D6.4 | Participatory foresight evaluation report

Deliverable:	**Participatory foresight evaluation report**
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Contributors:	The ENABLE.EU team is grateful to have had the commitment of a wide range of citizens and experts, 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.
Version:	Final
Quality review:	Stefano Proietti (ISINNOVA)
Date of publication	30/05/2019
Grant Agreement N°: Starting Date: Duration:	727524 01/11/2016 36 months
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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement number 727524.

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The project in brief

The Energy Union Framework Strategy laid out on 25 February 2015 aims at fostering a cost-efficient energy transition able to deliver secure, sustainable and affordable energy to all European consumers. It has embraced a citizen-oriented energy transition based on a low-carbon transformation of the energy system. At the end of the day, the successful implementation of the Energy Union will materialise in a change in energy production and energy consumption choices. Such choices are heavily shaped by particular economic prerequisites, value systems, gender-based preferences, efficiency of governance and the maturity of civil society.

The ENABLE.EU project attempts to understand the key drivers of individual and collective energy choices, including in the shift to prosumption (when energy consumers start to become also energy producers). The project will develop participatory-driven scenarios for the development of energy choices until 2050 by including the findings from the comparative sociological research. As differences between European countries remain salient, ENABLE.EU will have a strong comparative component.

The final aim of this project is to contribute to more enlightened, evidence-based policy decisions, to make it easier to find the right incentives to reach the twin goals of successful implementation of the Energy Union and Europe's transition towards a decarbonised energy system. To reach this final aim, ENABLE.EU will seek to provide an excellent understanding of the social and economic drivers of individual and collective energy choices with a focus on understanding changes in energy choice patterns. Results will be disseminated to relevant national and EU-level actors as well as to the research community and a wider public.

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Introduction

With an uncertain future on the horizon, foresight is a way to understand our options and how the choices we collectively make will affect us. It is a tool allowing us to explore a number of possible futures. It can thus help identify what will affect our lives over the next decades and envisage desirable changes in policies, strategies and behaviours, creating roadmaps that detail what we need to do today to shape our tomorrow.

The ENABLE.EU participatory foresight

The ENABLE.EU project is using foresight to understand how to encourage people to make better and more sustainable energy choices. The participatory foresight aims at taking stock of the research led in the project so far to devise possible trends in attitudes and lifestyles towards sustainable energy practices, and to explicit policies that can enable the energy transition in Europe over the next decades.

The participatory foresight was organised through three transition workshops which brought together experts and citizens to create a realistic roadmap for the future. First, experts were asked to envision future energy scenarios. Then, citizens from eleven countries refined these scenarios based on their experiences, offering their feedback on enablers and barriers to adopting sustainable energy behaviours. Finally, experts and citizens met together to create a roadmap for the future.

This participatory foresight was thus built in three steps:
1. A Transition Visioning Workshop in Sofia, Bulgaria in June 2018 (with experts);
2. A Transition Backcasting Workshop in Rome, Italy in November 2018 (with citizens);
3. A Transition Roadmapping Workshop in Brussels, Belgium in February 2019 (where citizens met experts).

The objectives of the transition workshops were 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 toward a more sustainable one;
- Build energy scenarios by interpreting existing trends, drivers, and practices that influence individual and collective energy choices;
- Get input from European households on the most important enablers and barriers that could help them move toward 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 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 was designed to identify policy, commercial and educational measures, which together can create a coherent strategy to promote the transition to low carbon energy.

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Evaluation of the participatory foresight

This report aims at assessing the quality of the participatory process as perceived by the participants, as well as the nature and the quality of the outcomes. This evaluation thus contributes to the WP7 Energy Union scenario building exercise with insights about the users' propensity to change behaviour and everyday practice. It also develops on how the outcomes can contribute to the formulation of policy recommendations for EU decision-makers (WP8). Finally, the evaluation can feed into the consolidation of the practice-oriented backcasting methodology for future applications.

In order to get a comprehensive evaluation of the participatory foresight, this report assesses first the workshops' organisation and design, then the content and outcomes. This implied:

- Monitoring the conduct of the workshop and relevance of the discussions: how the sessions were organised, how participants were encouraged to interact and whether the framework was adapted to creative problem solving;
- Assessing the links and consistency between the three workshops;
- Building on the qualitative outcomes of the workshop and their pertinence for the project's objectives and towards enabling the Energy Union.

This evaluation report is structured as follows: Section 1 presents the methodology and tools used to develop this evaluation. Section 2 presents how participants evaluated the organisation and design of the participatory process. Section 3 is an assessment of the content and outcomes of the discussions by participants. Section 4 takes stock of the whole process and proposes a critical review of the outcomes to extract the policy measures that can be used for EU policy level and hence the main contribution of this participatory process to the energy transition at EU level.

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1. Methodology of the participatory foresight evaluation

This participatory foresight evaluation assesses the workshops based on a survey filled out by participants and feedback from ENABLE.EU partners. This evaluation contributes to the next stages of the project (i.e. scenario-building, policy recommendations) and future applications of foresight activities.

At the end of each workshop, we invited each participant to fill out a paper survey with their view on the workshop and on the participatory foresight.

1.1. Participants' feedback

Before each workshop, the JDI team drafted a survey for participants with questions on the organisation of the workshop and the content and outcomes of the discussions. They were designed based on the type of participants (experts or citizens) and on the stage of the participatory process. The survey form was handed to participants at the end of the workshops and were answered anonymously (see survey questions for each workshop in Annexes). Each survey was answered by a majority of participants:

- Transition Visioning Workshop: 24 out of 55 participating experts;
- Transition Backcasting Workshop: 58 out of 65 participating citizens;
- Transition Roadmapping Workshop: 31 out of 47 participants.

1.2. Feedback from project partners

Partners who attended one or several workshops were also asked for feedback. They either formulated written comments based on the questions below or provided feedback in person during the workshops.

- What do you think of the participatory process in general – e.g. organisation, links between the workshops, content of the discussions?
- What do you think of the outcomes of the discussions?
- What would you have done differently?

1.3. Assessment of the outcomes

Through desk research and knowledge of the EU energy policy landscape, the JDI team assessed the recommendations formulated throughout the workshops. This work was carried out as:

- to pick out innovative proposals that could be proposed at EU, national or local level;
- to highlight measures that exist in some contexts but could be replicated and/or scaled up;
- to identify measures that could in theory solve issues but are in practice not possible to implement.

Based on this work, policy measures that are found to be useful to improve EU energy policy and realistic in the current policy landscape will be used in the formulation of policy recommendations and dissemination work of the project.

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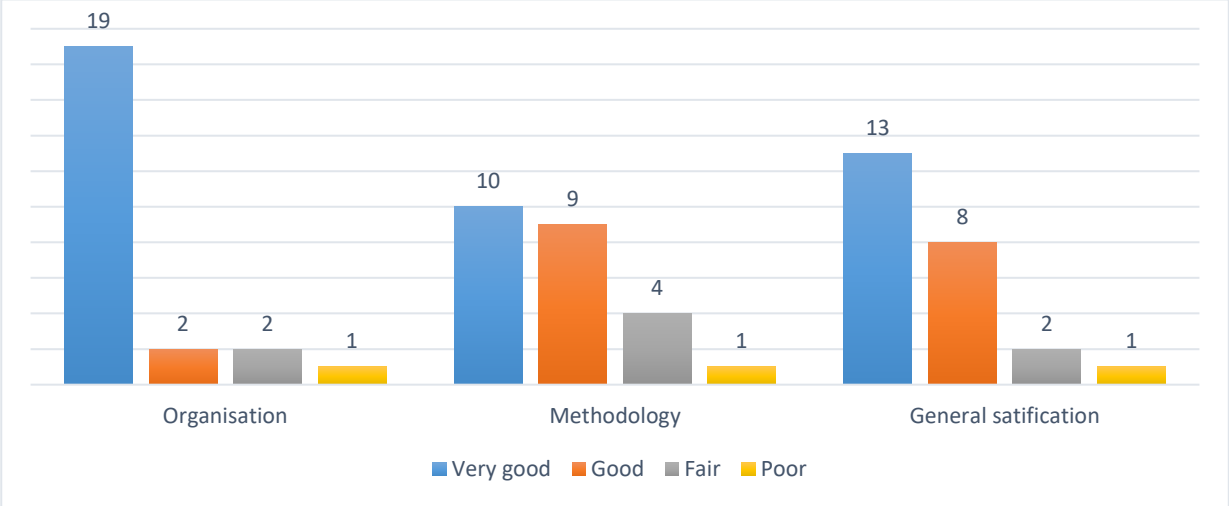
2. Evaluation of the workshops' organisation and design

2.1. Evaluation of the Transition Visioning Workshop
14-15 June 2018 – Sofia, Bulgaria

Figure 1: Quality of the workshop



Sample of 24 respondents out of 55 participating experts

The assessment of the quality of the workshop is **generally positive** (figure 1). 21 respondents were satisfied with the workshop. The **organisation was judged very satisfactory**. Regarding the methodology and the organisation, the majority of respondents replied they were of good or very good quality, while a small share of respondents found them fair or poor.

Valuable aspects of the workshop mentioned by respondents were:

- the **networking opportunities** (5 answers),
- the opportunity to meet experts from other countries and to learn about other countries (5),
- the **methodology** used, some referring specifically to the "Horizons" concept (5),
- the diversity of backgrounds (2),
- teamwork (2).

Participants also had the opportunity to discuss with experts from other countries during breaks and all respondents said they **might stay in touch** with other participants. Finally, all 24 respondents wanted **to stay informed about the project** and 19 of them would **like to participate in the final workshop** (figure 2).

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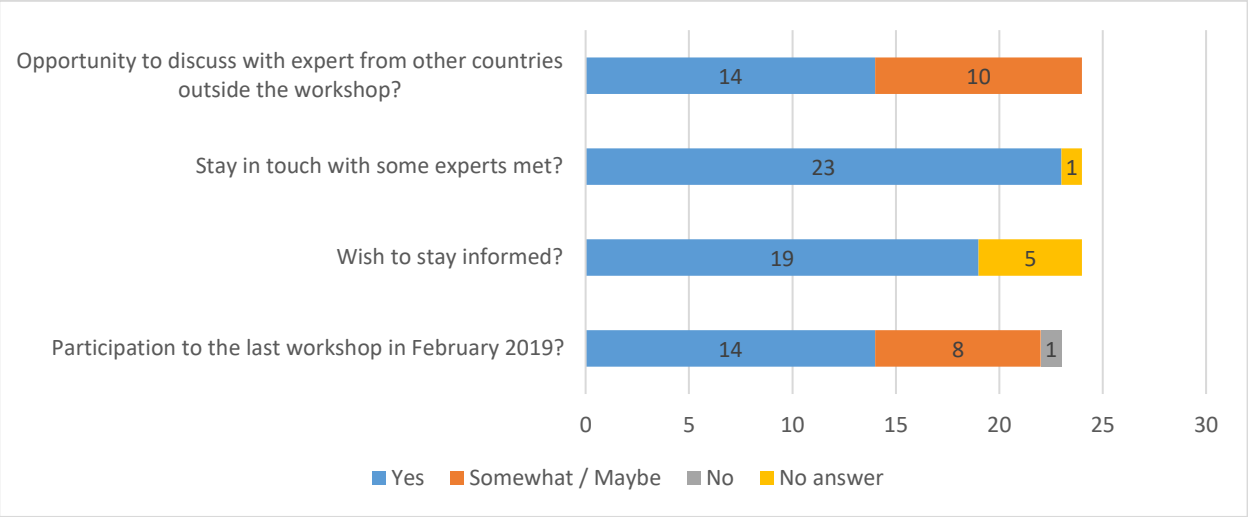
Figure 2: Respondents' views on networking opportunities and future project activities



Respondents also suggested measures for improvement, such as:

- Providing more time for discussion and interaction (10),
- Adapting the organisation and facilitation, e.g. with team building activities, more detailed instructions, smaller groups, better room setting (7).

Some respondents also suggested having more "outside of the box" thinking, a more diversified selection of participants and for sending material in advance (which has been done).

After the first workshop, we merged participants' and partners' feedback. Generally, the outcomes were positive but we identified avenues for improvements.

As regards the selection of participants:

- **Rich diversity of countries and people**: most of the added value and satisfaction from the workshop seems to come from meeting people from diverse backgrounds and countries. This should be further continued throughout the next workshops by seeking to have diversified tables by nationality and expertise. Icebreakers and teambuilding activities could also foster encounters between participants with diverse backgrounds.
- **Country representation**: Several partner countries were not represented, including populous countries such as Spain. Other partner countries were overrepresented, especially non-EU countries such as Serbia and Ukraine –likely partially because of their geographical vicinity with the location of the workshop (Bulgaria). For better cross-country discussions, a more balanced representation per country must be ensured.
- **Diversity of profiles**: the group of experts gathered mainly technical and engineers' profiles. The initial selection should thus seek to identify more experts with social, legal and economic backgrounds, especially for a workshop that is interested in behavioural aspects.

Regarding the workshop format, some key outcomes and possibilities for improvements were highlighted orally by participants and ENABLE.EU partners, and should be considered in the future to improve our work:

- **Time management**: the schedule did not give enough time for interaction between participants with ENABLE.EU presentations considered as too numerous and too long.
- **Facilitation**: some participants said a simple icebreaker at the beginning to get to know other participants around the table would have been useful. They also said the discussion was

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sometimes oriented by the facilitators and would have preferred a less directive approach to bring their own directions in the discussion.

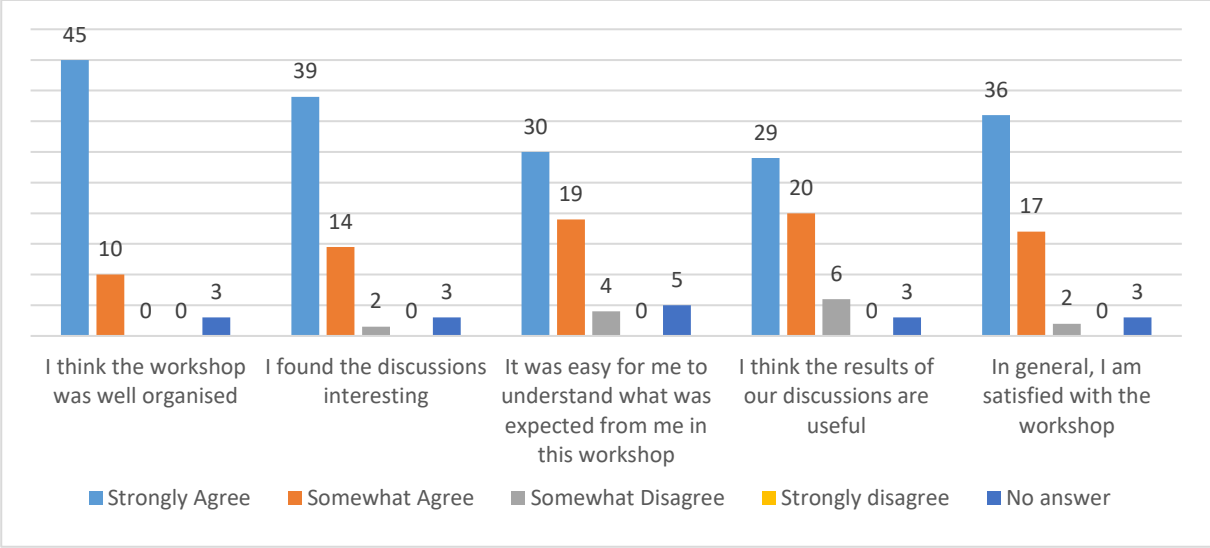
- **Methodology**: several participants mentioned that the method of the 3 Horizons was too complex, especially in such a short time. There is a risk that instructions were perceived by participants as being overly complex, and that this may have hindered their creativity. If this method were to be used, it would be useful to simplify it.
- **Scope of work**: the topics of the questions appeared too wide for the time available and created the risk of remaining too general in the discussions.
- **Room setting**: the workshop was organised in a quite formal room where all participants could not see each other because of a wall in the middle. For future workshops, less formal settings should be chosen.

2.2. Evaluation of the Transition Backcasting Workshop *28-29 November 2018 – Rome, Italy*

Before the 2nd workshop, participants registered on an online forum to start discussing with fellow participants and to answer some questions related to their perception of energy and to their energy habits. The forum was not used by all participants but a minority (those who seemed to be the most engaged in the topic) used the forum to share their opinions.

The assessment of the workshop is **generally positive**. 36 respondents were very satisfied with the workshop. Participants judged the **organisation very satisfactory**, found the discussions to be interesting. However, about half of participants were mixed about the expectations of the workshop and were not sure whether the results of their discussions were actually useful (see figure 3).

Figure 3: Assessment of the workshop



Sample of 58 participants

The respondents valued the opportunity to exchange ideas and information as the main benefit of the event. Indeed, two aspects of the workshop appear as most interesting. 18 respondents gained from **exchanging views with participants from other countries** while 19 respondents appreciated **group exchanges**, in particular the World Café format.

On the workshop organisation, a significant share of participants (21) judged the workshop **too**

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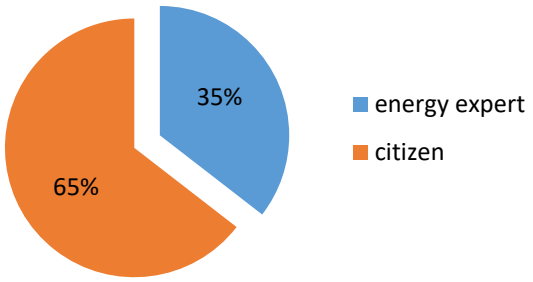
short. Some participants also highlighted that the **room settings** were not optimal as sometimes participants could not hear the presentations and discussions well. Some also regretted that the small discussion groups were too big for everyone to contribute extensively.

Finally, this event made it possible to establish a **place of exchange on energy practices** between the participants that goes beyond the workshop. Indeed, almost all respondents (51) would like to **stay in touch** with each other through the online forum, while only 8 gave no answer or a negative one. Participants seemed to enjoy the workshop and frequently highlighted they were happy to meet citizens from other countries and to share experiences. Selecting participants from different nationalities and organising interactions in small groups enabled participants to learn about different energy practices.

2.3. Evaluation of the Transition Roadmapping Workshop *14-15 Mars 2019 – Brussels, Belgium*

The third workshop gathered some citizens and experts from the two previous workshop. Among the participants who responded to the satisfaction survey, citizens represented the majority (65%), against one third of energy experts (35%).

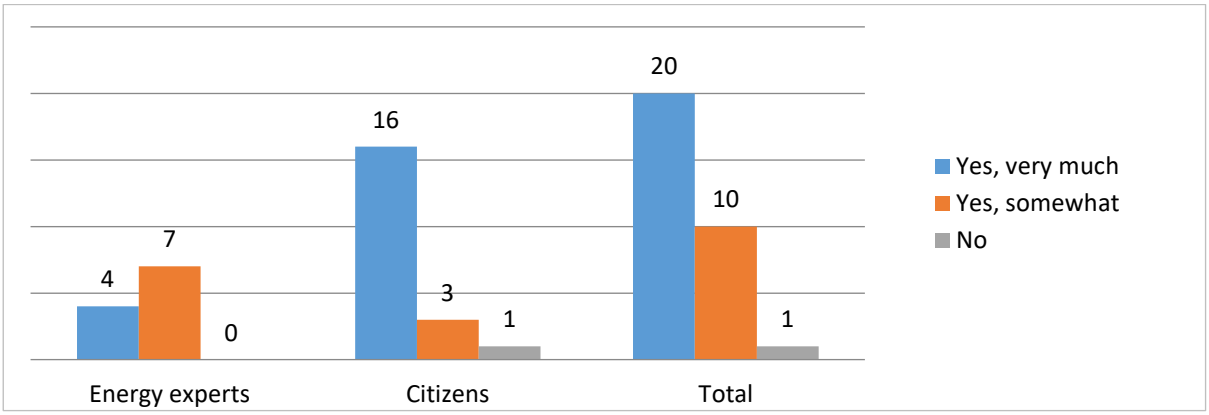
Figure 4: Participants' distribution



Sample of 31 respondents

Most of the respondents found **useful to bring together citizens and energy experts**. Indeed, 13 of them highlighted gaining new perspectives through interaction and communication and stressed the benefits of learning from others' experiences.

Figure 5: Number of participants who found useful to bring together citizens and energy experts in one workshop



For an energy expert, this allowed better mutual understanding. However, one participant found that

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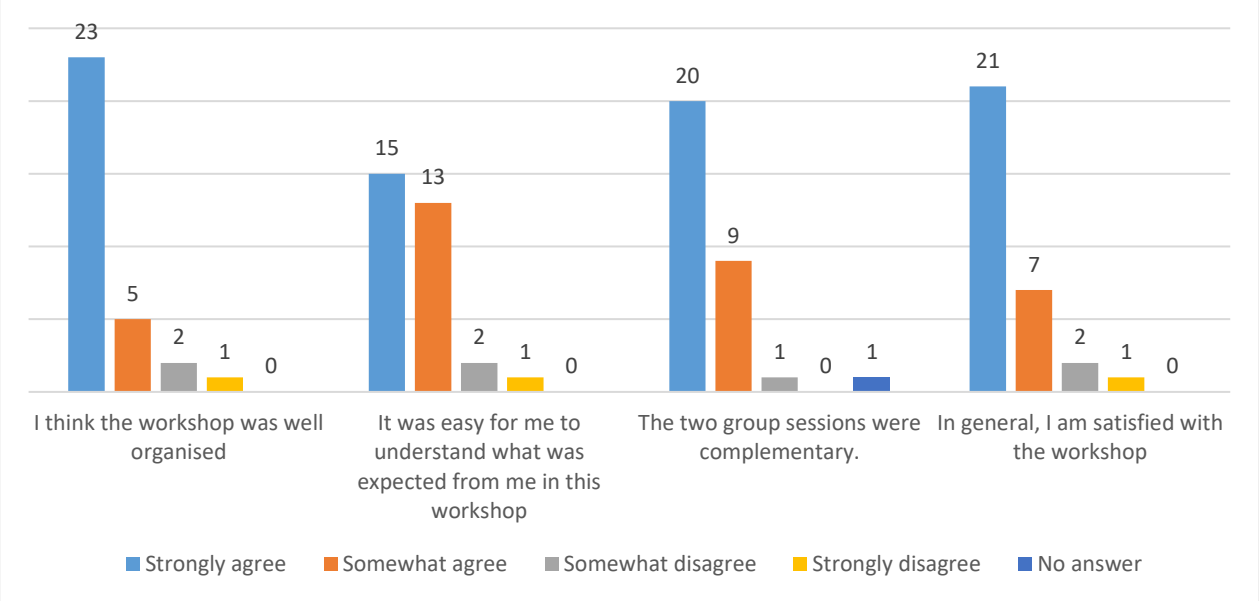
interactions between experts and citizens did not allow to enrich discussions: he did not feel the difference between the 2nd workshop in Rome and the 3rd one in Brussels. According to another citizen, the experts did not sufficiently expose their ideas during the workshops.

The assessment of the quality of the workshop is **generally positive**. 28 respondents were very satisfied with the workshop and participants judged it well organised.

Figure 6: Assessment of the quality of the workshop



As to the clarity of the methodology used during the workshop, most of the participants (28 respondents) understood what was expected of them during the workshop, although 13 of them bring some nuances. 29 participants also judged the morning and the afternoon session complementary.

Project partners highlighted avenues for improvements: few guidance was given to moderators prior to the workshop, which made it difficult for the moderators to guide the discussion and hence difficult for participants to understand the aim of the discussions.

When asked what they would suggest doing differently, respondents mostly pointed out **time management**: 50% of them would have dedicated more time for group discussions, and less for the diverse presentations, which one participant judged too long.

Additionally, they suggested to improve the methodology and the format of the workshop along the following lines:

- making smaller group;
- gathering more technical experts;
- giving more details about the methodology;
- focusing more on the survey results and less on participants' suggestions;
- ensuring that speaking time is distributed equitably among participants;
- conducting discussions in a more structured way.

In terms of **location**, the workshop was organised in the EESC premises, an opportunity the project team strongly appreciated. The workshop took place partly in a big official room (i.e. large rectangular table with individual microphones) and partly in small rooms for group discussions. Such setting was however not optimal to stimulate creative group thinking, as participants were not able to move

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around the room, discuss more spontaneously and the discussions remained organised in a traditional manner (one moderator and rounds of speaking).

2.4. General assessment of the design of the participatory process

Main lessons from the participatory foresight for future applications

The **assessment of the quality** of all three workshops is generally positive and participants judged them to be well organised (including administratively).

The **recruitment of participants** has played an important role in the quality of the participatory process.

1. During the first workshop, participants pointed out to a lack of diversity, both in terms of national representation and in terms of professional background. As this workshop was gathering energy experts, this also reflects the limited diversity of professional background within energy experts,
2. The second workshop, gathering citizens, received many positive feedbacks regarding the diversity of the countries represented. We hypothesised that those positive feedbacks come from the participants' focus on national diversity –with indeed much diversity in terms of nationalities. However, this diversity is to be strongly nuanced when taking into account other elements that national citizenship. Indeed, due to the selection bias of participants (capacity and willingness to speak English, volunteering to participate and ability to attend the workshops during weekdays), the **participating citizens cannot be considered as representative households**. Most of them were either early adopters (e.g. many prosumers), energy-curious or environmentally-concerned citizens.
3. Participants to the third workshop were satisfied with gathering energy experts and citizens.

These elements are important to keep in mind when assessing and generalising the outcomes of such a participatory foresight.

Regarding the workshops' **methodology**, if participants judged the first workshop too complex, they understood much better the aim of the second and third workshops. This improvement of the participants' assessment reflect the efforts made by the ENABLE.EU team to simplify and improve the methodology after having learnt from the first experience and in order to better fit in the limited workshop time. Having clear and simple objectives for the workshop is key for participants to feel at ease and contribute. In future applications, methodology could be tested beforehand with colleagues or relatives to check how easily it is understood by someone external to the project or field of work.

The **involvement of project partners** in the design of the workshops differed for each workshop. Partners were particularly involved in preparing the second workshop while there was less communication upstream of the third one. Third workshop's moderators felt that little information was provided to them as regards the content of the sessions. This made it more difficult for moderators to guide discussions in the last workshop and this likely lessened the quality of the workshops' outcomes.

During the workshops, the **level of involvement** that project partners and moderators should have in the discussion should be clear from the beginning. Otherwise participants can tend to rely on moderators or project partners rather than lead the discussions themselves. Project partners can also tend to expose their ideas more than learning from the invited experts or citizens (this can also be frustrating for participants). The number of project partners and level of involvement in such discussions should thus be limited (e.g. only observer).

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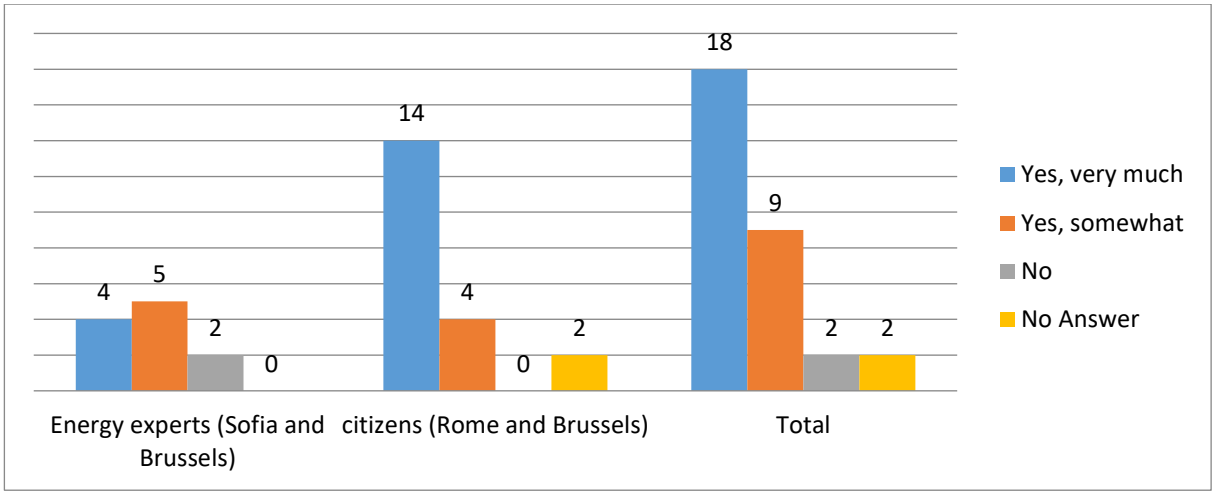
In addition, participants raised concerns about **time management** in the evaluation of the three workshops. Participants underline that too little time was dedicated to discussions, although the workshops devoted increasingly more time to group discussions over presentations. Considering how broad the topic is and how much time it takes to discuss issues thoroughly, future participatory foresight work might consider designing more time for discussion in longer workshops or decrease the ambition of the expected outcomes (e.g. focusing on one topic, one specific timeline). This way more specific proposals can emerge and be developed.

For future similar exercises, it is recommended to reflect on the type of interactions organisers want to stimulate among participants. The **room setting** (e.g. size, chairs or standing, lighting) and the **tools** (e.g. clipboards, post-its) should be chosen carefully to create a place of creative thinking where participants are at ease.

On whether the **workshops were well articulated and complementary**, participants who attended two workshops mainly gave a positive answer (27 respondents; see figure 7). However, some participants felt an overlaps between the second and the third workshops. Energy experts are also more nuanced in their assessment of the workshops' articulation: 5 out of 11 somewhat agreed.

Figure 7: did you find the workshops well-articulated and complementary?



Answers of respondents who attended two workshops

The participative process as a tool in policymaking

Overall, most respondents (29 out of 32) judged that this **citizen participatory process should be more used in policy-making**. According to a participant, it is an efficient way to assess the barriers of our energy policies. 9 out of 31 respondents highlighted the democratic value of such a process: this tool is an alternative to top down policy making, ensuring that policies are made by citizens, for citizens. According to another respondent, a participative process can help minimise the consequences of policies that affect the energy consumption of citizens.

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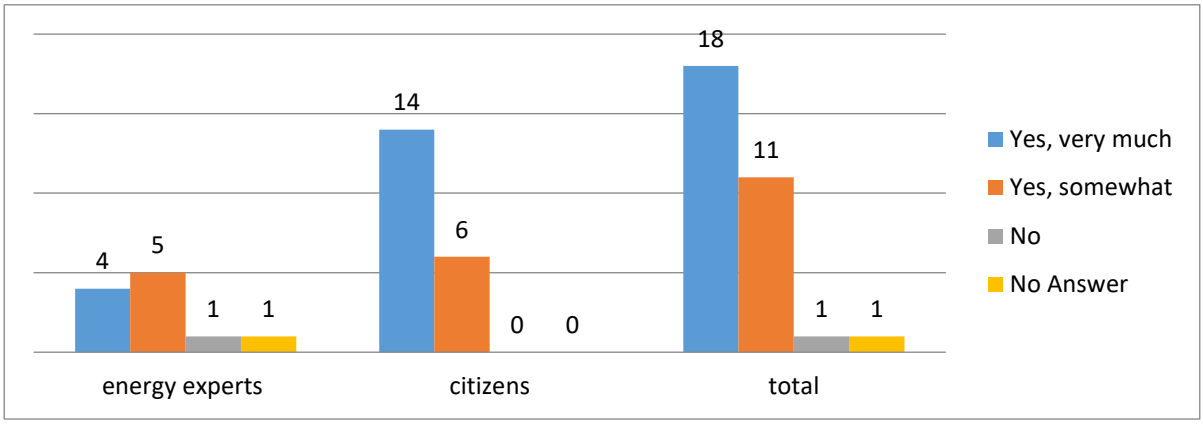
Figure 8: Number of respondents who think citizen participatory process is a tool that could be more used in policy-making



Answers of the last workshop's respondents

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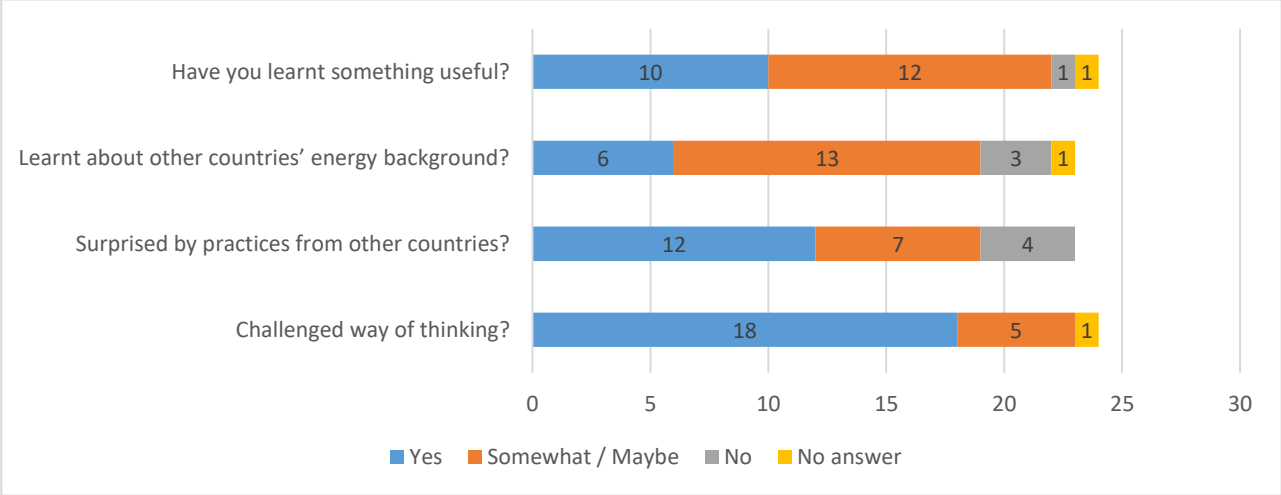
3. Evaluation of the workshops' content and outcomes

3.1. Evaluation of the Transition Visioning Workshop
14-15 June 2018 – Sofia, Bulgaria

Figure 9: Participants' experience and learning



Sample of 24 respondents

According to the feedback from participants, all but one learnt something useful during this workshop. More than half of the respondents said they **learnt about other countries' energy background** to some extent only and even **fewer were surprised by practices from other countries** (figure 9).

Half of the respondents said the workshop **challenged their way of thinking**, another third was somewhat challenged. They mentioned more specifically new thoughts about how Eastern and Western countries practices and goals could align, the presence of experts from outside the EU, the use of the "horizons" methodology, thinking beyond the national level at EU/global scale, the behavioural approach of decision-making, in particular in decisions for or against some types of energy, and finally a reflection on comfort as a service.

It was unclear to several participants what was the **expected outcome of the workshop**. Was it to identify sustainable practices? Practices rather at individual or collective level? They highlighted that the lack of conclusion to the workshop, no summing up of what has been done and of how this will feed into the next phases brought some confusion and a feeling of unfinished work.

During the workshop, experts identified seven priority areas and actions to move from the current energy system towards a more sustainable one:

- New energy business models, simplification
- Prosumers/ Renewable energy production
- Mobility as a service (MaaS), electric/smart mobility
- Energy affordability
- Energy education and awareness; research & innovation
- Active houses and energy efficiency measures at home
- Reduction of energy consumption, dematerialization/virtualization

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Formatting results in missions with obstacles and solutions can bring concrete proposals; but in the context of the workshop they **remained wide** and somehow superficial – i.e. the diversity and richness of expertise represented was not fully reflected in the outcomes. The nature of the expected outcomes needs to be made clearer when planning the next workshop to know where we want to go. This will facilitate the presentation of the objective and the formulation of a conclusion, but also bring satisfaction to the participants that they contributed to a joint largescale work.

Those measures were laying the basis for the citizens' discussion in the second workshop as its aim was to investigate what citizens perceive as the most important obstacles and opportunities in order to adopt and realize the measures proposed.

3.2. Evaluation of the Transition Backcasting Workshop *28-29 November 2018 – Rome, Italy*

As citizens participating in the workshop where mainly recruited from the case studies led at earlier stages of the project, the interactive sessions were organised in 4 different group discussions:

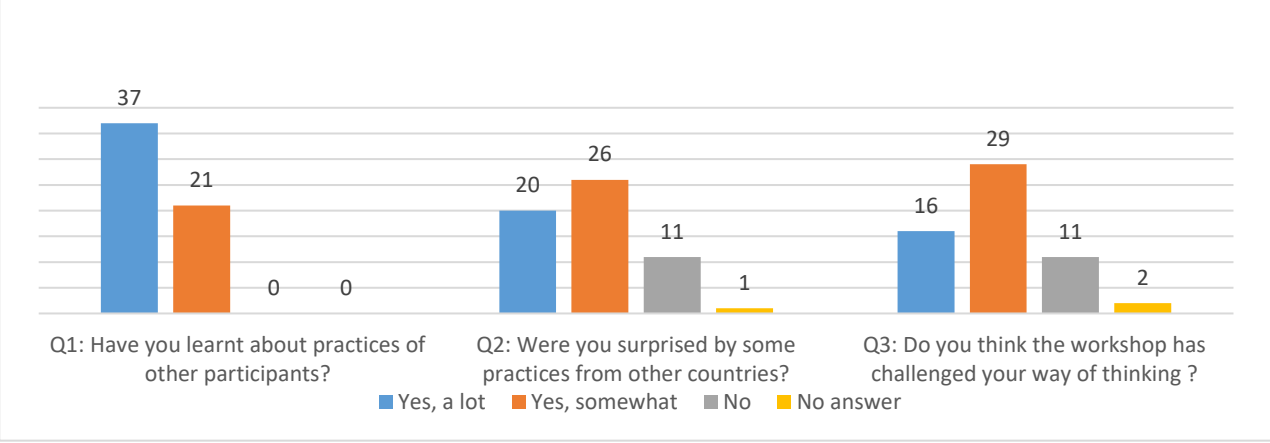
- Energy efficiency at home
- Prosumption
- Heating and cooling
- Mobility

It appeared from the discussions that the seven priority measures of the first workshop were either the main topic of one of the groups (e.g. prosumers; mobility) or a cross-cutting issue discussed in several groups (e.g. education; affordability).

While the first workshop was started with framing presentations (including research findings on behaviours from the literature review), the decision was made not to present such findings prior to the interactive sessions with citizens. Such a presentation could have biased the perception of participants on what can influence their energy behaviours. The session thus started with short presentations highlighting what the workshop is for and bringing more awareness of individual energy consumption to start reflection for the discussion.

The first part of the survey was about what the workshop brought to each participant – i.e. what they have learnt, whether it changed their way of thinking about energy and whether they intend to change their own behaviours.

Figure 10: Participants' experience and learning



Sample of 58 participants

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All respondents say they have **learnt about practices of other participants** and most of them were **surprised by practices from other countries** (figure 10). Examples mentioned were focused on experiences mainly from Ukraine (quoted 8 times), Norway (6) and the UK (5). Several respondents highlighted they were surprised by the development of PVs in Ukraine, incl. the existence of incentives and the important efforts of Ukrainian families towards energy efficiency. This can to some extent be explained by the fact that Ukrainian participants were for the majority of them prosumers so representative of an energy-informed share of the population. Surprising practices from Norway were mainly related to mobility: e.g. emphasis on electric cars and car-sharing practices.

Below are some examples of practices and facts from other countries considered as surprising by individual participants:

- Incentives for PVs and feed-in tariffs in Ukraine
- Ability to install own PV panels with few requirements of property in Ukraine
- Easiness of buying a solar PV online in Norway
- Solar panel installation is difficult in some countries
- Young age of prosumers in Eastern Europe
- Cheaper electricity at night in Bulgaria
- Share of renewable energy in Germany
- People not turning off the light in their own house in Norway
- Use of “black painted water containers for heating water by the sun” in Bulgaria
- Large share of district heating in some countries
- High price of heat pumps in the UK
- Cheap heat pumps in Norway
- Use of private block chains in Bulgaria
- Electric rollers for hire in large cities in Spain
- Importance of electric cars in Norway
- People from the UK not using transport running on fossil fuels

Finally, some participants were surprised that limitations appeared to be the same in all countries. A participant was surprised by how different mobility priorities are from country to country. Another one was surprised that in some countries they don’t use battery for energy storage. Several participants mentioned the example of a city with free public transport a day per month.

Three-thirds of respondents (45 out of 58) agreed that taking part in the workshop **challenged their way of thinking** (see figure 10). 6 respondents mentioned it raised their awareness of energy practices and consumption. 6 respondents learnt from exchanging practices between different countries, which they consider to positively broaden their horizon. Indeed, 2 respondents learnt about prosumption, whether it is about becoming one or about the possibility of exchanging energy (e.g. self-produced electricity) between consumers. Others mentioned learning more about different technologies such as smart home or energy storage.

On whether participants are likely **to change anything in their daily life back home**, a strong majority answered affirmatively (see figure 11). In the previous question, 7 participants already expressed the desire to change habits. Some concrete actions they plan to undertake were:

- Favouring cycling;
- Using transport in a more effective way;
- Investing in an electric car, or saving more energy;
- Using a higher share of green energy;
- Installing a heat pump.

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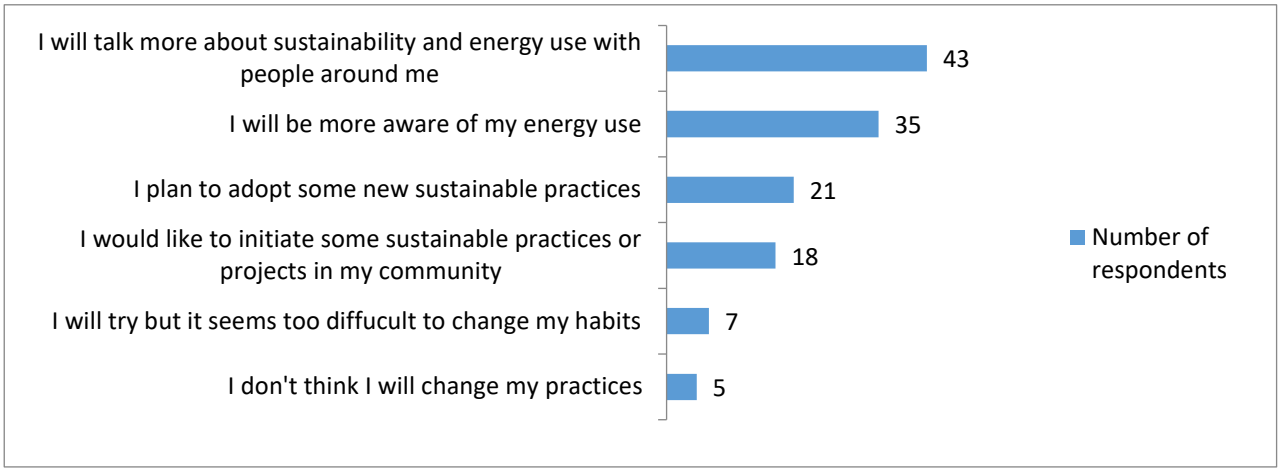
Figure 11: Number of respondents who answered they would undertake the action



Sample of 58 participants

Three thirds of respondents (43) said they would **talk more about sustainability** and energy use around them after this workshop. 60% of them will be **more aware of their energy use** while a third plan to **adopt new sustainable practices**, among which:

- 4 participants are considering installing a heat pump;
- 4 respondents will further monitor their energy consumption;
- 4 respondents think about changing means of transportation, i.e. towards cycling and more public transport;
- 4 respondents are acting to consume less energy by using less electricity, hot water or by improving the energy efficiency of their house;
- 1 participant will switch to a greener energy supplier;
- 1 respondent will become more politically engaged;
- 1 participant plans to invest in battery storage.

More than changing habits, a third of the respondents would like to **initiate some sustainable practices or projects in their community**. 4 of them plan to become energy prosumers and power their neighbours. Among the quarter of respondents who wrote their own statement, 3 of them are not planning to change daily habits but to extend their existing systems. On the other hand, a participant mentioned his/her limited possibilities to change energy behaviour. During the workshop, some respondents pointed out the **existence of legal and administrative constraints** making it difficult to adopt new energy practices. Indeed, 7 of them are **willing to try changing their energy habits** but view it as too difficult.

Regarding the **content of discussions** and the **relevance of the outcomes**, the majority of respondents replied they were of good or very **good quality**, while a small share of respondents found them fair or poor.

3.3. Evaluation of the Transition Roadmapping Workshop *14-15 Mars 2019 – Brussels, Belgium*

In the last phase, citizens and experts were invited to establish a Roadmap for an Energy Scenario that will define goals and measures nested along a medium and long-term timeline (2030, 2050). In order to do so, participants joined roundtables to discuss priorities to operate the transition. Like in the second workshop, those roundtables were organised by sector, but the groups on energy efficiency at home and heating and cooling were merged. This was done to avoid some repetition

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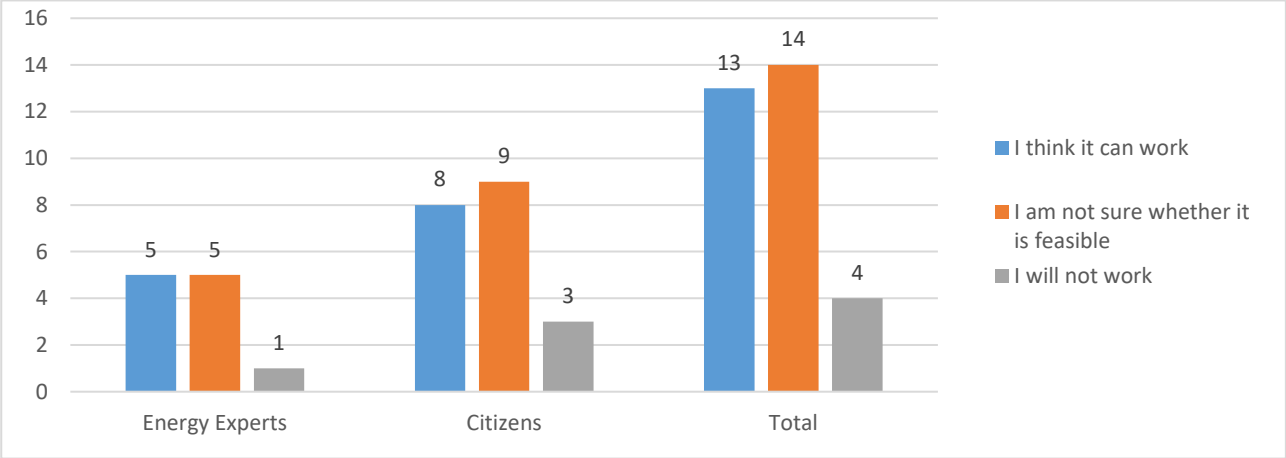
between the two groups as observed in the second workshop (e.g. as heating is also energy used at home, the topic was also discussed in the 'energy efficiency at home' group). Consequently, participants made few recommendations specifically targeting heating and cooling behaviours during the energy consumption workshop.

As the aim of the last workshop was to create a coherent strategy to promote the transition to low carbon energy with defined targets in short, medium and long term, we asked participants if they found the **final roadmap** realistic (figure 12).

Figure 12: Assessment of the final roadmap



Sample of 31 respondents

A majority of 18 respondents (out of 31) consider that the strategy elaborated together either will not work (4 out 31) or express their uncertainty about its feasibility (14 out 31). The reasons for their doubt are both **methodological and contextual**. For some participants, the **format and methodology of the workshop** did not allow them to build a realistic roadmap: going back to some organisational limits pointed above, overall objectives were not sufficiently defined (3), time was lacking (2), while another respondent stressed the superficiality of the process, completed in a very limited time by few individuals. Others perceive the **roadmap's content as too ambitious** considering the systemic constraints of our energy systems. 6 respondents pointed at the lack of political will due to political and industrial interests. Indeed, for one participant, investments are insufficient. 2 other participants pointed to the need for technological development.

A large minority of respondents (13 out of 31) assessed the roadmap as realistic for the following reasons:

- It gathers individuals with different point of views and competences (3 respondents);
- It brings varied solutions, covering the most important topics (2):
- It reflects real change (1).

Respondents **assessed positively the content of the workshop**, as 29 out of 31 respondents found discussions interesting (figure 13).

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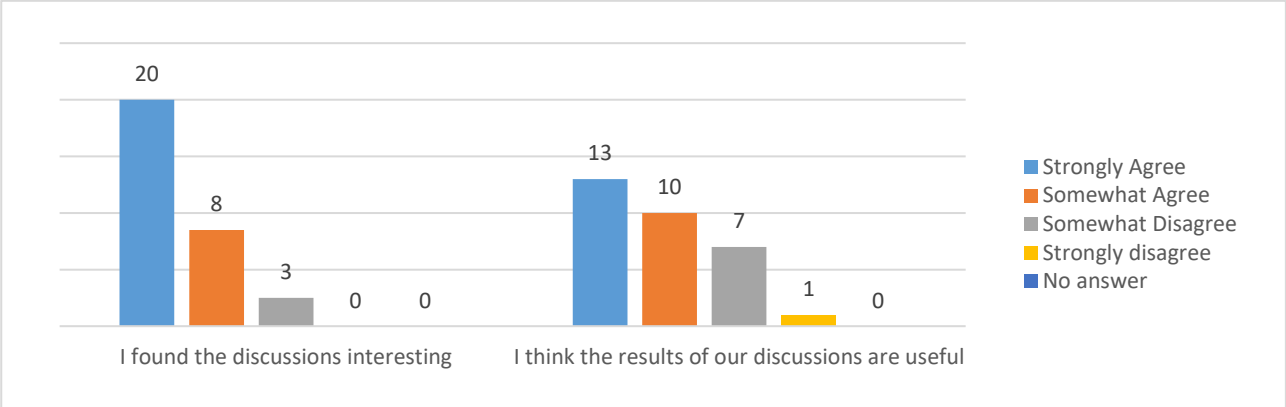
Figure 13: Assessment of the workshop's content



When it comes **to the workshop's outcomes**, **opinions are mixed**. 13 of them found the results of the discussions very useful and 10 found them somewhat useful: consequently, one third of respondents judged otherwise.

ENABLE.EU partners also rose concerns about how useful the outcomes of the third workshop will be. The methodology of the participatory foresight was key to link the outcomes of the second and the third workshop. The participants were invited to **complete a survey** before the last workshop with questions based on the results of the second workshop. However, the survey had a limited contribution to the last workshop due to its length (i.e. making the exercise complex for participants) and its timeline (i.e. limited time to use its results) so that proposals emerging from the survey remained quite vague. This made linking the results between workshops more difficult and complicated the focus on a few targeted proposals for both participants and moderators.

A limitation of the 3rd workshop outcomes was that **results were generally broad and few of them are nested along a specific timeline** in order to build a consistent roadmap towards 2050 (like planned initially – see figure 14). Furthermore, many outcomes are framed in terms of what policy should do without clear initial statements on what practices will shape the future. These can be assumed based on the recommendations, e.g. *improving conditions for bikes, such as better bike lanes, slower car speed in cities for security, subsidies for e-bikes and developing shared bikes services in smaller cities* implies that citizens want to use bikes more but need improved infrastructure, regulation, more incentives and services for bike use to scale up.

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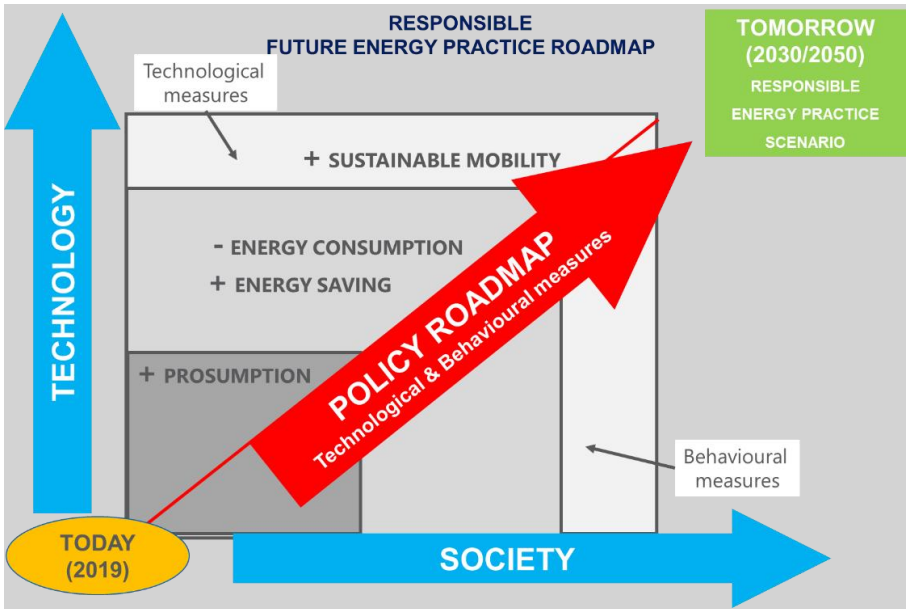
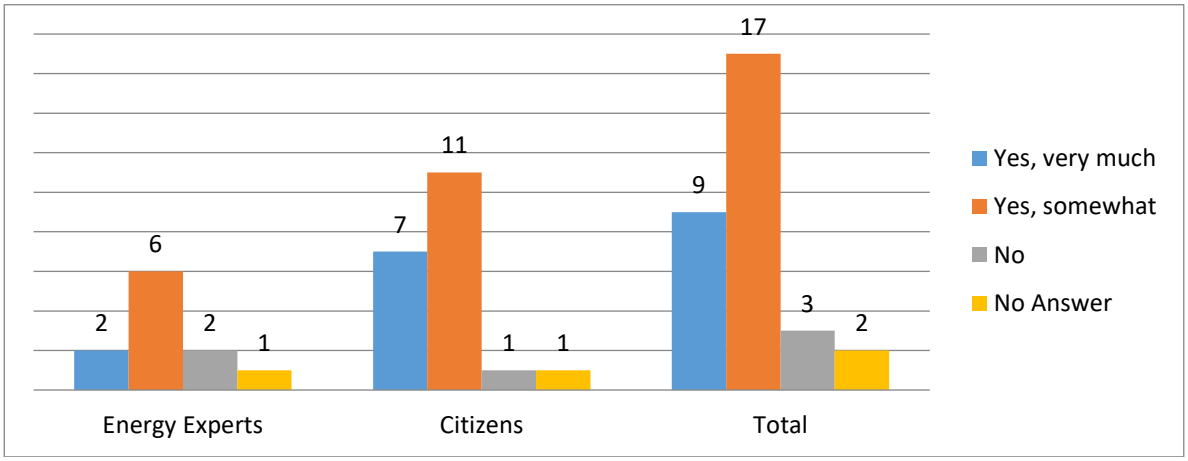
Figure 14: Responsible future energy practice roadmap



3.4. General assessment of the process' outcomes and contribution to the debate on the energy transition in Europe

Overall, participants are **satisfied with the quality of the outcomes** of the process. While during the first workshop in Sofia, results remained broad and somehow superficial – i.e. the diversity and richness of expertise represented was not fully reflected, but some participants highlighted improvement in the next stages. Indeed, respondents from the last two workshops were very satisfied with the **quality of exchanges**, due to the diversity of backgrounds and nationalities.

Figure 15: Are the outcomes of the process in line with your expectations?



Sample of 31 participants who attended 2 workshops (Sofia/Rome and Brussels).

Most respondents considered that the outcomes of the workshop were (very much or somewhat) in line with their expectations (26 respondents out of 31 – figure 15). Indeed, participants are **mostly satisfied with the results of the participatory foresight but expressed some reservations** about their relevance for several reasons:

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- 4 respondents stressed the lack of specificity of the results, with too broad policy measures.
- 2 of them would have enjoyed more time for discussion to specify action and to prioritize them.
- 1 participants highlight the lack of technological perspective.
- 1 participant perceived a bias in the participatory process: he felt we already had the results prior to the workshops.

For two other participants, the outcomes of the participative process allow policy makers to find the effective way to operate the energy transition.

The fact that some outcomes remain broad or vague can be linked to several aspects: as discussed above, the time available and broad topics of discussion can make it harder to reach a clear and detailed final roadmap because participants could tend to discuss different ideas depending on their knowledge and interest rather than agree and focus on one proposal and defining its practical aspects. But **broad outcomes can also be linked to what participants have in mind**. This is for example the case of education: this measure is frequently put on the table as the solution for more energy awareness and knowledge about energy production and consumption but they do not necessarily know what are concretely the best ways to actually improve energy-related education. This is why even broad measures should be studied in the light of existing research findings and assessment of existing policy measures to put into practice those proposed measures that are found to be efficient.

Finally, respondents could **share their vision for the energy transition in Europe** or leave any comment they wish. Several of them commented on the outcomes of the process.

- To improve innovations and policies, we should change people's demand.
- Citizens must have a clear understanding of what the costs and benefits are for them.
- The change of energy should not be connected with high costs for the citizen.
- The energy system will not change unless we abandon the model of the unlimited economic growth.
- We should demystify educating citizen to energy use: we should give energy to people.

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4. Contribution of the participatory foresight to policy

This section aims at identifying evidence from the workshop discussions that can support the formulation of policy recommendations[1]. Through the participatory foresight, experts and citizens identified measures to move from the current energy system towards a more sustainable energy system. As a number of outcomes remain broad and not time-bound, we review the most concrete results to identify policy recommendations relevant for energy and climate policy-making. To do so, we discuss measures (*in italics*) that were proposed by participants and that could support the adoption of sustainable practices and thus contribute to the achievement of the energy transition. This section brings elements about the current policy context (i.e. whether some measures are already implemented) and includes comments on the level (i.e. EU, national and local) at which such measures could be adopted.

4.1. Cross-cutting measures for more sustainable energy behaviours

Education

Sustainability could be built into University curriculums, such as economics and engineering studies: The EU cannot impose curricula constraints in universities. But initiatives to integrate a sustainability dimension in university programmes exist locally. Examples are the CORE curriculum[2] or the Ivano-Frankivsk University in Ukraine that works with an NGO to provide training and learning for tradespeople and practitioners working in areas related to energy efficiency.
The EU however directly finances several universities, such as the College of Europe. It could thus use this to engage those universities so they better integrate sustainability in their programmes, and also promote such integration within the academic world.
At the EU level, the Erasmus Pro programme for apprentices could be extended to include a green component so to provide millions of young Europeans with experience sharing and knowledge to be the makers for the energy transition in Europe.

Junior high school and high school education: Energy learning could also be built into existing curricula of younger students. For example, in maths class, children could learn how much energy an iPad uses in an hour. In history class, children could learn about the Industrial Revolution and how energy usage has changed over time. In geography class, children could learn about energy usage per capita and how this varies by country and is linked to our standards of living. As education is primarily a national competence, the EU could contribute by providing tools or financing for such activities in Member States. Such activities could be either developed in schools or by local authorities and civil society organisations at the level of neighbourhoods for instance.
As a first step, the EU could implement such changes in the European Schools it funds (e.g. several schools in Brussels where many children of EU civil servant go).

To involve parents, homework exercises could be designed for children to share learning about energy with their parents: Such interventions could again be tried out by national authorities who have the competence over school programmes. A reflection on that topic could be additionally led at EU level to share best practices.

[1] ENABLE.EU policy recommendations will be developed in a forthcoming report (in October 2019).
[2] https://www.core-econ.org/about/

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Providing free or low cost energy advisors for citizens: experience from the heating and cooling ENABLE.EU case study[3] shows findings in line with this proposal as several participants highlighted the importance of being informed by trusted parties (e.g. Germany, Hungary). In France, local energy programmes involving energy advisors for citizens were strongly appreciated by citizens in precarious situation who benefitted from such support. Such advisors should be appointed at the local level so the EU could at best provide funding for such programmes and tools to share best practices throughout Europe. There are for instance Horizon 2020 projects, such as *Assist2gether* that create a network of trained active Home Energy Advisors (HEA) to help their communities identify and implement efficiency and behavioural solutions for those in vulnerable situations. At local level, the town hall of Barcelona established the *Auditorías e intervención a las viviendas en situación de pobreza energética*[4] programme, retraining former employment seekers as Home energy advisors. The European Investment Bank could also work with national promotional banks to ask them to, directly or indirectly, identify such energy advisors.

Communication

Communication campaigns targeting the general population: this proposal is broad but points to a perceived lack of communication by many Europeans as regards changing energy behaviours. Many national authorities and organisations provide such information easily available online, e.g. the German Federal Ministry for Environment, the Polish Energy Regulatory Office and Energy Ministry[5], the French environment and energy agency ADEME, NGOs, etc. offer guidelines for individuals to adopt more sustainable energy behaviours. However, this information tends to be presented in a manner that is not user-friendly. More campaigns could be based on visual illustrations of good practices to adopt.[6] Additionally, such information needs to be communicated efficiently. Beyond the content and its format, more emphasis could thus be devoted to the way energy-related information is provided to citizens. The EU could play a specific role here in finding visual ways to present information, as this would not depend on national languages and could be building on the EU experience with energy efficiency labelling.

Digital platforms and databases for energy advice and knowledge exchange: the paragraph above on communication already addresses online energy advice. However, we are not aware of any knowledge exchange platforms in the EU that could be used by citizens. When it comes to energy production, there are more and more networks like REScoop where citizens can come together to invest in sustainable energy thus leading to more exchanges on improving one's energy behaviours. At the national level, online tools like the Energy Saving Trust in the UK help teach households about the benefits of switching technologies, adopting energy-efficient behaviours, etc[7].The Polish Energy Regulatory Office also provides links to organisations that help rationalise energy use[8].

Taxation

Revenue from taxation (e.g. carbon tax) and other levies on companies and on household fuel bills could be directed towards financing energy education: considering that measures involving energy taxation at the EU level are difficult to adopt because they require unanimity in the Council[9], this is a measure that is more realistic at national level. As seen with the Yellow Vests in France since November 2018 though, a carbon tax on household fuel use can trigger social unrest when putting

[3] See ENABLE.EU "Synthesis report on the "heating & cooling" case study", September 2018
[4] https://www.diba.cat/es/web/benestar/auditories
[5] See on the Polish Regulatory Office and the Polish Energy Ministry websites
[6] See e.g. illustrative tools in ADEME, "40 trucs et astuces pour économiser l'eau et l'énergie", January 2019
[7] https://www.energysavingtrust.org.uk/
[8] List available on the Polish Regulatory Office website
[9] According to the Treaty on the Functioning of the European Union, article 194.3

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an additional strain on low-income households who have no option but to rely on their car to go to work. Also shown by ENABLE.EU research led in the UK and in Germany[10], energy price increases might not be too effective in increasing energy efficiency, so their actual impacts in terms of energy savings, additional revenue and most importantly social impacts should be thoroughly assessed. If implemented, such measures should be transparent on how the revenue is spent – e.g. education spending, sustainable projects, etc.

4.2. Prosumption

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): It can be a way to increase the number of prosumers, and more specifically women, non-engineers and later adopters. As highlighted in the ENABLE.EU prosumers' case study[11], advertisement for solar PVs tends to be strongly oriented towards male consumers and more generally the process to become prosumers is driven by men. Creating ads that are more gender balanced and providing more information about the benefits of self-production of electricity can raise acceptance of PVs at home among the general public. This can be a recommendation for PV companies.

Creating 'hands on workshops' for children and adults on how to use technologies to produce energy at home: practical experience can indeed be more engaging and memorable for people than just theoretical information. As education is a national competence, the EU could provide tools or financing for such activities in Member States. Such activities could be either developed in schools or proposed by local authorities or civil society organisations at the level of a neighbourhood for instance.

Label by national authorities to certify 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 still not well developed and where it is difficult to find skilled professionals in the field of home production systems. In France for instance, companies can have the RGE certification (RGE standing for "Recognised to preserve the environment") ensuring that they provide quality work, have the expertise and respect the standards. Such certifications do not exist in all countries though and could be developed based on experience in other contexts (e.g. other countries, other sectors). Guarantee of quality can also be provided by energy auditors who are required to meet conditions regulated by law.

Furthermore, participants suggested the creation of an *EU "toolkit" of regulations that national and regional level could use*. This could take the form of a web portal, on the model of the EU Energy Poverty Observatory which categorises policies and measures by country, type of measure, target groups, financing method and energy carrier[12]. In fact, a large share of energy-related legislation in European countries is the result of the implementation of regulations and directives decided jointly at the EU level, e.g. energy labels (A to G) and eco-design rules. When it comes specifically to solar PVs, several Member States already have experience with regulatory and economic tools to encourage prosuming. At the EU level, currently, the recast of the Renewable Energy Directive[13] includes provisions to support individual prosumers and energy communities, mainly the right for consumers in all Member States to become renewables self-consumers and to be remunerated for

[10] See ENABLE.EU "Report on economic factors impacting individual long-term energy choices", February 2019
[11] See ENABLE.EU " Synthesis report on the "from consumer to prosumer" case study", September 2018
[12] https://www.energypoverty.eu/
[13] Directive (EU) 2018/2001 on the promotion of the use of energy from renewable sources

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the electricity they feed into the grid. The measures should be effective at latest in July 2021. Decreasing prices of solar PV are strongly supporting their roll-out. The case of Poland shows that the market competitiveness of PVs (low price) is a sufficient factor for their deployment.

Participants also stressed the need for economic incentives to encourage prosuming – especially targeted towards vulnerable consumers. As highlighted by participants, these can include subsidies and 'flexible' feed-in tariffs; grants to energy communities; financial mechanisms to finance upfront costs for the installation of PV systems or heat pumps; incentives for tenants to install solar panels (e.g. by regulating the sharing of investment costs with the owners or by means of tax reductions for the owners renting apartments equipped with solar panels); more adequate regulation and incentives for multi-apartment settings where the decision is shared.

4.3. Energy efficiency at home

Smart metering implementation in all homes: smart meters can help better understand one's energy usage. EU legislation[14] already requires Member States to ensure the implementation of intelligent metering systems: the current target plans for the replacement of at least 80% of electricity meters by smart meters by 2020 but there is no specific implementation target for smart metering in the gas sector. By 2020 about 72% of Europeans should have a smart meter for electricity and 40% for gas according to 2014 projections of the DG Energy of the European Commission and the Joint Research Centre[15]. If Italy, Spain, France, the UK and Poland plan to reach a wide-scale roll-out by 2020[16], the diffusion rate of smart meters in Germany might be of around 23% by 2020 while Hungary does not provide data on that question.

However, smart meters tend to be contested (e.g. by organisations representing consumers) because the benefits for consumers are often not visible – e.g. they are often not easy to read and understand, some consumers see increases in their bills, they raise the issue of data protection and security, the installation procedure is burdensome and creates problems related to the circuit breaker, aesthetics at home, etc. This shows that the introduction of smart meters could have been more user-friendly with better communication and information display. Efforts in this direction should be pursued.

The Directive on the energy performance of buildings and on energy efficiency[17] also encourages more automation and control systems[18] to make buildings operate more efficiently. EU Member States will now need to elaborate a smart readiness indicator that will measure a building's capacity to use new technologies and electronic systems to adapt to the needs of the consumer, optimise its operation and interact with the grid.

Smart technics, smart meters and smart home devices used by households in their dwellings and in entire buildings (e.g. apps to check if appliances are on/off from a distance) and measures to monitor more closely energy consumption (e.g. Apps with a visual display or Web apps; online calculators for energy similar to FX converters): The EU directive on Energy Efficiency reminds to Member States that investments should be made in education and skills of the user for the implementation of

[14] See the Third Energy Package: Directive 2009/72 concerning common rules for the internal market in electricity; Regulation (EC) 714/2009 on conditions for access to the network for cross-border exchanges in electricity; Regulation (EC) 713/2009 establishing an Agency for the Cooperation of Energy Regulators
[15] https://ses.jrc.ec.europa.eu/smart-metering-deployment-european-union
[16] 80% or more, according to the data on Smart Metering deployment in the European Union
[17] Directive (EU) 2018/844 amending Directive 2010/31/EU on the energy performance of buildings and Directive 2012/27/EU on energy efficiency
[18] See art 8. (1) of Directive (EU) 2018/844 amending Directive 2010/31/EU on the energy performance of buildings and Directive 2012/27/EU on energy efficiency

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new metering technologies to be successful. With the democratisation of digital tools, there is a real opportunity for developing user-friendly applications and websites where one can have access to live consumption of energy, analyse consumption per appliance or even turn on and off connected appliances through the online tool. The UK energy provider Ovo developed an app tool for smart meter data so that users can track their spending and see cost per appliance[19]. The French start-up Wivaldy analyses one's electricity consumption for a week and provides advice to reduce electricity consumption and bills[20].

Reducing consumption through behaviour change: participants raised several possible practices related to heating, such as turning on the heating a week later than the beginning of the heating season, setting lower night temperature or an hour earlier than usually, setting different temperatures in different rooms and turning off/ lowering the heating when not at home. Thermostats also give the possibility to control and programme energy use (e.g. Nest).

National and local authorities should however focus on encouraging the adoption of more structural changes, mainly deep energy renovation, as such measures are the most efficient in reducing the energy demand of buildings. As demonstrated in ENABLE.EU research on the drivers behind households' long-term energy choices, policy support should target deep renovations as it delivers higher savings than the implementation of several individual measures. The latter are indeed usually more expensive taken together and achieve lower efficiency gains.
In a move that would be symbolic for the European Union, but structural for cities like Brussels or Luxembourg, the European Union could commit to ensure the deep renovation of all EU institutions and EU agencies, in cooperation with local municipalities to ensure that EU experience can feed into local decision-making processes.

Knowledge of the prices and products offered by energy suppliers: the new electricity market design currently finalised[21] aims at making electricity billing user-friendly and easier to understand (e.g. by displaying the most important information for consumers to be able to adapt their consumption and compare suppliers' offers). Furthermore, all electricity consumers in the EU will get free-of-charge access to at least one certified energy comparison tool that meets minimum quality standards in order to provide reliable information about the offers provided to consumers. It also goes beyond a simple informative purpose: the EU required easier switching conditions from suppliers. All switching related charges will be prohibited, except for early termination fees on fixed term contracts.

Use off-peak/night tariffs, e.g. by setting devices to work or charge at night: With the new electricity market design, consumers have the right to request a smart meter and a dynamic price contract that allows them to be rewarded for shifting consumption to times when energy is widely available and cheap.

New labelling for home appliances: The EU already revised its labelling design for households appliances in 2017[22] to provide consumers with better information on the energy efficiency of different appliances. To facilitate the understanding of the label, the categories will scale again from A to G (from currently A+++ to D which is more ambiguous) as of 2021. Additionally, consumers will have access to a QR code on the label that will provide non-commercial information, available on the European product database for energy labelling (EPREL) launched in 2019. It would however be useful to also provide information on how much savings one can make by choosing a more energy-efficient appliance. Consumers can now search the database for energy labels and product information sheets. Citizens can also access online platforms that map existing ecolabels and

[19] https://www.ovoenergy.com/smart-meters
[20] https://www.wivaldy.com/
[21] 2016/0380(COD) Common rules for the internal market in electricity. Recast
[22] Regulation (EU) 2017/1369 establishing a framework for energy labelling

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provide detailed information on their criteria[23]. However, to be useful, such websites need to be known of the general public and identified as trustworthy.

Fighting planned obsolescence by legislating longer warranties: a longer lifetime for products in Europe can have a positive impact on the economy, on society and on the environment[24]. According to a 2014 Eurobarometer survey, 77 % of European citizens would prefer to repair their goods rather than buy new ones, but they ultimately have to replace or discard them because they are discouraged by the cost of repairs and the level of service provided. Despite that, few legislations exist at EU level. A non-binding resolution on "a longer lifetime for products: benefits for consumers and companies" was adopted by the European Parliament in 2017 but the European Commission should build on this initiative. In Norway for instance, 5-year-long guarantees are a standard.
As a first step, the European Commission could ensure that all the goods it acquires (e.g. cell phones for its employees) have long term guarantees and can be easily repaired (e.g. such as the FairPhone2).

Setting very high standards and requiring the implementation of all the technologies that are available on the market; *Stricter energy efficiency standards*: those measures were already undertaken at EU level. Beyond appliance labelling mentioned above, the Energy Performance of Buildings Directive requires all new buildings to be nearly zero-energy by the end of 2020. To improve energy efficiency of existing buildings, Member states can draft major renovation plans with the help of European structural funds provided by the EIB. Currently, a large share of the building stock needs renovation but only about 1% of the buildings are renovated each year in the EU[25]. This rate should triple in order to decarbonise the building stock by 2050. Ambitious legislation is adopted but now efforts need to focus on its implementation with adequate amounts devoted to renovation works.

In Belgium there are programmes funding energy efficiency refurbs for schools. It is important for children to learn in an environment that reflects where we want to be regarding energy efficiency: this is an interesting example. Giving more visibility to energy savings and why this is done can also contribute to making sustainable practices a "normal thing" for children and hence in their future perception of energy. This could also be transposed to the exemplarity of public buildings (i.e. all public buildings have to be energy-efficient). The EU already requires that all new public buildings must be nearly-zero energy buildings two years earlier than other buildings[26]. This should also be done with public car fleets for exemplarity.

Gamification – this could be made more fun by developing games for children [and adults] to play: as seen with the rising use of technologies (e.g. smartphones), games are becoming more accessible to different publics. Participants mentioned games for children but adults should also be targeted. Simulation games have a long history as an alternative to traditional instruments for awareness raising, education, training, and research for environmental issues. The scientific journal *Simulation & Gaming* has published research and practice examples of environmental games with a specific focus on climate change, showing that gamification helps understand complex issues[27]. To develop such projects, the EU could devote R&I funding to create video games that familiarise the players with sustainable behaviours (e.g. energy conservation, prosuming).

Create unions of owners in larger apartment buildings to foster collective decision and investments

[23] E.g. Ecolabel Index: http://www.ecolabelindex.com/ecolabels/
[24] Carlos Montalvo, TNO David Peck, Delft University of Technology Elmer Rietveld, TNO, "A longer lifetime for products: Benefits for consumers and companies." (2016)
[25] https://ec.europa.eu/info/news/questions-answers-energy-performance-buildings-directive-2018-apr-17_en
[26] Revised energy performance of buildings Directive (EU) 2018/844
[27] See for example: Eisenack, Klaus & Reckien, Diana. (2013). Climate Change and Simulation/Gaming. Simulation & Gaming. 44. 245-252.

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to promote energy savings: This was especially pronounced among Ukrainian participants, where there is a lack of formal representation of tenants. The creation of an "energy efficiency mission" for co-ownership syndicates could be encouraged by cities and municipalities. In addition, creating a dedicated council in social buildings would ease communication between tenants and the local administration. In some countries, condominium syndicates composed of all owners of a building need to approve all investment decisions. In practice, decisions are often difficult to make when it comes to large investments, such as building insulation.

Regulating landlord/tenant relationship: highlighted by the participants and in the case study on heating, the tenant/owner relationship is a recurring problem: conflicting interests hinder the implementation of efficient solutions, mainly renovation activities. This raises the question of whether incentives or obligations would work better. More incentives could be provided at national level for owners to improve the energy efficiency performance of the dwellings they own. However, even when financial support is available, it is not necessarily used. Coupling both incentives and strict rules for letting or selling a dwelling could be an option. In the United Kingdom, there are renovation requirements for the rental or sale of energy-inefficient housing [28]. Since April 2018, it is unlawful to let a dwelling with very poor energy efficiency rating when it is possible to improve energy efficiency through public financing. Landlords need to ensure that their properties have an Energy Performance Certificate rating of at least E[29]. At EU level, the "Smart Finance for smart Buildings Initiative" can also help homeowners meet their obligation.

4.4. Mobility

Introducing higher taxes on more polluting fuels (including on flights): increasing taxes on fossil fuels needs to be considered carefully. As seen with the Yellow Vests movement in France, putting financial pressure on people who depend on their polluting car cannot work. Transport has a low elasticity so that a rise in fuel prices will marginally influence distances travelled but will put a strain on low-income populations who have no alternative to their polluting car. Therefore, such taxation should be considered jointly with social (or re-distributional) measures to work. Flights however are indeed a potential area for action as aviation benefits from a low-tax regime[30]. Most airplane tickets are exempt from VAT (expect for domestic flights) and kerosene is not taxed either. Several countries have already developed aviation ticket taxes (e.g. the UK, Belgium, Italy, Germany). Sweden introduced in 2018 a CO2 tax on aviation strongly impacting airlines flying in Sweden[31]. While the EU can push for the taxation of aviation emissions in Europe, it should also be considered globally through the International Civil Aviation Organisation (ICAO). Similar efforts are needed for maritime emissions.

Improving public transport and trains (in terms of quality, reliability -also thanks to real-time information- and comfort; in particular night trains): this is a key improvement that is needed to leave the car behind. While cities and countries are the best placed to make changes to their public transport infrastructure, the EU also provides funding for local and national authorities to finance infrastructures (e.g. through CEF). Night trains are an example that is more and more supported by Europeans while many such journeys have been phased out in several European countries. In Belgium for instance, night trains were phased out about 15 years ago deemed underused and not competitive enough with low-cost airlines. In 2016, Austria and its public rail company OBB tried to make night trains attractive again offering journeys throughout Europe and said to be profitable in

[28] The Domestic Private Rented Property Minimum Standard, April 2018
[29] Detailed explanation of the regulation and its enforcement is available on the UK government's website.
[30] Faber, J. and Huigen, T. (2018), A study on aviation ticket taxes. CE Delft.
[31] "Will Sweden's aviation tax make a difference to greenhouse gas emissions?" thelocal.se, 21 June 2018

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2018 already[32]. This is an option that can indeed recover customers if it offers a service that is competitive with flying in terms of destinations, price and convenience.
As a first step, when organising conferences, the EU could decide to stop reimbursing flights for a distance inferior to e.g. 400km (provided that an alternative is available). This would oblige conference participants to look for more sustainable options for short/medium-distance travel. If successful, such provision could be expanded to all events organised by EU financial support.

Many measures highlighted by participants should be undertaken at the city level, where the EU can encourage their adoption through networks like the Covenant of Mayors. This includes:

- measures encouraging the use of shared and public transport such as *the implementation of free public transport days like the annual Car-Free Day, for instance once a month; Subsidies for the use of public transport; Developing affordable or free park and drive for people living in more remote area to then take public transport; Earmark parking space for carpooling*

- measures encouraging the use of soft modes, i.e. *improving conditions for bikes, such as better bike lanes, slower car speed in cities for security, subsidies for e-bikes and developing shared bikes services in smaller cities.*

- measures restricting car use, such as *higher parking rates and car free zones*.

The city of Madrid for instance implemented many of these measures at the same time in an ambitious and comprehensive programme to improve the sustainability of mobility in the city (so-called Plan A)[33].

Having a charging station every 150 km in all Europe by 2030: the shift towards alternative fuels mobility, and especially electric mobility, is ongoing. The 2014 EU Directive on Alternative Fuels Infrastructure already planned for the roll-out of charging infrastructure. It required from EU Member States to develop National Policy Frameworks that plan for such roll-out by the end of 2020, 2025 and 2030. When it comes to electricity, the directive recommends a ratio of at least one recharging point for 10 electric vehicles by the end of 2020 and a recharging point at least every 60km on the TEN-T Core Network by the end of 2025[34]. So the objective at EU level is already ambitious but needs to be implemented properly in the years to come to make electric vehicles a convenient alternative to internal combustion engine vehicles everywhere in Europe and to foster a real transition on its roads.

Several actions recommended by participants should be undertaken at the level of companies: e.g. *teleworking* and *reward system for bicycle users, with a premium system in case of difficult conditions (e.g., taxi cheques in case of hard rain)*. Member States could implement measures that reward employees for using non emitting and healthy transport modes like bikes and set a regulatory framework that allows employees to work from home when possible. Considering the challenge of decarbonising mobility, simply switching from a strongly emitting mode to a less emitting and/or more energy-efficient mode will not be enough. Modal shift should be accompanied by a reduction of constrained journeys (e.g. instead of office work 50km away from home every day, one can work remotely two days per week).

More binding regulation on the car industry through, for instance, the efficiency labelling system: Car

[32] "Le train de nuit fait-il son grand retour en Europe?" rtbf.be, 13 December 2018
[33] "Plan de Calidad de aire de la ciudad de Madrid y Cambio Climático (PLAN A)" by the city of Madrid
[34] According to 2014/94/EU Directive on the deployment of alternative fuels infrastructure; and data derived from field test data in several EU countries. See Platform for Electric Mobility, 2018. "How EU Member States roll-out electric mobility: Electric Charging Infrastructure in 2020 and beyond".

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labelling is enforced since 1999 with the car labelling directive[35], which requires that all new cars for sale have a label showing fuel economy and CO2 emissions. The Commission recommended in 2017 that Member States improve labelling by displaying also information on air pollution. The fact that this recommendation was formulated in the workshop might reflect insufficient visibility of such labels in car showrooms.

Market campaigns showing cars as killers [because of air pollution and CO2 emissions]: measures to limit advertisements about cars could be an option to explore. Currently, car manufacturers spend as much as 3.5 billion euros on advertisement just in France[36]. A way forward globally and in the EU to clean up mobility is electrification of transport. In Norway, where policies have been strongly encouraging the development of electric cars, car makers devoted about 25% of their advertising budget to electric vehicles in 2017[37]. Regulating how polluting cars are advertised, compared to the case of cigarettes, could be a way to change the way people look at car ownership. However, the implications of such a measure, its acceptance by the public and the industry and whether it is realistic need to be considered further.

More funding for R&I for batteries performance improvement: to support the development of electro-mobility that is both more sustainable and comparable in performance to current internal combustion engine cars, the production of batteries needs to become cleaner and provide a sufficient autonomy for a competitive price. The EU already devotes R&I budget to improving battery technology, e.g. through Horizon 2020 calls[38]. Most importantly, the European Commission launched the European Battery Alliance (EBA) in October 2017 that aims to create a competitive manufacturing value chain in Europe with sustainable battery cells at its core. The initiative is supported by Financial institution such as the European Investment Bank. In December 2018, the French and German governments announced the creation of a consortium to produce batteries and several gigafactory projects are developing throughout Europe (e.g. the most advanced is Northvolt in Sweden and Poland).
While investment in current battery technologies (e.g. lithium-ion) should be pursued, this should be accompanied by increased investment in next-generation technologies (e.g. solid state batteries).

Subsidies for electric cars (including extended recharging infrastructure) and alternative fuels vehicles: such incentives exist in several European countries (e.g. Italy, Germany, France, Sweden, Spain, Romania) and some models of electric cars are already more affordable to own than conventional cars[39]. The EU could indeed encourage undertaking such measures in all Member States to accelerate the adoption of EVs. As a first step, the EU could ensure that the entire car fleet of EU institutions switch to zero-emission cars within five years.

Finally, some measures highlighted by participants can seem rather restrictive to individual freedom but are useful to put in perspective how far we are ready as citizens to change our habits and accept constrain in our future energy use, e.g. would it be feasible to implement *a carbon quota per person* or to *limit car ownership (e.g., one per family)*?

[35] 1999/94/EC Car labelling directive
[36] Data from the bump Baromètre unifié du marché publicitaire 2018, Kantar Media, IREP, France Pub
[37] Transport & Environment "Carmakers STILL failing to hit their own goals for sales of electric cars" June 2018
[38] For instance, the European Commission dedicated €114 million in 2019 for next-generation batteries calls.
[39] BEUC, "When will electric cars be an affordable option or European consumers?", 2018

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5. Conclusions

The ENABLE.EU participatory foresight brings a valuable contribution to the project findings and to the formulation of policy recommendations for future energy policy-making in Europe. Having insights and opinions of numerous experts and citizens on the energy future and ways to achieve it helps to frame the possible measures that policy-makers can adopt to accelerate the energy transition.

The methodology of participatory foresight has the advantage of bringing together different perspectives to exchange opinions and to build on each other's ideas. Additionally, the diversity of nationalities and profiles led to fruitful exchanges where most participants could learn about practices from other countries but also notice similarities across countries. Based on surveys carried out after each workshop, we gathered numerous feedback from participants and the project team. Most participants expressed satisfaction with the way the workshops were organised and enjoyed being part of the participatory process.

However, we also drew lessons from the shortcomings of the process, due, among other things, to the limited length of the workshops, complex methodology and a broad range of topics covered. For these reasons, it was difficult for participants to develop a clear roadmap towards a clean energy future in all the energy areas investigated (i.e. energy consumption at home, heating and cooling, prosuming and mobility). Some participants thus expressed reservations about whether the outcomes of the workshop could be used. It is thus key in future applications to precisely frame the topic and the expected outcome.

In the last workshop, participants formulated a list of measures that could be undertaken at different levels of governance. When asked about the sustainable behaviours and practices, they envisage adopting to contribute to the energy transition, most participants seemed enthusiastic and willing to make such changes. But they considered that the main limits to adopting more sustainable behaviours are external conditions such as the lack of infrastructure and services, communication, economic incentives and regulations that are either needed to change (e.g. availability of public transport) or would encourage the shift (e.g. subsidies for solar panels and electric cars). The measures they proposed thus reflected the areas where they think public policy at different levels (i.e. cities, countries, EU) should devote more attention to allow further change in individual energy practices.

It should be reminded, however, that the participants were not representative of the European population as they were generally more aware of energy and climate issues than average and they all spoke English. This bias needs to be considered when assessing the potential impact of the measures they proposed because not all citizens are likely to change their behaviours to the same extent as the workshop participants think they would. This might also be one of the reasons why a share of participants was mixed about whether the outcomes are realistic in the current policy framework.

Last but not least, some participants underlined the added value of the participatory foresight tool for increasing the involvement of citizens in policy-making. Future participatory applications can build on the ENABLE.EU experience.

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Annexes

Participant Survey: First workshop

Thank you for attending and actively contributing to the workshop! Before you leave, we would appreciate to have your feedback on your experience.

1. Have you learnt about practices of other participants?
   Yes, a lot / Yes, somewhat / No
2. Were you surprised by some practices from other countries? If yes, please provide an example.
   Yes, very much / Yes, somewhat / No
   ……
3. Do you think the workshop has challenged your way of thinking? If yes, please provide an example.
   Yes, very much / Yes, somewhat / No
   ……
4. What aspect of the workshop have you found the most valuable for you?
   ……..
5. Do you think you are now more likely to change anything in your daily life back home? Please check and/or complete the sentence(s) that apply.
   - ☐ I will be more aware of my energy use
   - ☐ I plan to adopt some new sustainable practices (for example .....)
   - ☐ I will talk more about sustainability and energy use with people around me
   - ☐ I would like to initiate some sustainable practices or projects in my community (e.g. neighbourhood, school)
   - ☐ I don't think I will change my practices
   - ☐ I will try but it seems too difficult to change habits
   - ☐ Or write your own statement: …….
6. To what extent do you agree with the following statements?
   Boxes with strongly agree, somewhat agree, somewhat disagree et strongly disagree
   - I think the workshop was well organised.
   - I found the discussions interesting.
   - It was easy for me to understand what was expected from me in this workshop.
   - I think the results of our discussions are useful.
   - In general, I am satisfied with the workshop.
7. What would you suggest to do differently (e.g. timing of sessions, size of group discussions, more possibilities to interact)?
   ……...
8. Would you like to stay in touch with other participants through the online forum?
   Yes, very much / Yes, maybe I will / I don't think so

Thank you and have a safe trip back home!

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Participant Survey: Second workshop

Thank you for attending and actively contributing to the workshop! Before you leave, we would appreciate to have your feedback on your experience.

1. Have you learnt about practices of other participants?
   Yes, a lot / Yes, somewhat / No
2. Were you surprised by some practices from other countries? If yes, please provide an example.
   Yes, very much / Yes, somewhat / No
   ……
3. Do you think the workshop has challenged your way of thinking? If yes, please provide an example.
   Yes, very much / Yes, somewhat / No
   ……
4. What aspect of the workshop have you found the most valuable for you?
   ……..
5. Do you think you are now more likely to change anything in your daily life back home? Please check and/or complete the sentence(s) that apply.
   - ☐ I will be more aware of my energy use
   - ☐ I plan to adopt some new sustainable practices (for example .....)
   - ☐ I will talk more about sustainability and energy use with people around me
   - ☐ I would like to initiate some sustainable practices or projects in my community (e.g. neighbourhood, school)
   - ☐ I don't think I will change my practices
   - ☐ I will try but it seems too difficult to change habits
   - ☐ Or write your own statement: …….
6. To what extent do you agree with the following statements?
   Boxes with strongly agree, somewhat agree, somewhat disagree et strongly disagree
   - I think the workshop was well organised.
   - I found the discussions interesting.
   - It was easy for me to understand what was expected from me in this workshop.
   - I think the results of our discussions are useful.
   - In general, I am satisfied with the workshop.
7. What would you suggest to do differently (e.g. timing of sessions, size of group discussions, more possibilities to interact)?
   ……...
8. Would you like to stay in touch with other participants through the online forum?
   Yes, very much / Yes, maybe I will / I don't think so

Thank you and have a safe trip back home!

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Participant Survey: Third workshop

Thank you for attending and actively contributing to the workshop! Before you leave, we would appreciate to have your feedback on your experience.

1. You are participating as: □ An energy expert □ A citizen
2. Have you found it useful to bring together citizens and energy experts in one workshop?
   Yes, very much / Yes, somewhat / No

   ……
3. How realistic do you think the final roadmap is and why?
   - □ *I think it can work because…..*……
   - □ *I am not sure whether it is feasible because …….*……
   - □ *It will not work because*

     ……..……
4. To what extent do you agree with the following statements?
   Table with strongly agree, somewhat agree, somewhat disagree et strongly disagree
   - I think the workshop was well organised.
   - I found the discussions interesting.
   - It was easy for me to understand what was expected from me in this workshop.
   - I think the results of our discussions are useful.
   - The two group discussions were complementary.
   - In general, I am satisfied with the workshop.
5. What would you suggest to do differently (e.g. timing of sessions, size of group discussions, more possibilities to interact)?

   ……

General feedback on the participatory foresight process

6. If you also attended the workshop in Sofia or in Rome:
   a. Were the workshops well-articulated and complementary?
      Yes, very much / Yes, somewhat / No
      Tell us why:

   ……
   b. Are the outcomes of the process in line with your expectations?
      Yes, very much / Yes, somewhat / No
      Tell us why:

   ……
7. Do you think this citizen participatory process is a tool that could be more used in policy-making?
   Yes, very much / Yes, somewhat / No

   ……

Your opinion: please tell us anything you would like to share or your vision for the energy transition in Europe!

……
……

Thank you and have a safe trip back home!

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