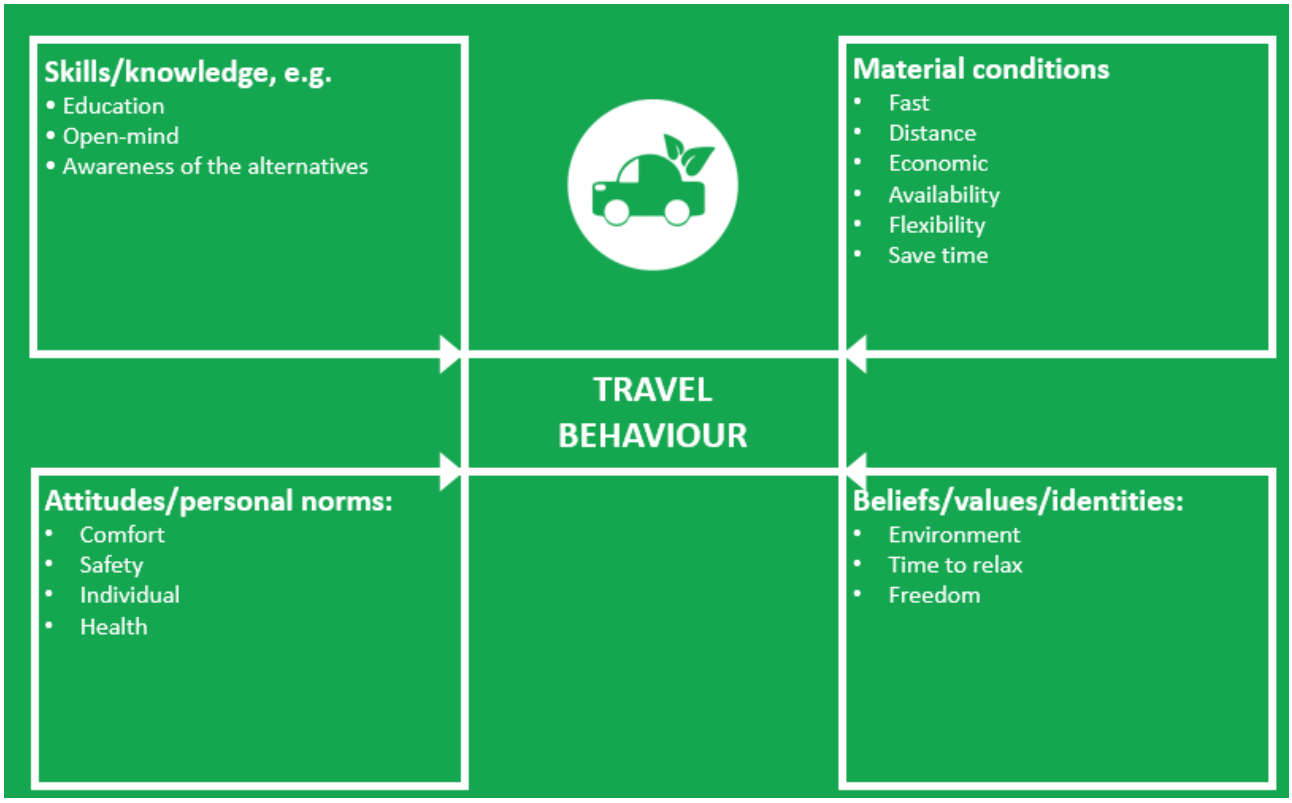

Figure 12: Factors influencing participants' mobility choices

Skill/Knowledge: Participants mentioned **education** as a crucial factor that shapes peoples' awareness and can drive their decision and behaviour. They also mention the desire for a better

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education system that could bring citizens that are more concerned. Then a sustainable mobility requires **open-minded** people who don't mind sharing vehicles with others. Also being **aware** of the different available alternatives affect travel behaviour.

Material conditions: The necessity of moving **fast** and for **long distances** has been widely mentioned as affecting motorised transport modes. Then, being **cheap and available** have been mentioned as factors affecting choice of public transit and car sharing. The possibility of **saving time** and **flexibility** needs shape the decision of mobility practices of car sharing and private cars.

Attitudes/personal norms: Travel behaviour can be affected by needs of moving in a **comfortable** and **safe** way, which have been mainly connected to cars, private and shared. Also individuality, being **independent** from others, is a need that affect decisions of which mode to take. Finally, with respect to active modes, the need of conducting a **healthy** life can motivate people to walk and bike.

Beliefs/values/identities: Many participants declared **environmental concerns** affect the way we live, hence also how we decide to move. Choosing public transport can also be done looking for some **time to relax** with no need of driving. Finally, the feeling of **freedom** affects participants' choice of walking and biking instead of using motorised modes.

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4 Tomorrow's practices: Imagining new ways of meeting energy needs

4.1 Energy Transition Scenarios

Carlo Sessa (ISINNOVA) introduced the future energy transition perspective by presenting two possible extreme scenarios, called "network in control" vs "people have the power" (www.enable-eu.com/wp-content/uploads/2018/12/Transition_workshop_30Nov_Scenarios_final.pdf).

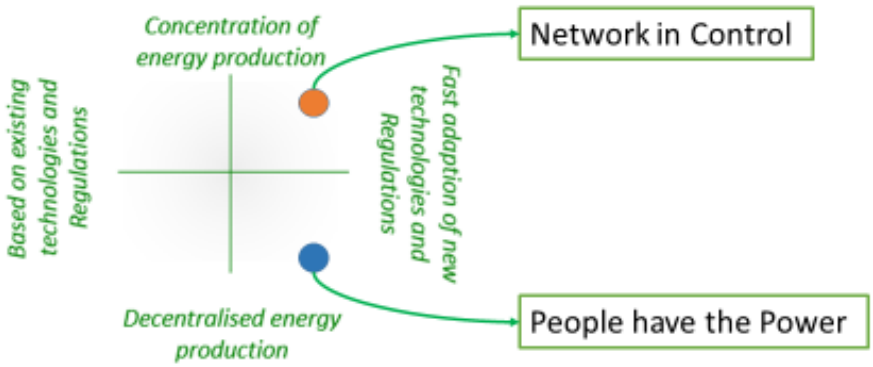

Figure 12: Two possible energy Scenarios

As shown in the figure above, both energy transition scenarios foresee a fast improvement and adaptation of the regulatory framework and the new energy technologies. But in the "network in control" scenario the energy production remains concentrated with the predominance of large power plants and top-down transmission and distribution of energy, while in the "people have the power" scenario power generation and distribution is decentralized. In the following, the two scenarios' features are presented with a greater detail.

Network in control
In Europe, the EU directives promoting consumers participation have mostly failed to provide a playing field for demand aggregation at the EU level, at least in the majority of the Member States. The share of distributed RES remains low since the development of small-scale, grid-connected renewable resources has slowed down, mostly due to tariff and grid connection problems. The electricity production is then mainly entrusted to offshore wind and a limited number of large PV plants. For what concerns the heating uses, district heating mainly feed by biomass and/or using waste industrial heat and, in some cases, by solar thermal plants are spread in Central - Northern Europe, while heat pumps and solar thermal plants provide to the majority of the heating demand in Southern Europe. Electric vehicles (mainly cars and light duty vehicles) and biofuels (mainly biodiesel) assure the sustainability in the transport sector. The first H2 fuel-cells based vehicles appear in the market.
In this scenario, the distribution system remains primarily hierarchical, with electricity flowing one way from generators to end consumers. Gas power plants remain the primary source to provide backup capacity and grid balancing, but there is growing concern about the difficulty of managing periods of low demand and high generation from wind parks and, at the same time, ensuring the security of supply. To this end, the medium voltage (MV) and high voltage (HV) grids have been widely equipped with ICT solutions improving grid management and control from the side of

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Distribution Service Operators (DSOs) and Transmission Services Operators (TSOs), and widespread regional cooperation has been undertaken. To enhance interconnection capacity and ensure the flexibility of the network by integrating variable RES, a reinforced grid infrastructure (including superconducting solutions) is able to manage data exchange and communications across countries in order to store and trade electricity. ICT devices and sensors are deployed in the grid at the low voltage level as well. However, their use is limited to the DSOs, to allow them to monitor the status of the grid and electricity consumption / injection.

People have the power
The main assumption behind this scenario is that the new measures envisaged for Europe in the recast of the Electricity Directive have been accepted and successfully implemented by the European stakeholders and policy makers. This means that consumer empowerment has become a reality and their level of engagement in the grid operations is strong at low and medium voltage level. Demand response is then an attractive option for both the residential and industrial customers. Moreover consumers and prosumers engage in the grid at low and medium voltage level providing the required flexibility both on the demand and on the supply side. The electricity market is well developed with a large number of new actors, including aggregators, renewable energy suppliers, prosumers and ICT developers of energy efficiency solutions. Distributed RES generation plants, such as large and small wind power plants, roof-top PV and micro-CHP fed by biofuel assure the 100% of electricity production. An efficient management of heat and electricity (CHP, micro-CHP and heat pumps with heat storage systems) increase the system flexibility allowing effective demand response schemes. As in the Networks in control scenario, heating is also provided by large and micro district heating fed by biomasses (and biogas) and EVs and biofuels fuelled heavy duty vehicles assure the 100% RES coverage of the road transport energy needs. A fully digitalised infrastructure allows for multidirectional flow of electricity. An extensive ICT layer enables high interoperability of network operators and devices, allowing for complete and real-time interaction among all actors in the system. Sensors are widespread and data communication and ownership are well regulated. In addition to the upgraded and smart main grid, micro-grids are deployed in many locations, with back-up connections to the local grid operators. Actually wherever and whenever this is convenient, the micro-grids are used as an alternative to the electricity supply from the grid operators in order to provide a reserve balancing capacity. As in the Network in Control scenario, the EVs assure additional storage capacity to balance the electricity flow at the low voltage level.

After the presentations of the scenarios, Carlo Sessa introduced the purpose of the following World Café session, aiming to identify promising practices that will be used to elaborate the Energy Union Sustainable Practice Household Scenario to spread good practices across Europe.

4.2 World Café session

The World Café session featured three rooms, each one hosting two tables with 10-15 participants per table. The session was organized in three rounds of 30 minutes each, with people moving from one table on one topic (e.g. energy prosumption) to a next table for a different topic (e.g. mobility). In this way all participants had in principle the opportunity to discuss all the three topics (as a matter of fact the time left for the entire session was enough only to complete two rounds). The World Café format offered participants the opportunity to work together in the different thematic sessions, with the facilitation of one rapporteur for each table.

In each table, participants were asked to think about two questions:
1) What do they want to see in the future/what will they do in their daily practice?
2) How can politicians and decision-makers make it easier for them to adopt these sustainable practices?

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The following three thematic sessions were organized:

- Energy production – moderated by Carlo Sessa and Giovanna Giuffrè of ISINNOVA;
- Energy consumption – moderated by Thomas Pellerin-Carlin of the Jacques Delors Institute and by Margaret Pesuit of ISINNOVA;
- Mobility – moderated by Emilie Magdalinski of the Jacques Delors Institute and Stefano Proietti of ISINNOVA.

4.2.1 Results from the energy production session

Rapporteurs: Carlo Sessa & Giovanna Giuffrè - ISINNOVA

What do you want to see in the future, and what will you do in your own daily practice?

Participants identified several changes that they would like to see in the future:

- Changes were foreseen especially with regard to energy technologies, infrastructure and services. On the one hand, participants imagined the *discovery of new ways of producing energy*, as example, by studying nature-based solutions. It was also put forward the ideas of building micro-biogas plants that could be fed using home food waste. The development of an "energy wifi" – a technology able of transmitting energy without grid – was also discussed.
- On the other hand, participants considered possible breakthrough improvements of the current technologies, the most important being a *possible improvement of the batteries'* technology and performance. Improved energy storage was perceived by many participants as critical to enlarge the number of prosumers among citizens.
- Looking at governance, some suggested and wished for the emergence of a *"new urbanism"* which would be based on the concept of resilience and would always include energy aspects – as energy production- into city planning. In this perspective, energy production systems should become mandatory in all new buildings and regeneration projects.
- In our energy future, it was imagined the *creation of jobs and the consolidation of skills and knowledge related to installation of energy production systems* as well as the energy services. In particular, it was put forward the ideas of a national authority able to certify with a label those companies who guarantee a high quality job for energy systems installation. This certification system is especially needed in those countries in which the market is not still well developed and where it is difficult to find skilled professionals in the home production systems fields.
- Generally, many participants foresaw the *development of services, skills and mechanisms that will make easier the citizens participation in the energy market* (buying and selling energy). The future energy market could be more transparent and diversified, a market-place with many actors and services, and this will allow citizens to buy – for instance - only energy produced by renewable energy sources. The block chain technology was mentioned as a big opportunity to enable the energy trade, with all transactions being recorded on a shared ledger without needing a third party (energy utility) intervention. The option was especially valued for managing exchange of available energy among neighborhood households connected through a micro-grid. These micro grids should connect also EV charging stations to exploit the accumulated energy of parked vehicles, when available. Another important energy trade opportunity is related to the excess of energy that solar panels installed in second houses could offer to the local network when the house owners are away (i.e. living at their principal home elsewhere), thus consuming no energy.
- Some participants – from Ukraine but also from other countries – stressed the need of *promoting right incentives for the tenants of apartments* to install solar panels or other devices, e.g. regulating the sharing of investment costs with the owners or conditional subsidies (e.g. by means of tax reductions for the owners renting apartments equipped with solar panels). By the same token, there is the need to better regulate and create incentives for the multi-apartment settings (e.g. condominiums), where the decision cannot be taken by a single household.

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- Most of the participants stressed the need of *better and simpler communication* about the concrete way new energy installations can work and the benefit they can deliver. This is considered a public service governments or energy authorities should deliver to the citizens. The messages should be consistent with the reality of the gains citizens may have in migrating to prosumption, for instance by fixing convenient feed-in tariffs for the energy sold on the grid.
- Many participants stressed that the practice of producing energy could lead to a more *conscious energy consumption*. The increased knowledge of energy costs could be a driver to induce the adoption of more sustainable energy behaviors. The majority of citizens will be aware of energy production costs (economic, social and environment) and, thus, committed to reduce their energy consumption. Even more important, energy saving education for children is considered perhaps the most effective and easy to implement measure to improve the awareness and energy behavior of future generations. One participant – holding solar panels in his home – launched the idea to play as show-case for the schools in the neighborhood, by organizing classroom visit at his premise to disseminate the experience.

What will you need, and how can decision-makers/politicians make it easier for you to adopt these practices?

To make this shift possible, participants identified several actions that should be taken by decision-makers:

- Stricter energy efficiency standards.
- More policy commitment and financial support scheme for producing energy at home.
- Disincentives and cap on the use of fossil fuels in order to make them more expensive.
- Guarantee of stability over time of the energy regulations and the financial mechanisms in order to ensure the citizens' investment viability.
- Simplify the regulation on energy production in order to make easy and fast producing and selling energy.
- More funding for R&I for batteries performance improvement.
- A paradigm shift in the economic system: from linear to circular – forget infinite growth!
- Education policies: create 'hands on workshops' for children and adults on how to use technologies to produce energy at home;
- Closing the gap between policy makers (EU/National), academia and citizens on energy and climate change (against misinformation);
- Marketing, advertising and information campaigns to make energy production more trendy and appealing to all (also via social media e.g. prosumers who become promoters to disseminate experiences on energy production at home).

4.2.2 Results from the energy consumption session

Rapporteurs: Thomas Pellerin-Carlin (JDI) & Margaret Pesuit (ISINNOVA)

What do you want to see in the future, and what will you do in your own daily practice?

The first group of participants spoke of wanting *better information/communication* (Germany), of having *local gardens* (Ukraine) and growing their own food (UK). Several participants talked about using *bikes, electric cars and public transport*, of living in smaller and/or *energy-neutral houses and/or buildings that demand less energy*, *of using renewable energy, heat pumps and smart equipment with timers, of using less plastic, and of teaching one's children about energy.*

Because the question did not seem specific enough (numerous participants asked for clarification), it was rephrased for the second round in "Ten to twenty years from now, what will you do in your daily life to change your energy consumption at home?"

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The second group of participants brainstormed how life might be different in 10-20 years, and how that will change the way they use energy. For example, if global warming gets worse, they will need *air condition* in the summer and more heat in the winter, perhaps necessitating a heat pump, said one UK participant, which now are quite expensive. A participant from Serbia said that there may be *robots* to do the things we don't want to do, though she was unsure how that would change energy consumption, and if it would end up increasing rather than decreasing energy consumption. A participant from Norway imagined that hot water might become a luxury and that they might need to find faster, more energy-efficient ways to maintain hygiene. Several thought that a rise in *locally produced food, along with making products, devices and appliances last longer* (and phasing out things like planned obsolescence) could reduce energy use. Many also talked about having *better awareness of their own consumption, through smart metering and the development of apps that could inform people what their consumption is*. More energy-efficient *appliances, energy companies that use renewable energy*, and producing one's own energy were practices mentioned by several participants, with the others nodding in agreement. Co-housing was also brought up by two participants (from Hungary and Spain) as a possible solution.

What will you need, and how can decision-makers/politicians make it easier for you to adopt these practices?

The first group of participants proposed initiatives such as *better bicycle infrastructure, tax incentives, for example, a carbon tax on emissions, feed-in tariffs, fiscal incentives for green practices, the promotion of energy savings, and encouraging the installation of solar panels by offering more money to sell electricity to the grid*. Interestingly, some of the same proposals – such as improving bike infrastructure and increasing tax incentives - came from countries as diverse as Ukraine, Norway and Spain. A Ukrainian participant spoke of *liberalising the energy markets*. Another from Germany said that smartphone producers should find a way to use less battery/energy. Many participants agreed that better communication with citizens and involving citizens in decision making by having open, participatory dialogues with the public – as was done at the ENABLE.EU workshop – would go a long way towards making the energy transition a bottom-up, successful process.

The second group of participants, answering the same question, had a number of suggestions. A Spanish participant proposed *new labelling for home appliances* that take into account their impact, though to do this more research needs to be done on the impacts of the energy system at home. A few participants said that *planned obsolescence*, a common feature of mobile phones and other products, needs to be dealt with, and companies need to be encouraged, even regulated into creating longer lasting products. One way this could be done is by legislating longer warranties. *Feed-in tariffs and decentralised energy* could also help, suggested a participant from Serbia. More information is needed so that consumers can predict how much energy they will use with each product, each appliance, and each device – not only in terms of efficiency but in terms of how much energy it took to produce it, how much it will take to dispose of it, and what its expected lifetime is, stated a Hungarian participant. He added that more information is also needed for things like solar panels, so that people can predict how much they can save and make better decisions on whether to invest in them or not. Several participants suggested that the government needs to increase the number of awareness-raising campaigns and do more to encourage more sustainable energy use. They proposed a multi-pronged approach, with education regarding energy use in school combined with wider programmes to show communities and families some specific, daily practices that they can adopt. The government needs to inform citizens of new technical possibilities that could save energy, and more importantly, it needs to be a good example, one that is independent of financial and industrial interests.

Overall, both groups were extremely enthusiastic about participating in the workshop, and nearly all of them voiced how much it meant to them to be listened to, to be asked what they think and what they need. This might be one of the most important takeaways for policy makers, if they want to design, propose and implement policies to promote a truly participatory and bottom-up transition to low-carbon energy.

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4.2.3 Results from the Mobility Session

Rapporteurs: Stefano Proietti (ISINNOVA) and Emilie Magdalinski (JDI)

What do you want to see in the future, and what will you do in your own daily practice?

When talking about mobility, participants starting the discussion focused on their daily trips and the use of cars. Many of them took *public transportation* for their daily travelling, especially those living in larger cities. Some participants said they take their car because they are in small towns where the public transport system is insufficiently developed to move around or go to work. According to one of them, it would take her 1.5 hours to go to work hours by public transport instead of 30min by car so this is currently not an option.
Some participants mentioned the possibility to adopt cleaner alternatives, such as electric cars once they are more affordable and that there are more and faster charging points. But they generally agreed that *the use of individual cars will not be how we move in the years to come* because of pollution, congestion and change in how we see life in cities. Few participants doubted the possibility to see a future society without individual cars. Generally, participants considered that in the future, they would like to rely on *public and shared transportation* that is affordable, offering dense coverage and frequent service. The system also needs to offer more capacity of trams and busses to support people shifting from cars and sufficient user *comfort* to make the shift more attractive. By shared transport services, they meant shared cars, mainly electric, car-pooling, and shared electric bikes and scooters.

This system was complemented with the concept of *tailored transport service*. The aim is to use more sustainable modes, incl. public transport and car-pooling, organised in an inclusive offer that allows a user to travel from point A to point B in the most efficient way without relying on an individual car. Like our current data plans, this service can be paid through one service or application with available schedules and e-tickets. This also solves the question of the last-mile problem. Some participants pointed out to the current difficulty to go from home to the station without a car. The solution would be to provide *on-demand pooling services*. Some participants highlighted that they were ready to rely on car-pooling in more remote areas even if it involved longer trips. This could be done through an application, which proposes a trip asking whether it is fine for the user to take some travellers on the road for a cheaper ride. In such a system, the user has still the opportunity to choose the comfort level and time devoted to the trip at different prices.

Participants also highlighted the importance to provide solutions for more remote areas that do not benefit from developed public transport. The system of "*park and ride*" where one can leave a car close to public transport connections was considered as a solution for now, but they regret their limited availability (none in many stations or few places) and high price (e.g. London). They argued they should be available for free or at an affordable price.

In addition to car-pooling which offers transport with other people but in small groups, some participants highlighted the role of developing more sustainable *transportation on water*, i.e., on rivers and canals, with electric ferries for instance (as it is the case in Norway). A participant insisted that such electrical water "busses" should be small and not crowded big boats to "feel special". She meant that public and shared transport should keep a human dimension and provide comfort.
Rail transport could have a significant role in this system, with improved connections and comfort (in particular night trains). A participant illustrated this point with the idea that instead of long trains with many carriages, railways could be more exploited with small carriages circulating more often on short distances between cities. Some participants opposed this idea saying that rail is already inefficient now so that short distances could make it even more complicated.

Bikes were also seen as a large part of the solution in cities. Some participants regretted the absence of *shared bikes* in their cities and the lack of infrastructure for safer and more pleasant trips. Climate

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conditions were also mentioned as a barrier, e.g., a Bulgarian participant was reluctant about cycling in winter. On the other hand, a Norwegian participant said this is not an issue in Scandinavia with winter tyres but roads and bike lanes need to be cleared of snow.

Regarding how participants perceive future territorial planning, two opposite visions emerged from the discussion. On the one hand, according to some participants, rethinking mobility involves the *reorganisation of daily activities and urban space*, aiming to reduce urban congestion by reducing the need to travel (including flight travels). Local availability of main activities, e.g., shops, services, *co-working spaces* and green areas, can help to limit the daily trips to farther areas and improve life quality. This change requires a societal change of how office work is perceived and planning for better not bigger and too dense and concentrated cities. On the other hand, some participants envisioned urban planning that separates each activity (e.g. residential and work areas) in order to better plan *traffic management with same flows from home to work*. This involves more coordination between housing and transport planning.

Future technological options were also mentioned by some participants, such as self-driving vehicles, including sustainable autonomous busses, but also personal balloons -flying with helium- and hybrid car-planes that would allow for both road and air travelling.

What will you need, and how can decision-makers/politicians make it easier for you to adopt these practices?

To make this shift possible, participants identified several actions that should be taken by decision-makers.

Several participants were favourable to limit or to ban the use of private vehicles in city centres.

All of them agreed on the *need of mentality change*: this will require more proactive behaviours from the side of citizens/users (also by changing the status symbol attached to car ownership) and at the same time *more information provided* on different mobility options available and on full economic, social and environmental costs of each of them. In this sense, some measures should be:

- Taking into account all externalities;
- More robust technology evidence about the impacts of different transport options;
- Market campaigns showing cars as killers;
- Life Cycle Analysis on different kind of vehicles.

The use of private solutions should be discouraged by introducing higher taxes on more polluting fuels (including on flights), higher parking rates, car free zones, carbon quota per person, limitation on car ownership (e.g., one per family). Tax increase should be gradual and benefits properly communicated to get support from the population.

Many participants stressed the importance of regulations, subsidies and incentives (economic and qualitative ones) to encourage the adoption of sustainable modes:

- Improved quality, reliability (also thanks to real-time information) and comfort of public transport and trains (in particular night trains);
- Subsidies for the use of public transport;
- Subsidies for electric cars (including extended recharging infrastructure) and alternative fuels vehicles;
- Simplify the use of car-sharing;
- Displays at home showing the different mobility options to encourage intermodality;
- Improve cycling infrastructures and safety;
- Reward system for bicycle users, with a premium system in case of difficult conditions (e.g., taxi cheques in case of hard rain);

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- Implement free public transport days like the annual Car-Free Day, for instance once a month. Participants were very enthusiastic about this possibility, esp. on working days for people to try out daily trips without a car;
- Improve conditions for bikes in cities, such as better bike lanes, slower car speed in cities for security, subsidies for e-bikes and developing shared bikes services in smaller cities.
- Make traffic regulations more friendly for cyclists, e.g. possibility to turn right even when red light
- Develop affordable or free park and drive for people living in more remote areas.
- Earmark parking space for carpooling

Additionally, more investment should be channelled in more sustainable transport modes, such as railways, especially for freight transport to reduce the number of trucks on roads. The introduction of autonomous cars should also be regulated, e.g. to make the transition smooth with both driven and autonomous cars on the roads.

On a broader perspective, participants called for a redesign and reorganisation of the urban spaces: by reducing the presence of private vehicles, the free parking spaces should be repurposed and reallocated as common spaces. A new urbanism should be promoted, with self-sufficient districts (so reducing the need for mobility): in particular, some rural and peripheral areas should be better connected by transport and/or served by different functions, encouraging teleworking and facilitating persons to avoid commuting, also in the view of a better social justice.

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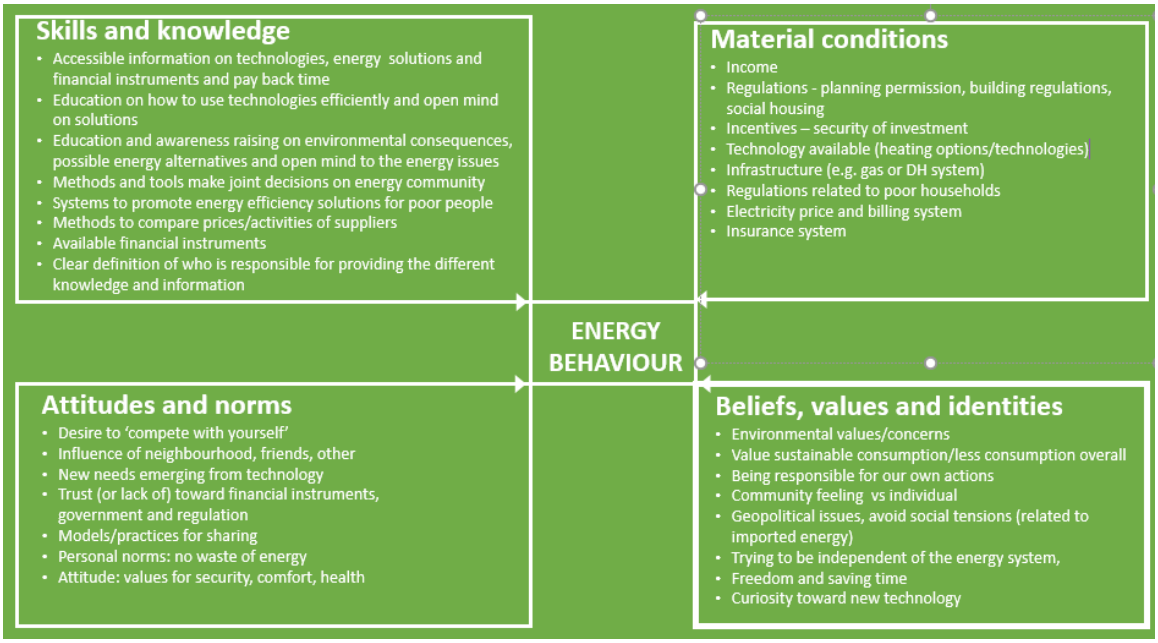
5 Conclusions and the way forward

Energy is vital for economies and societies: historically, it is possible to see a connection between national GDP growth and growth in energy consumption. Across countries, households recognised the importance of energy to satisfy basic needs as well as make our daily life more comfortable. Energy allows us to pursue a wide range of activities such as cooking, heating, cleaning, accessing health-services, working, travelling and communicating. In regard to this, the increasing reliance on mobile phone to work and communicate is reflected in the demand to be always able to 'plug in and connect'.

Nowadays the challenge to halt climate change is urgently requiring to decouple the economy growth and the satisfaction of our energy needs from GHG emissions. The EU is on track to meet the 20**%** cut in greenhouse gas emissions (from 1990 levels) by 2020. EEA reports highlight the need of additional measures to reach the target of 40% reduction target by 2030[3]. According to projections submitted by Member States, planned reductions are estimated to bring emissions between 27% to 30% below 1990 levels by 2030. The actions are needed to reach the goal of greenhouse gas emissions reduction by 80–95% below 1990 levels by 2050 necessary to avoid climate change increased consequences on citizens and ecosystems. Participants highlighted many opportunities available today to reduce energy consumption and to use it in more sustainable ways. From the use of advanced technologies to the (re)-discovery of frugal innovations and the adoption of sustainable behaviours and solutions, small changes in our everyday practices can make a difference in reaching the long-term goal of decarbonising our economy and lifestyles.

The table below sums up the results of the workshop on what influence households' energy practices in the four ENABLE.EU fields.



Workshop participants pointed out how the adoption of sustainable energy practices needs to be promoted and supported by policies acting in four fields influencing energy choices. While the factors

[3] EEA report 04/2015 "Trends and projections in Europe 2015":http://www.eea.europa.eu/publications/trends-and-projections-in-europe-2015; EEA technical report 14/2015 "Trends and projections in the EU ETS in 2015":http://www.eea.europa.eu/publications/trends-and-projections-eu-ets-2015/ EEA technical report 15/2015 "Approximated EU GHG inventory: proxy GHG estimates for 2014":http://www.eea.europa.eu/publications/approximated-eu-ghg-inventory-2014/

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related to materials conditions and skills and knowledge are often taken into consideration in the energy planning and policies, the framework adopted by the ENABLE.EU project highlights also the importance of taking into consideration and including measures on beliefs, values, identities, attitudes and norms for fostering and shaping a real energy transition.

The ENABLE.EU households pointed out the need of a paradigm shift toward circular economy should be coupled with mentality shift of citizens who should become more aware of their consumption consequences and proactively engaged in the search and implementation of sustainable actions and solutions.

To make this shift possible, participants identified several actions that should be taken by decision-makers. The next workshop, held in March 2019 at the Economic and Social Committee, will build upon the most promising identified practices towards an 'Energy Transition Roadmap', which will define actors, objectives and time for making the desired decarbonisation scenario a European reality.

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Annex I: Transition Practice workshop – participants list

	Name	Famy name	Country
1	Luigi	Acquaviva	IT
2	Ortzi	Akizu	ES
3	Kristin	Aurdal	NO
4	Tetiana	Boyko	UA
5	Arne	Bratlie	NO
6	Holger	Brinkschröder	DE
7	Jelena	Cvijović	RS
8	Gonzalo	de cadenas santiago	ES
9	Paolo	De Luca	IT
10	Enzo	De Martino	IT
11	Anna Lena	Düffels	DE
12	Zsanett	Écsi	HU
13	Péter	Fejes Tóth	HU
14	Ragnhild	Gjelsvik	NO
15	Oleksandra	Gumeniuk	UA
16	Isabelle	Harsin	FR
17	Christian	Heinlein	NO
18	Rodrigo	Huertas	ES
19	Katrine	Husby	NO
20	Borja	Izaola	ES
21	Ragnhild	Jensen	NO
22	Svitlana	Kolesnyk	NO
23	Espen	Kristensen	NO
24	Natasa	Kuzmanovic	RS
25	Olha	Lakiza	UA
26	Malte	Lange	DE
27	Mari	Langer Asland	NO
28	Dragan	Lazarevic	RS
29	Nevena	Lazarević	RS
30	Svitlana	Lozovytska	UA
31	Rostyslav	Lozovytskyi	UA
32	Vania	Maneva	BG
33	Roman	Maretskyy	UA
34	Gavin	McDermid	UK
35	Sally	McDermid	UK
36	Matthieu	Meunier	FR
37	Dorota	Mielec	FR
38	Ilona	Miklós	HU
39	Jelena	Mirkovic	RS
40	Laura	Morosini	FR

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41	Isabella	Neuweg	UK
42	Jan	Paszkiewicz	PL
43	Heinz	Philipps	DE
44	Francesca	Pietroni	IT
45	Tetiana	Polischuk	UA
46	Sergey	Popov	UA
47	Julia	Puka	PL
48	Witold	Rajewski	PL
49	Marija	Reljic	RS
50	Alberto	Rossi	IT
51	Zsófia	Salát	HU
52	Isabell	Schepers	DE
53	Michael	Spiller	UK
54	Sarah	Spiller	UK
55	Andrew	Sutton	UK
56	Jeanette	Sutton	UK
57	Angela	Szülek	HU
58	Slavi	Terziev	BG
59	Paul	Thompson	UK
60	Zsófia	Vértessy	HU
61	Estitxu	Villamor	ES
62	Alun	Williams	UK
63	Melanie	Williams	UK
64	Todor	Yalamov	BG
65	Illia	Yeremenko	UA

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