ENABLE.EU
Enabling the Energy Union

D6.3 | Transition Practice Framework Workshop Report

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Contributors:	ENABLE.EU team is grateful to have had the commitment of a wide range of households 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.
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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.

1 Introduction

1.1 Using participatory foresight to enable the energy transition

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

Transition Visioning Workshop

A one-day workshop for energy experts held in June 2018 in Sofia, Bulgaria. Interactive work in groups will allow all participants to share their knowledge and build scenarios based on energy practices.

Transition Backcasting Workshop

A one-day workshop for households and citizens held in November 2018 in Rome, Italy. Participants will offer insight on innovative and sustainable behaviours to enrich the scenarios created in the visioning workshop.

Transition Roadmapping Workshop

The experts and citizens from the previous workshops will meet in February 2019. Participants will design a roadmap setting out goals and measures to make the most sustainable scenario a reality.

1.2 The transition workshops' objectives and process

Objectives of the transition workshops are:
✓ 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, which will set out the 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 will lead to the identification of policy, commercial, and educational measures, creating a coherent strategy to promote the transition to low carbon energy. The scenarios developed will serve as an input to the modelling work that will be undertaken later in the project and was designed to assess the socioeconomic impacts of different transitions.

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

questions:
- What are the desired end results or functions of energy practices?
- What are the emerging actions and practices that are considered marginal but could shape our energy behaviours in the future?
- What are the most promising actions related to technologies, policies, and behavioural changes that will have the highest impact on individual and collective energy practices in the future?

The Transition Practice Backcasting Workshop was another two-day workshop held on 29-30 November 2018 in Rome, Italy. Interactive work in thematic sessions has allowed all participants to speak and share their experiences. Taking into consideration the scenarios, the workshops were focused on the following questions:
- What are your energy needs?
- What are the sustainable practices you can think of today? What energy practices are you implementing today?
- What influences your energy choices the most?
- What do you want to see in the future, and what will you do in your own daily practice?
- What will you need, and how can decision-makers/politicians make it easier for you to adopt these practices?

The Transition Practice Framework Workshop was held on 15th March 2019 In Brussels, Belgium. Participants were invited to develop recommendations to promote the adoption of sustainable behaviours for each of the ENABLE.EU fields. The workshop addressed the research question "How the sustainable practices identified in the Transition workshops might be largely implemented to move toward the low carbon Scenarios discussed at the Transition workshop". This led to the ENABLE.EU Roadmapping Phase, which aimed to:
1) Engage some European experts as well as some of the citizens involved in the Transition Practice workshop in a new constructive debate - this time aimed to identify the most important policies strategies and measures that can help to support sustainable energy behaviour and practices.
2) Identify the main enablers and barriers for implementing these practices and the main actors that should drive a sustainable energy transition;
3) Define a Roadmap toward the Sustainable Citizens' Practice Scenario that will define goals and measures nested along a medium and long-term timeline (2030, 2050).

For the appropriate preparation of the final workshop, an online survey was elaborated to ask its participants about the policies they considered the most important in order to achieve the energy transition in the future.

2 The Transition Practice Framework Workshop: participants and Agenda

2.1 The participants

Forty-seven citizens and experts from 13 countries participated in the Transition Practice Workshop.

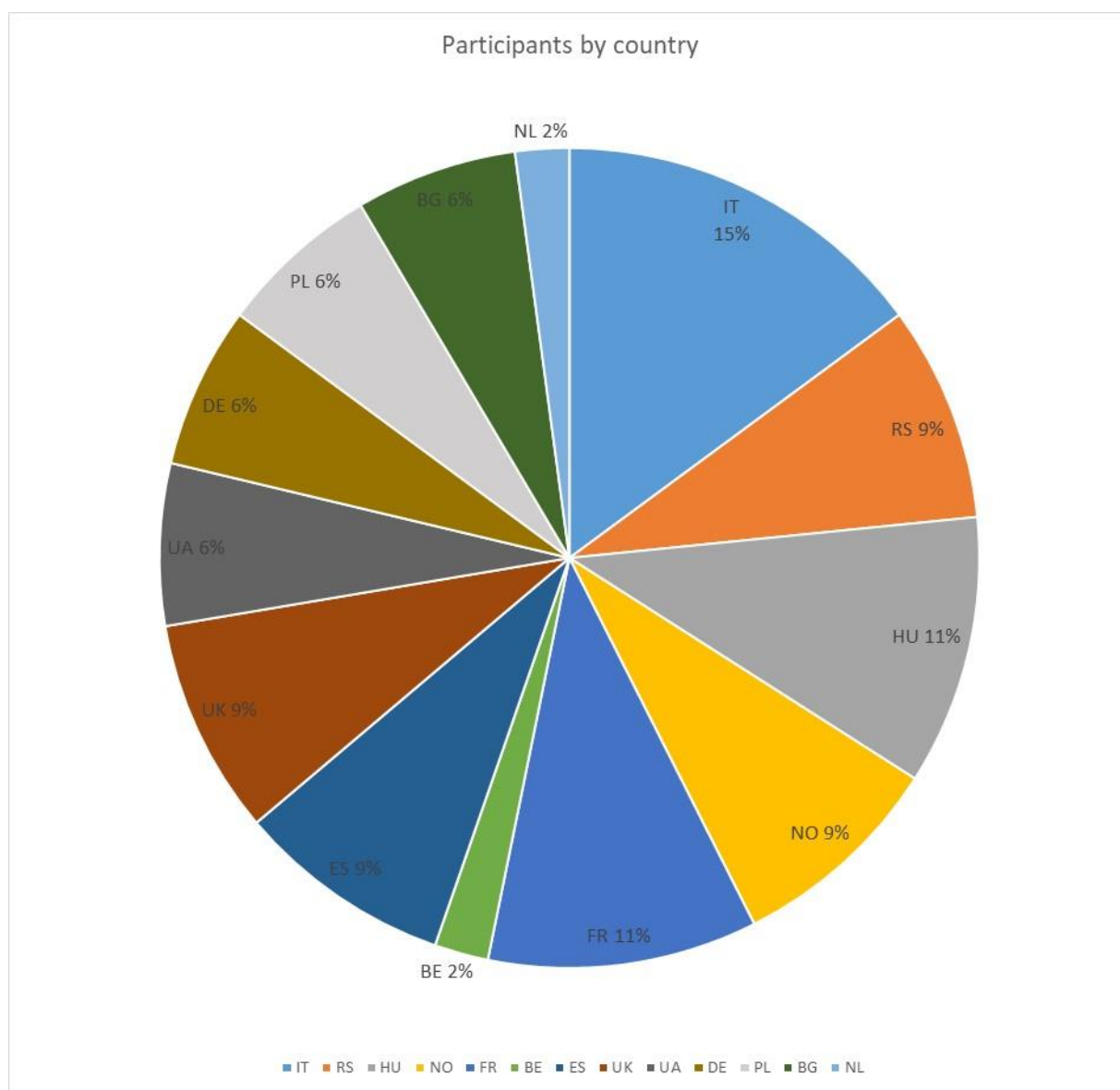The geographical representation was as reported below.

Figure 1 Participants by regions

2.2 The agenda

The final agenda of the ENABLE.EU workshop, as presented below, provides an overview of the various sessions and topics addressed on March 15, 2019.

15.03.2019 ENABLE.EU Practice Framework Workshop	
8.30 – 9.30	**Registration & Welcome coffee**
9.30 – 10.00	**The EESC contribution to the Energy Transition and social impact debate** - Welcome of Pierre Jean Coulon (President of the EESC Section for Transport, Energy, Infrastructure and the Information Society)
10.00 – 10.30	**The ENABLE EU Project and the Energy Union Sustainable Citizens' Practice Scenario** Carlo Sessa (ISINNOVA)
10.30 – 12.00	**First Interactive Session: Sharing the Sustainable Citizens' Practice Scenario** Thematic sessions: ✓ Energy production moderated by Elisabeth Schøyen Jensen and Karina Standal (CICERO) ✓ Mobility moderated by Alessandro Silvestri (BC3) ✓ Energy consumption moderated by Daire Mccoy (GRI-LSE) and Mária Bartek-Lesi (REKK)
12.00 – 12.30	**Presentation of discussions and results**
12.30 – 13.30	**Lunch break**
13.30 – 15.00	**Second Interactive Session: Building a citizens and civil society roadmap to the energy transition in Europe** Thematic sessions: ✓ Energy production moderated by Elisabeth Schøyen Jensen and Karina Standal (CICERO) ✓ Mobility moderated by Alessandro Silvestri (BC3) ✓ Energy consumption moderated by Daire Mccoy (GRI-LSE) and Mária Bartek-Lesi (REKK)
15.00 – 15.30	**Presentation of discussions and results**
15.30 – 16.00	**Conclusions** Thomas Carlin-Pellerin (JDI) and Carlo Sessa (ISINNOVA)

3 Introduction of the Workshop

Opening remarks were given by Pierre-Jean Coulon, President of the <u>section of the EESC (European Economic and Social Committee) in charge of Transport, Energy, Infrastructure and Information Society (TEN)</u>, who emphasized the importance of financing projects like ENABLE.EU that put the citizen at the heart of the energy transition. Covering 11 European countries, ENABLE.EU is representative of Europe's diversity and resonates with the EESC's work of representing European civil society.

Pierre-Jean Coulon synthesized the aim of the participatory foresight: "the European energy transition must be done by the citizens, for the citizens and with the citizens". He finally confirmed the support of EESC in promoting the results of ENABLE.EU towards the European institutions.

Following this introduction, Carlo Sessa of <u>ISINNOVA</u> presented the objectives of the participatory foresight, explaining that this third and last stage of the transition workshop process aimed to identify promising sustainable energy practices that can be replicated across Europe.

He recapped the "Sustainable Citizens' Practice" Scenario: it was elaborated by ISINNOVA on the basis of the inputs received by experts in the first ENABLE.EU workshop and was presented to households for validation at the second ENABLE.EU workshop. For its elaboration, the method of Three Horizon was adopted and the underlying question for its elaboration was *"What might a future energy sustainable system look like at 2050 and what individual and collective energy behaviours would support it?"* More information is available within the "Transition visioning workshop report[1]".

He recalled the on-line survey circulated among participants before the workshop. By the way, as many propositions had some similar level of support, the results of the survey represented only the initial basis for discussion.

Finally, he showed the graph to collect the information related to the policy roadmap, with the present time (2019) in the origin, the societal and technological aspect respectively on the horizontal and vertical axis and the policy roadmap pointing towards 2030 and 2050.

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[1] http://www.enable-eu.com/downloads-and-deliverables/
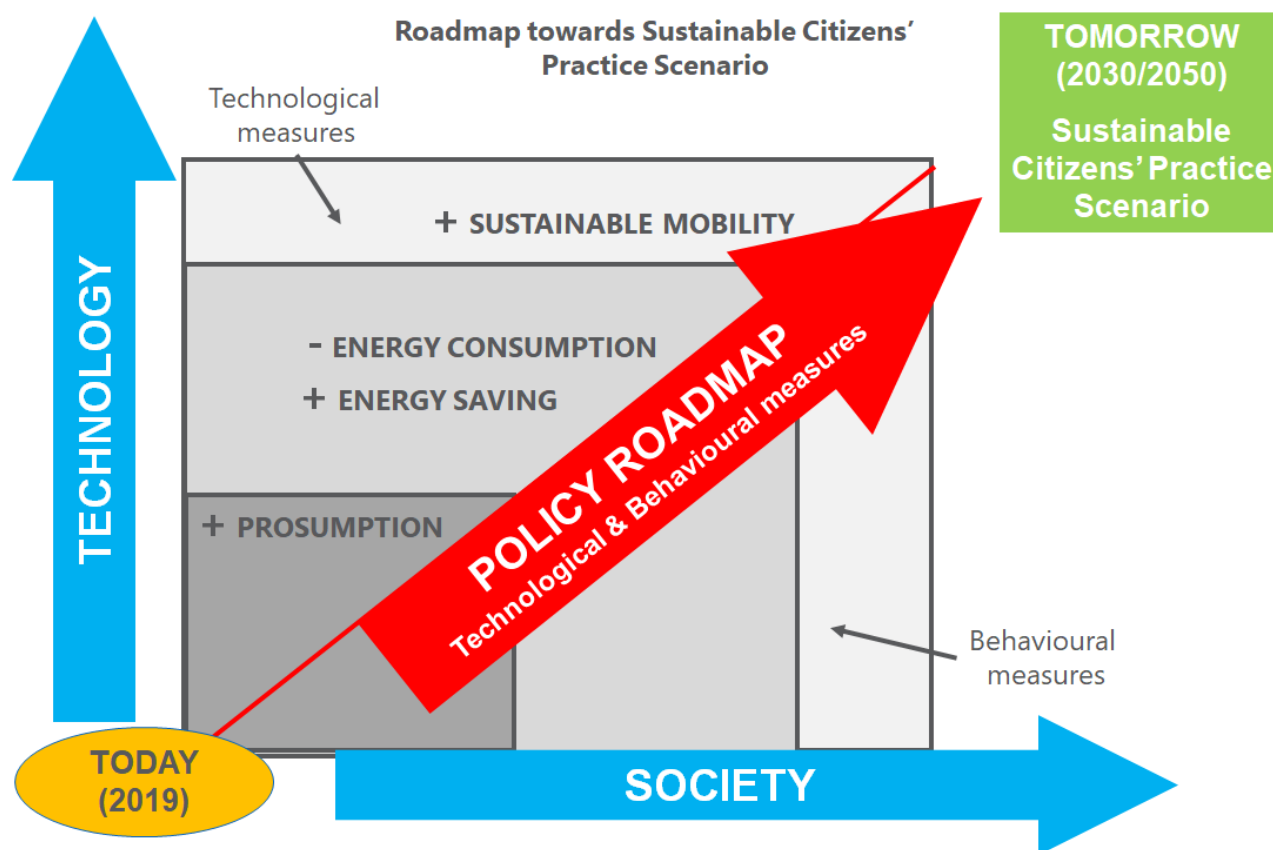
Graph 1: Roadmap towards a Sustainable Citizens' Practice Scenario

The participants were divided into three groups: energy consumption, prosumption, and sustainable mobility. Each group hosted tables with around 10-15 participants per table.
The morning session focused on identifying priorities, with participants asked to pick 3 measures/actions they considered to be indispensable for reaching an energy transition. Then they discussed freely the measures to achieve a consensus.

The goal of the second session was to recommend specific measures and modalities to be implemented in different timeframes between now and 2030/2050 as a roadmap towards energy transition.

The sessions were organized in two rounds of 30 minutes each, with people moving from one table on one topic (e.g. energy prosumption) to a next table for a different topic (e.g. mobility). In this way all participants had in principle the opportunity to discuss all three topics. As a matter of fact, the time left for the entire session was enough only to complete two rounds. In this sense, finally rotation happened only between two groups to let more time for discussion, 30 minutes proving to be too little to allow participants to exchange and choose proposals. This format offered participants the opportunity to work together in the different thematic sessions while facilitated by one rapporteur for each table.

4 Interactive Sessions

4.1 Results from the Energy Prosuming session
Rapporteurs: Karina Standal and Elisabeth Schøyen Jensen (CICERO)

4.1.1 First Interactive Session: Sharing the Sustainable Citizens' Practice Scenario
The session was divided into two groups. A wide range of actions were suggested, which can be grouped into the following categories of measures:
   a) Providing reliable information and knowledge on several levels (education, campaigns)
   b) Reducing the administrative burden
   c) Economic incentives – especially targeted towards people living in apartment buildings, with low socio-economic status and energy communities to broaden the diversity of prosumers
   d) Developing new technologies and business models.

a) Providing reliable information and knowledge
In both groups, the need for reliable and specific information to enable potential prosumers to manoeuvre between different solutions and providers, and for an efficient solutions for their specific house were taken up. In addition, the importance of raising awareness so citizens "buy into the concept" was repeated. Raising awareness was seen as important on two levels; 1) the need for improving general knowledge or "energy literacy" and technical know-how for adults and children (e.g. in the education system and through government channels for information), and 2) Making prosuming "trendy" and visible to make it attractive to be a prosumer and actively contributing to energy transition. There was a discussion concerning how difficult it is to motivate people to change or make such investments when they are within their comfort zone (that is, they have reliable and affordable electricity supply). It was also highlighted that becoming a prosumer involves understanding some of the technical and bureaucratic aspects, thus limiting the potential group of prosumers.

b) Reducing the administrative burden
As a possible way of increasing the amount of prosumers, reduction of transaction costs (i.e. administration and bureaucratic procedures) was seen as very important. Several participants noted that cumbersome rules and regulations from administrative and bureaucratic bottlenecks prevent people from becoming prosumers. Regulations also need to keep up with technological development. An example was given from Greece where the potential prosumer had been waiting for months for an answer from the utility company, only to be told that they had to resend the application to become prosumer because his/her application was now outdated. In some countries, regulations prohibit citizens to become prosumers (Serbia). Development of coherent regulation on different levels within the EU was listed as a possible remedy. For instance, the EU could develop a "toolkit" of regulations that national and regional level could use.

c) Economic incentives – especially targeted towards to broaden the diversity of prosumers
Provision of economic incentives to households was taken up as an important action to increase prosuming in combination with other measures as described above. Participants especially mentioned feed-in tariffs, subsidies and grants. It was also highlighted that a successful energy transition needs to take into consideration groups of people that are not 'typical prosumers'. These include people who live in energy poverty (those who have a low income and have to spend a significant famount of their income for energy to cook and keep warm), people who live in apartment buildings and thus are dependent on housing boards and neighbors to make the decision to become prosumers, people who do not own private

property, but rent their apartment or house. Economic incentives also need to target these groups to successfully scale up an energy transition towards energy production in the home while not increasing inequalities. More details concerning operationalizing such actions were also discussed during the roadmap session.

d) Developing new technologies and business models.

Participants also discussed the need for the development of new technologies and business models to increase energy production at home. Especially, batteries and energy storage was seen as an important driver for households as they then can use more of their produced energy themselves (rather than selling excess electricity to the grid during the day and buying needed electricity in the evening). Others mentioned the need for new business models such as blockchain technology and development of energy community systems (micro-grids). 'Independent' energy communities with decentralized systems could both increase the amount of prosumers who do not necessarily own their house or have resources for high upfront costs, but such communities also provide infrastructure that can help central grid supply in extreme situations where they cannot sustain a reliable energy supply. Participants also suggested that prosumers should be more than individuals or households; "think places, not only homes". Not all households can be self-sufficient, so there is a need for cooperation. The need for technological development concerning the integration of prosumers was also mentioned. This development requires an upgrade to smart grid technology. A full energy independence is also not feasible in most contexts as production can be private, but still need grids/networks /utilities.

4.1.2 Second Interactive Session: Building a citizens and civil society roadmap to the energy transition in Europe

In the first round, the group discussed specific measures linked to communication, while group two discussed how specific measures towards government provided economic incentives could contribute to a roadmap to increase in energy production. An important aspect cross-cutting the specific suggestions was the need to consider gender and social context into all suggestions. The concrete measures are listed as numbered suggestions.

a) Communication

Suggestion 1: (short and long-term). Providing free or low cost energy advisors for citizens. Potential prosumers often have difficulty in finding reliable and useful information concerning possibilities to implement renewable energy systems for energy production in their home. This concerns finding viable alternatives that provide return on the investment and that is feasible for their home. Often information is presented in standardized ways that do not consider type of home, esthetics or prioritization of measures that give the optimal solution in the given context, and commercial companies give advice based on the products they are selling. Providing citizens with the opportunity to seek advice from independent experts that either work in or for the public sector would allow for potential prosumers to get reliable information that is perceived legitimate.

Suggestion 2: (Short term). Communication campaigns targeting the general population. The awareness of energy production in the home is not high, and the increase of prosumers had been driven mainly by people with particular interest in the technology and the environment. In the face of climate change and need for rapid de-carbonization and energy transition, there is a need for communication campaigns that speak to the general population. Such a campaign should be framed towards people's emotions and values to facilitate change. It thus needs to consider particular social contexts and be appropriate for men, women and different ages and ethnicities. In some contexts, it would be wise to frame the campaign towards environmental awareness that is not linked specifically to climate change to ensure that it speaks to people who also distrusts governments and climate sceptics.

Suggestion 3: (mid-term and long-term). Digital platforms and databases for energy advice and knowledge exchange. A useful and complementary tool to increase energy production at home would be set up of public digital platforms. In the medium-term these platforms could facilitate citizens and prosumers to exchange information and experiences concerning energy production at home. Such a platform could for instance include narratives of prosumer families, relevant links to forms and documents needed for the process of becoming prosumers, links to trustworthy companies and opportunities for blog posts and chatting for exchange of information and seeking of advice. In the long-term, such a digital platform could increase its value by becoming a 'database' for different experiences and with new computer technology (i.e. artificial intelligence). The web page could provide citizens with opportunities to get detailed advice on what would be a feasible and cost-benefit analysis option for their unique home based on a larger number of variables than at present.

b) Economic incentives

Suggestion 1) (short-term and long-term). Feed-in tariffs, subsidies and flexible feed-in tariffs. Different feed-in tariffs and subsidies (on the up-front costs) were mentioned as an enabler to increase the number of prosumer households in the short term. This has proved successful examples in several countries, but over time governments wish to withdraw these benefits once the goal of developing the market has been achieved, because they need consumers to pay for the maintenance of the central grid supply (as a security). In a more long-term perspective, a concrete measure could be flexible feed-in tariffs. Some years after the investment in a household solar system, the prosumers would then need to make additional investment in battery/storage technology to keep the feed-in tariff. After a period, the prosumer would need to invest in auxiliary services to keep the feed-in tariffs. In this way, feed-in tariffs would be in line with a progressive development towards a green transition as it allows for pioneers to test out new technologies and promote new clean energy technologies and business models. However, the aspect of equality was also taken up as feed-in tariffs do not remove the up-front costs and thus the benefits of have them are available only to families who have economic resources. Different policy measures are needed to address this issue.

Suggestion 2) (short and medium term). Grants to energy communities. The importance of decentralized systems and energy communities was taken up by the participants as an important way forward in energy production at home, and also an opportunity for people to manage up-front costs together. Being part of an energy producing community would lower the up-front costs and make energy production a more attractive alternative.

Suggestion 3) (short term). Taxes to dis-incentivize 'business as usual'. This refers to a tax on energy transportation (also within the grid system), making it also more attractive for communities to invest together in renewable energy production. An important addition is to remove legal barriers for selling/sharing electricity from such systems between neighbors. This would decrease transmission loss, but energy communities can also be important for preparedness and rebuilding after extreme weather events (see the Brooklyn micro-grid). Carbon pricing was also mentioned as likely to heighten the attractiveness of becoming a prosumer and energy transition. Another suggestion was to implement variable tariff (time differentiated electricity pricing). This would increase people's motives to produce their own energy and use storage technology (e.g. batteries).

Suggestion 4) (medium to long-term) Economic incentives targeting those who have less financial agency. Conventional schemes such as feed-in tariffs and subsidies often prevent those who cannot make the considerable up-front costs from becoming prosumers. This further entrenches inequality, especially for the energy poor, who have to use much of their income on less efficient technologies, while those with

resources implement technologies that reduce their energy consumption costs. Among the suggestion was to provide 'Solar loans'; favorable credit schemes based on certain criteria. This would make prosuming an attractive and feasible opportunity for more prosumers. In the long run, it is important to find good ways of handling energy poverty and how the energy poor can be included in such a green transition, to reach a "power to the people" scenario and avoid increasing economic polarization. Another measure suggested to target certain groups was a mix of social benefits and economic incentives to become prosumers, such as combining up-front cost subsidies with health insurance to targeted population groups.

4.2   Results from the Energy Consumption session
Rapporteurs: Mária Bartek-Lesi, Adrienn Selei (REKK) and Daire McCoy (GRI-LSE)

4.2.1 First Interactive Session: Sharing the Sustainable Citizens' Practice Scenario
A wide range of actions were discussed which can be grouped into the following categories:

a) Knowledge and provision of information
b) Enhancing the role of communities
c) Implementing incremental regulation
d) Providing well-oriented subsidies
e) Building on corporate responsibility

a) Knowledge and provision of information: Sharing the Sustainable Citizens' Practice Scenario
Similar to the previous rounds of the ENABLE.EU Transition Workshops, participants pointed to the fundamental role of education, information provision and information campaigns in directing consumers towards energy-conscious behaviour.

As a possible way of improving energy awareness, participants suggested that consumers should be familiar with how energy can be measured, not only in monetary but also in physical terms, so that they have an idea about the amount of energy their appliances use, just like being able to count calories contained in food. This would make it easier to grasp how energy consumption is divided among different uses in their households (heating, cooking, lighting, electric appliances, etc.), and how they contribute to overall energy costs.

Another measure suggested by participants was to provide a kind of label for the energy sold by suppliers to households, describing its composition by energy sources (renewable, coal, gas, etc.) in percentages. Hence, the share of renewables in the energy mix could become a second selection criteria in choosing among energy suppliers.

Participants stressed that people should have proper information about the actual costs of different energy saving measures. As changing appliances and energy efficiency upgrades of homes may require large upfront investment and the payback period can be quite long (10 years or more in some cases), people are afraid of undertaking such investments. Increasing the energy literacy of people and providing more information on the lifetime costs of energy saving investments can motivate people to adopt measures that are cost-effective.

Providing consumers with more frequent and detailed energy consumption information helps them to become more aware about their energy using practices. One participant argued that it would be useful to place readouts on household appliances like washing machines, showing the amount of energy used for a washing cycle, although there is no information on whether it would be effective to equip appliances

with such an option. A more frequent feedback on the actual energy used according to the times of the day and seasons of the year was also suggested to make consumers aware of the timely manner of their energy use.

The role of information and communication technologies and IoT (Internet of Things) were mentioned as possible future solutions to these problems. Increased penetration of smart meters which can provide close to real-time information on consumption and prices, along with smart appliances will enhance the energy-awareness of consumers to a great extent.

However, one of the participants claimed that it is not enough to provide new technological solutions and encourage consumers to invest in them, but it is also very important to have a life-cycle perspective of savings at home. Energy savings must take into account the energy use and social costs related to the production and transportation of the appliances as well as their expected lifetime.

b) Enhancing the role of communities

Information related to energy use can be more effective in inducing behaviour change if consumers can compare their consumption to that of similar households or to a benchmark. Participants agreed that sharing information at the community level can serve as a benchmark and is an important channel for engaging households with the knowledge related to behavioural patterns and technological solutions.

Emerging solutions, such as community-based energy services and peer-to-peer energy trading platforms can give rise to more collaboration within communities to produce and exchange their own energy. According to participants, instead of a highly centralised system, regulatory power should be divided between the different regional levels, allowing regional authorities and municipalities to have higher influence in some questions.

The opportunities offered by gamification at the local level were also raised: using game design elements to motivate the adoption of energy saving measures and energy-conscious behaviour through active participation of residential consumers in energy applications.

c) Implementing incremental regulation

Changes in behaviour and energy choices can be strongly facilitated by smart meters and new technologies enabling the continuous reduction of energy consumption in households. Therefore related research, development and the deployment of smart technologies should further be stimulated by regulation. Participants think that technological change, smart homes and the internet of things will be the next step in reaching higher energy efficiency in homes through helping to reduce and control energy use.

Besides measures inducing behavioural change, regulation prescribing the use of certain technologies and the periodic revision of standards were also deemed necessary to reduce the use of inefficient technologies. Besides stricter building regulation and efficiency standards for appliances, the issue of banning gas boilers in new homes were mentioned as examples. One participant suggested that forbidding gas boilers might be a good idea not only in case of new and deeply renovated dwellings, but for all houses.

d) Providing well-oriented subsidies/incentives

As we cannot aim to reduce consumption without improving the efficiency of buildings, subsidies are needed to facilitate refurbishments. One possible example mentioned by participants was related to the UK, where a tax must be paid on houses sold. In case of more efficient dwellings the level of tax could be reduced.

The role of subsidies was considered crucial in case of poor households, given the fact that they usually live in older and less efficient homes. There was a consensus that subsidies and public funds should mainly focus on vulnerable groups. One Ukrainian participant raised the problem of having to subsidize poor households to help them pay their bills, while at the same time it would be also important to subsidize the energy efficiency improvement of their dwellings. She said that proper criteria should be set for selecting those people who are really in need of monetary contribution, given that some households receiving help from the government based on their low official income level do not in reality need subsidies.

One participant raised the issue that currently implemented national programs for changing heating systems are only pilot projects usually covering about 10,000 households, and it is not clear how much time is needed to reach the rest of residential consumers. She suggested extending these programs to the wider population.

When trying to motivate individuals to engage in energy-saving measures, it is important to consider cultural differences across countries, i.e. an obligation that works well in one country may not work well in another. A contrast was drawn between Norway and Ukraine. In Norway people may respond well to obligations imposed on them whereas in Ukraine people respond better when they have choices and do not like being forced to do something.

e) Role of corporations
Participants believe that part of the burden of financing changes should be shifted from the state to companies. They believe that corporations should take part in decreasing the energy bill of the poor households, for which the Energy Efficiency Obligation Schemes implemented in many European countries in line with the Energy Efficiency Directive is a good example. It was also suggested for governments to create a special budget dedicated to energy transition including, among others, all the public income generated from greenhouse gas emission trading and taxation.

One person argued that a large discrepancy exists between the real cost of energy we consume, and the price companies and final consumers pay: the price is too low compared with the costs supported by the environment. At the same time, there is a trade-off in setting a higher price as those living in fuel-poverty cannot afford paying their bills even at current prices, so it is difficult to find a good balance. Another participant mentioned that cost is a strong driver of human behaviour and having in mind that the cost of installing new appliances is high, it would be good to be aware of how much fuel will cost in the future, as that would determine our decisions today.

4.2.2 Second Interactive Session: Building a citizens and civil society roadmap to the energy transition in Europe
During the second session, specific measures related to the previously collected actions were recommended by participants to be implemented in different timeframes until 2030 and 2050.

a) Education and knowledge
Education is the first and most important social action that has to start immediately and continue during the whole timeframe. Participants recommended to begin educating children on energy conscious behaviour as early as kindergarten, and design specific courses on energy and its environmental effects in school syllabi for primary schools, because todays' children will be the decision-makers by the time net zero emissions are to be achieved. Education and information-sharing programs should also be designed for households to increase their energy-literacy including ways to calculate future savings and payback periods for investments. Policy-makers should also receive education, tailored to their special

needs and the scope of their possible actions.

Households need easily comprehensible information on their consumption for which benchmarks should be provided in an institutionalized way, e.g. by suppliers. They should also reveal the composition of the electricity/heat by source they supply to initiate additional competition besides price levels. These actions are to be implemented in the short term and belong to the social dimension.

In the longer term, by around 2030, information and communication technologies should allow consumers to have access to close to real-time data related to their consumption that can display specific information on energy use by appliances. To reach this, policy-makers need to take steps to accelerate the installation of smart meters, and their technological improvement.

Providing knowledge about the energy consumption and emission released in the supply chain of appliances could be accomplished by designing new types of product labels. These labels should also include the year an appliance was produced and its expected lifetime. This technical measure should be implemented in the short term.

b) Enhancing the role of communities

Decentralized information provision on neighbours' and community's consumption and actions at the local level (or at company level) shall be assisted by municipalities, providing benchmarks for the quantities consumed by similar households. They could also share decentralized information on smart metering data in the medium term, which could be used as a reference by other households. Gaming and social interactions should be organized locally to enhance information-sharing and energy saving behaviour by generating competition among consumers. Information on energy saving solutions used by other households should also be exchanged with the help of municipalities. The role of local administration should be strengthened in the short term and is related to the social dimension of actions.

Governments shall provide proper incentives for building infrastructure that neighbourhoods can commonly use, for example heat pumps or geothermal heat distribution systems in the short and in the longer run.

c) Implementing incremental regulation to enhance the gradual reduction of energy consumption in households

As regards the energy efficiency of dwellings, regulation similar to newly built buildings should be also elaborated for the existing building stock right away, and national governments shall design comprehensive national renovation plans. Building materials should be subject to continuous improvement, and consumers should receive information on new solutions available in the market. These actions can be started today and should be continued over the whole-time horizon.

A long-term perspective on developing smart home technologies is needed today, so that households can optimize their energy consumption and rely on renewable technologies possibly produced and exchanged within their communities. This development process should be motivated by policy-makers today and can be a reality sometime before 2050.

Setting minimum efficiency standards for buildings and appliances that are under continuous revision and improvement shall be the basis for incremental development of energy-efficiency of homes. These standards could also provide a basis for consumption quantity benchmarks for households in the whole time-horizon.

d) Subsidies/incentives

In order to achieve real improvements, poor households need to receive financial help starting from today, especially having in mind that energy efficiency investments can result in monetary savings. Producers of modern building materials or consumers buying these products should also be subsidized to help increase the market penetration of new solutions and decrease their price similarly to the subsidies employed in the renewable energy sector. Support mechanisms should be designed in the short term and represent actions belonging to both the social and technological dimensions of actions.

e) Role of corporations

Participants shared the view that the corporations, being profit oriented entities, can be involved only if governments create incentives for them, either by providing subsidies to stimulate R+D activities and technological improvements or putting a price on the negative externalities they cause. These activities are already pursued to some extent and should be continued over the whole time-horizon.

It was also raised by one participant that new technological solutions should be shared with poor countries, as they will not have the money to get access to them otherwise. Generic technologies similarly to generic drugs could ensure open access to technologies across borders to make poor countries benefit from development through access to knowledge. Related measures should be designed in the short or medium term.

Overall, as regards the time dimension of actions and measures proposed by participants, almost all actions were suggested to start today and continue over the whole time-horizon. The number of measures proposed to start at later times is limited, probably due to the dynamic changes in consumption patterns and technological development that are difficult to anticipate. It also suggests that households feel the necessity to start moving to sustainable solutions as soon as possible.

4.3   Results from the Mobility session
Rapporteurs: **Alessandro Silvestri (BC3)**

4.3.1 First Interactive Session: Sharing the Sustainable Citizens' Practice Scenario

The first topic participants addressed was related to public transport. They highlighted the importance of the availability of this mode and its utility in reducing private cars in cities. In order to be a successful alternative of private vehicles, public transport must be of "good quality" and "seamless", allowing for direct and simple connection. One participant then suggested not to limit this discussion to public transport but to include other alternatives to private vehicles, such as shared mobility, bike and other novel modes.

Participants agreed that in order to substitute private vehicles all these alternatives must represent overall a clearly better option. This has therefore been linked to the possibility of limiting private vehicles in cities through parking pricing and roads restrictions. However, some participants noted a political barrier derived from the diffused belief that lack of vehicles in city centres negatively affects commercial activities. This suggested the need of a cultural and societal change towards the idea that a city life without vehicles can actually bring benefits to urban activities. The cultural change should also eradicate the belief that "having a car is a right whereas the real right is the possibility of living in a healthy environment". Educational plans should not be the only actions to kick-start this behavioural change as they are not always effective. Other arguments should be found in order to transmit this concept and this societal change should be facilitated according to the local context.

Participants then highlighted the central role of administrations in the transition towards a sustainable

mobility. According to some participants, local administrators must set the requirements and the related infrastructure and people will then adjust. Some discussion followed on whether people would really accommodate this change without protests. Participants agreed that a central role depends on communicating these policies by stressing the importance of the positive environmental aspects. Administrations should be changing city planning to minimise the need for mobility, by developing hubs that allow people to work close to home and reducing the distance for shopping by developing and enforcing local shops and markets instead of big commercial centres. This city planning should be done together with the development of the public infrastructure in order to create an efficient environment.

Another topic addressed then was freight transport. This is connected to the cultural change by sensitising on the importance of reducing our consumption and choose where we decide to purchase our goods. Transition in this context would also be done through new technologies such as local 3D printing, automation and electrification of freight transport.

Then, the first group agreed on synthetizing all this discussion into three main actions:
a) the provision and enforcement of alternatives to private vehicles,
b) the change of mind-set and
c) the sustainable planning of cities.

After this first part, participants moved to other topics and a second group joined the mobility table. Participants were first introduced by the moderator to the discussion developed by the first group and the three main actions identified. Then, they were asked to contribute and continue the discussion. Overall they decided not to add any extra measure to the three identified by the previous group but to complete them.

With respect to providing alternatives to private vehicles, new participants noted how the previous group didn't address enough electric and hybrid vehicles. Hence, they argued electrification of mobility is an important step as it provides a cheaper, more reliable and cleaner alternative to conventional vehicles. They also stressed the importance of not looking exclusively at road transport, as airplanes also represent an important source of emissions and enforcing the rail network could be an alternative to this mode at least for domestic flights.

The discussion on airplanes then evolved into a contribution to the second measure of changing mind-set. With respect to airplanes, participants argued that it is important to increase awareness of each one's footprint. The group also acknowledged the importance of changing people's habits although they noted this might be difficult because private vehicles are also considered to be an "expression of wealth". One user then summarised this discussion into three main areas of action to achieve this mind-set change: education, communication and incentive/disincentive schemes.

Moving to sustainable urban planning, participants mentioned the importance to develop sustainable urban mobility planning together with the community through citizen consultations. They also stressed that planning not only relates to infrastructure but also mobility in order to ensure its complementarity. It has been also suggested that these plans should support techniques for reducing mobility needs such as days working from home.

Finally, the group made two general comments that apply to all three measures. First, measures should tackle the transition not only at urban level but also among cities and among countries. The second comment is to include equity measures. Otherwise, the risk is that only lower income groups will pay the costs of the transition, while richer people won't trade their comfort for energy savings and continue

polluting.

4.3.2 Second Interactive Session: Building a citizens and civil society roadmap to the energy transition in Europe

Two groups participated in the discussion: the first one designed the roadmap and the second group completed the results. The discussion was related to the three main actions identified in the morning: provide alternatives, change mind-set and sustainable urban planning.

The first action directed at providing alternatives measure was to introduce a carbon tax. The discussion rose immediately on the acceptability problems related to such measures and participants agreed on three main aspects to stem this problem. The first was to compensate this measure by strong investment in alternative mobility infrastructure, such as charging towers for electric vehicles. The timeline for this action was 2030 with the objective of having a charging tower every 150 km in all Europe. The second argument was to reuse revenue of the tax in the same sector on sustainable alternatives in a transparent way. Third, the acceptability of measures for sustainable transition could be also fostered by avoiding targeting low income classes. Another action to facilitate transition to cleaner mobility was to make more binding regulation on the car industry through, for instance, the efficiency labelling system. With respect to freight transport, a participant suggested the possibility of including clauses into international free trade agreements to promote clean freight transport. On a longer time horizon, regulation should address also new flying freight mobility based on drones. One member of the second group also suggested the possibility of involving fuels that are not currently used such as hydrogen and helium.

For changing mind-set, the second group suggested the urgency of raising awareness on private vehicle costs and impacts through information programs and by sharing success stories of alternative sustainable mobility. Another measure connected to this would be the development of platforms which can easily allow comparison of different alternative to perform a trip giving also information on the relative environmental impact. Both these measures should be adopted in the short term.

Moving to sustainable urban mobility planning, the first measure would be to regulate these plans and make them mandatory as soon as possible for cities and regions. The sustainable mobility plan should also be accompanied by frequent and flexible public transport demand evaluation systems to make it more efficient for users. To foster local markets, an action suggested was to develop public procurement measures to make public institution purchasing food and other products exclusively by local producers. In a medium term future, once mobility is less dependent on private vehicle there would be a need for redesigning roads network in favour of public transport.

Overall, the majority of measures proposed were considered feasible in the short-term. In the case of the carbon tax it was suggested that this should be implemented first with low charging levels and then progressively increased with clear and transparent information on the process so that it could influence from the beginning people's vehicle investment decisions.

5 Conclusions

At the end of the workshop, certain number of actions and recommendations were identified and elaborated by citizens and experts. In particular:

– Energy Prosuming session
  o Providing free or low cost energy advisors for citizens
  o Communication campaigns targeting the general population
  o Digital platforms and databases for energy advice and knowledge exchange
  o Feed-in tariffs, subsidies and flexible feed-in tariffs
  o Grants to energy communities
  o Taxes to dis-incentivize 'business as usual'
  o Economic incentives targeting those who have less financial agency

– Energy Consumption session
  o Education and knowledge enhancing energy literacy and the adoption of available technologies
  o Enhancing the role of communities to facilitate decentralized exchange of information and shared investments
  o Implementing incremental regulation to enhance gradual reduction of energy consumption in buildings
  o Subsidies/incentives for poor households to improve the energy efficiency of their homes/new building materials
  o Subsidies to stimulate R+D
  o Pricing negative externalities

– Mobility session
  o Provision and enforcement of alternatives to private vehicles
  o Change of mind-set and
  o Sustainable mobility planning of cities.

Concluding the workshop, Thomas Carlin-Pellerin of the Jacques Delors Institute talked about the next step in the process: feeding the identified policy recommendations and communicating them to policy makers in Brussels. For the first time, the European Commission has set a clear end goal to the energy transition, which is to achieve net zero greenhouse gas emissions by 2050. Moreover, on May 26, Europeans will elect new Members of Parliament, who will elect the new President of the European Commission, who together will co-design the new work programme of the European Commission. The work of the project now is to take stock of the policy proposals that have come out of the workshops, to refine them as needed, and to propose them to the new Members of Parliament.

These citizen co-designed proposals are concrete recommendations that the project's representatives will bring to policy makers during fall 2019.
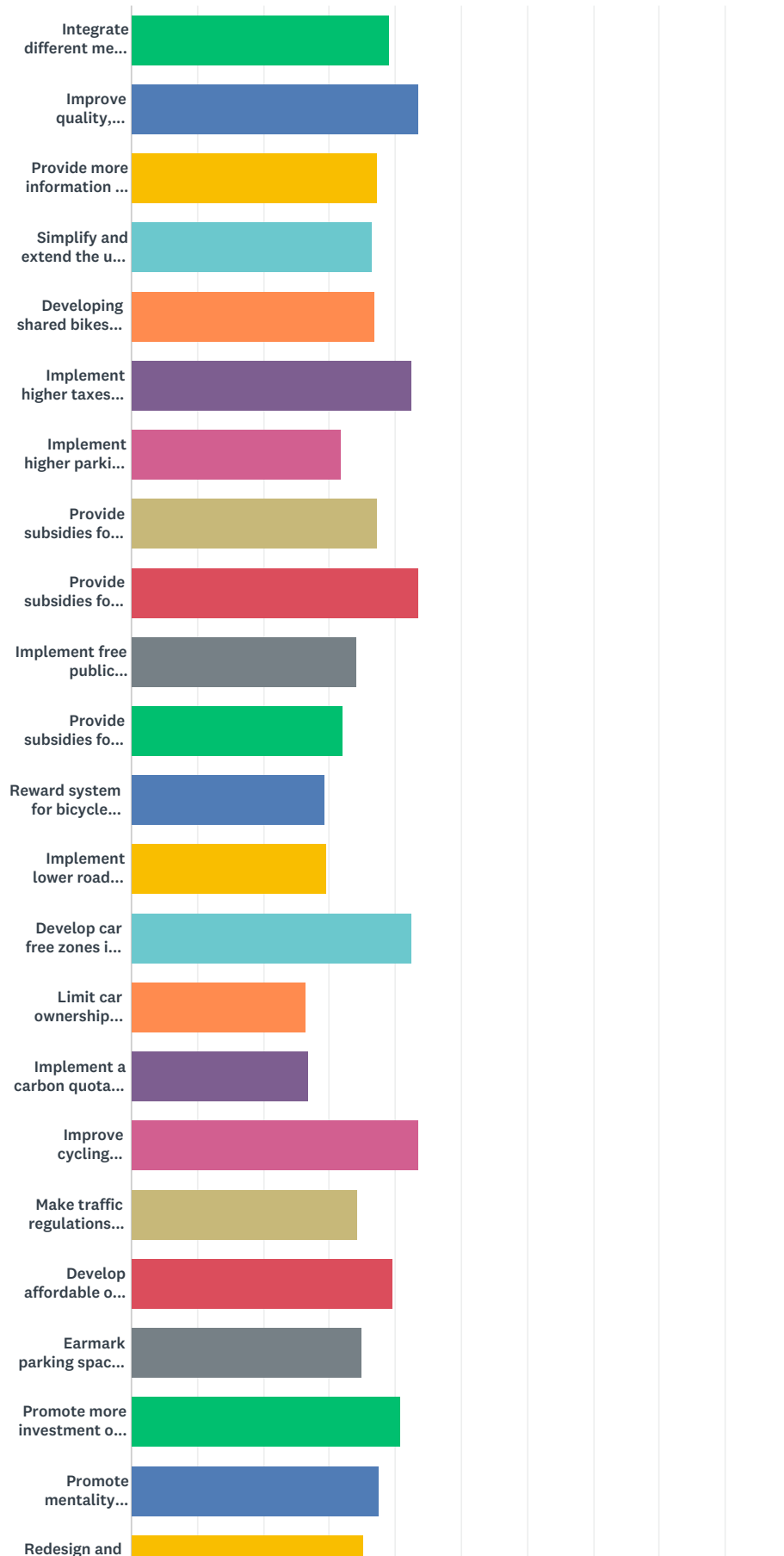
Annex I: Transition Practice Framework workshop – participants list

	Responsible Energy Practice Workshop Friday 15 March 2019 European Economic and Social Committee		
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Annex II: On-line Survey on Transition Practice Framework workshop

Q1 Please provide a score (1-5) on the importance of the actions below (1 as least important and 5 as most important)

Answered: 25   Skipped: 1

Integrate different me...

Improve quality,...

Provide more information ...

Simplify and extend the u...

Developing shared bikes...

Implement higher taxes...

Implement higher parki...

Provide subsidies fo...

Provide subsidies fo...

Implement free public...

Provide subsidies fo...

Reward system for bicycle...

Implement lower road...

Develop car free zones i...

Limit car ownership...

Implement a carbon quota...

Improve cycling...

Make traffic regulations...

Develop affordable o...

Earmark parking spac...

Promote more investment o...

Promote mentality...

Redesign and

1 / 18

	1- NOT IMPORTANT	2- A LITTLE BIT IMPORTANT	3- SOMEWHAT IMPORTANT	4- QUITE IMPORTANT	5- EXTREMELY IMPORTANT	TOTALE	MEDIA PONDERATA
Integrate different means of transport, information and data, payment methods – one pass for all mobility modes (public transport, bike sharing, car sharing, etc.)	4,00% 1	4,00% 1	20,00% 5	40,00% 10	32,00% 8	25	3,92
Improve quality, reliability (with real-time information) and comfort of public transport and trains	0,00% 0	4,00% 1	8,00% 2	36,00% 9	52,00% 13	25	4,36
Provide more information on different mobility options available and on full economic, social and environmental costs of each of them (externalities, robust technology evidence, market campaigns)	0,00% 0	4,00% 1	48,00% 12	20,00% 5	28,00% 7	25	3,72
Simplify and extend the use of car-sharing	4,00% 1	12,00% 3	24,00% 6	36,00% 9	24,00% 6	25	3,64
Developing shared bikes services in smaller cities	0,00% 0	16,00% 4	28,00% 7	28,00% 7	28,00% 7	25	3,68
Implement higher taxes on more polluting fuels and vehicles (including on flights)	4,00% 1	0,00% 0	12,00% 3	36,00% 9	48,00% 12	25	4,24
Implement higher parking rates	4,35% 1	26,09% 6	30,43% 7	26,09% 6	13,04% 3	23	3,17

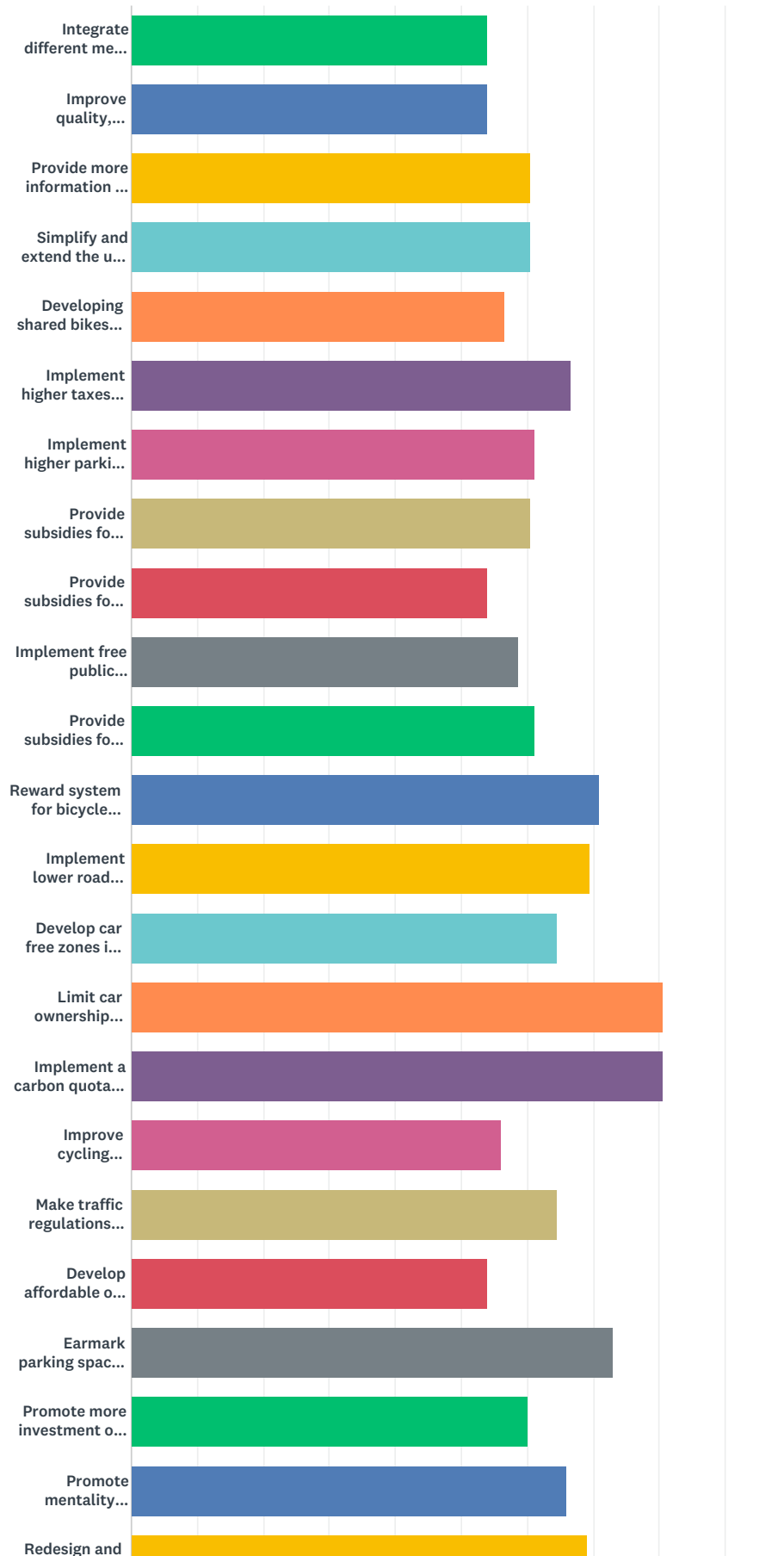|							
Provide subsidies for electric cars (including extended recharging infrastructure) and alternative fuels vehicles	4,00% 1	12,00% 3	20,00% 5	36,00% 9	28,00% 7	25	3,72
Provide subsidies for the use of public transport	0,00% 0	4,00% 1	12,00% 3	28,00% 7	56,00% 14	25	4,36
Implement free public transport days like the annual Car-Free Day, for instance once a week/month	4,00% 1	16,00% 4	24,00% 6	48,00% 12	8,00% 2	25	3,40
Provide subsidies for electric bikes	0,00% 0	28,00% 7	32,00% 8	32,00% 8	8,00% 2	25	3,20
Reward system for bicycle users, with a premium system in case of difficult conditions (e.g., taxi cheques in case of hard rain)	8,00% 2	28,00% 7	36,00% 9	20,00% 5	8,00% 2	25	2,92
Implement lower road speed in cities	16,00% 4	28,00% 7	16,00% 4	24,00% 6	16,00% 4	25	2,96
Develop car free zones in all cities	4,00% 1	0,00% 0	8,00% 2	44,00% 11	44,00% 11	25	4,24
Limit car ownership (e.g., one car per family)	25,00% 6	29,17% 7	20,83% 5	8,33% 2	16,67% 4	24	2,63
Implement a carbon quota per person	20,00% 5	32,00% 8	24,00% 6	8,00% 2	16,00% 4	25	2,68
Improve cycling infrastructures and safety	0,00% 0	4,00% 1	4,00% 1	44,00% 11	48,00% 12	25	4,36
Make traffic regulations more friendly for cyclists, e.g. possibility to turn right even when red light	16,00% 4	8,00% 2	20,00% 5	28,00% 7	28,00% 7	25	3,44

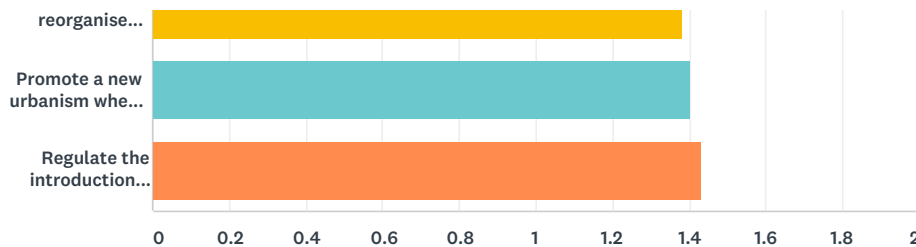|							
Develop affordable or free Park&Ride for people living in more remote areas	4,00% 1	8,00% 2	12,00% 3	40,00% 10	36,00% 9	25	3,96
Earmark parking space for carpooling	0,00% 0	8,33% 2	41,67% 10	41,67% 10	8,33% 2	24	3,50
Promote more investment on sustainable transport modes	4,00% 1	0,00% 0	20,00% 5	36,00% 9	40,00% 10	25	4,08
Promote mentality change from the side of citizens/users (also by changing the status symbol attached to car ownership)	0,00% 0	20,83% 5	20,83% 5	20,83% 5	37,50% 9	24	3,75
Redesign and reorganise urban space: less private vehicles, free parking spaces should be reallocated as common space	4,00% 1	20,00% 5	20,00% 5	32,00% 8	24,00% 6	25	3,52
Promote a new urbanism where the need for mobility is reduced: i.e. functional self-sufficient districts, and more teleworking	0,00% 0	20,00% 5	12,00% 3	28,00% 7	40,00% 10	25	3,88
Regulate the introduction of autonomous cars	8,33% 2	12,50% 3	25,00% 6	33,33% 8	20,83% 5	24	3,46

Q2 Please indicate the ideal timeframe of the actions below (2030 or 2050)

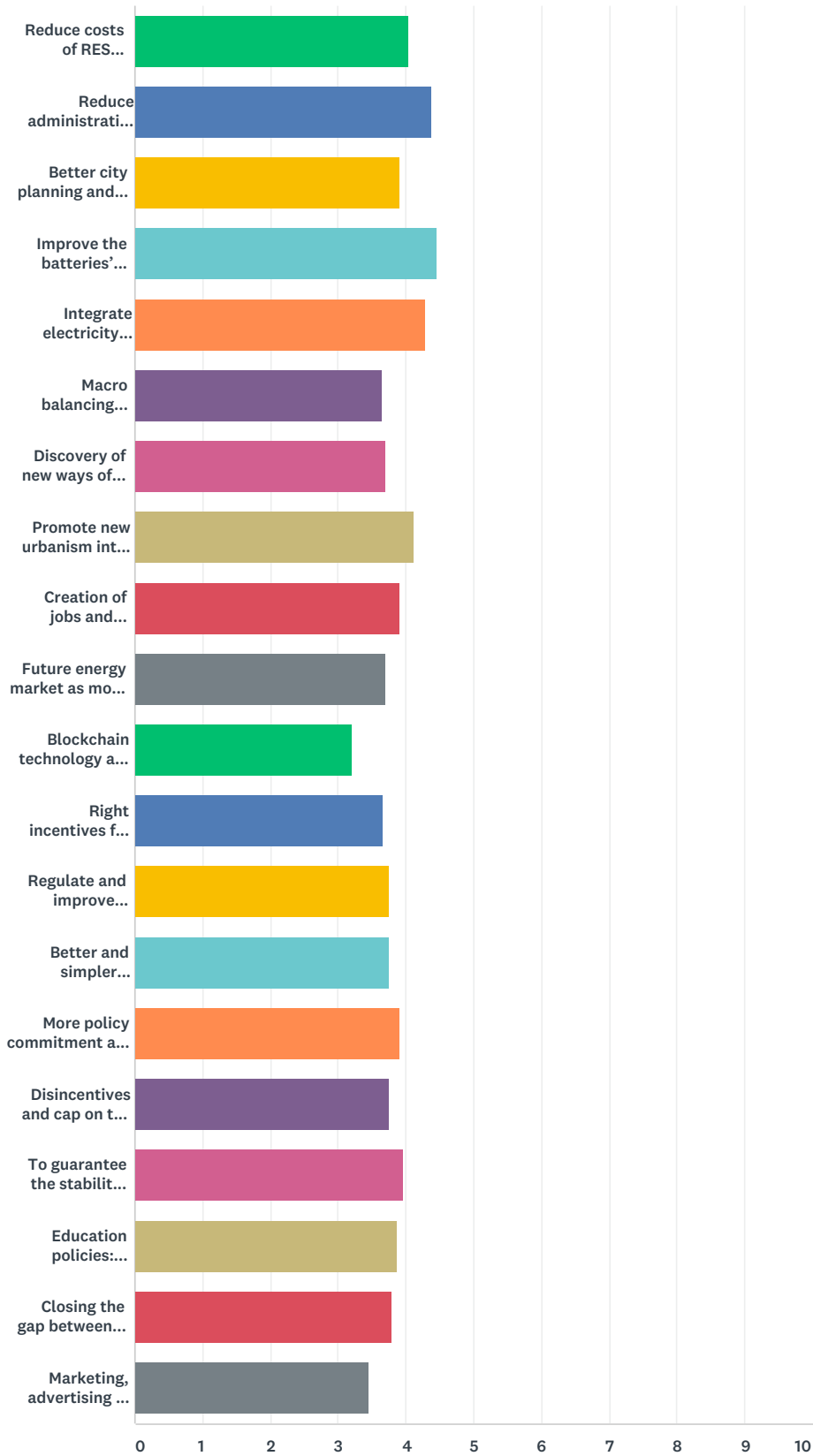Answered: 25   Skipped: 1

	2030	2050	TOTALE	MEDIA PONDERATA
Integrate different means of transport, information and data, payment methods – one pass for all mobility modes (public transport, bike sharing, car sharing, etc.)	92,00% 23	8,00% 2	25	1,08
Improve quality, reliability (with real-time information) and comfort of public transport and trains	92,00% 23	8,00% 2	25	1,08
Provide more information on different mobility options available and on full economic, social and environmental costs of each of them (externalities, robust technology evidence, market campaigns)	79,17% 19	20,83% 5	24	1,21
Simplify and extend the use of car-sharing	79,17% 19	20,83% 5	24	1,21
Developing shared bikes services in smaller cities	87,50% 21	12,50% 3	24	1,13
Implement higher taxes on more polluting fuels and vehicles (including on flights)	66,67% 16	33,33% 8	24	1,33
Implement higher parking rates	78,26% 18	21,74% 5	23	1,22
Provide subsidies for electric cars (including extended recharging infrastructure) and alternative fuels vehicles	79,17% 19	20,83% 5	24	1,21
Provide subsidies for the use of public transport	92,00% 23	8,00% 2	25	1,08
Implement free public transport days like the annual Car-Free Day, for instance once a week/month	83,33% 20	16,67% 4	24	1,17
Provide subsidies for electric bikes	78,26% 18	21,74% 5	23	1,22
Reward system for bicycle users, with a premium system in case of difficult conditions (e.g., taxi cheques in case of hard rain)	58,33% 14	41,67% 10	24	1,42
Implement lower road speed in cities	60,87% 14	39,13% 9	23	1,39
Develop car free zones in all cities	70,83% 17	29,17% 7	24	1,29
Limit car ownership (e.g., one car per family)	39,13% 9	60,87% 14	23	1,61
Implement a carbon quota per person	39,13% 9	60,87% 14	23	1,61
Improve cycling infrastructures and safety	88,00% 22	12,00% 3	25	1,12
Make traffic regulations more friendly for cyclists, e.g. possibility to turn right even when red light	70,83% 17	29,17% 7	24	1,29
Develop affordable or free Park&Ride for people living in more remote areas	91,67% 22	8,33% 2	24	1,08
Earmark parking space for carpooling	54,17% 13	45,83% 11	24	1,46
Promote more investment on sustainable transport modes	80,00% 20	20,00% 5	25	1,20
Promote mentality change from the side of citizens/users (also by changing the status symbol attached to car ownership)	68,00% 17	32,00% 8	25	1,32
Redesign and reorganise urban space: less private vehicles, free parking spaces should be reallocated as common space	62,50% 15	37,50% 9	24	1,38
Promote a new urbanism where the need for mobility is reduced: i.e. functional self-sufficient districts, and more teleworking	60,00% 15	40,00% 10	25	1,40

Regulate the introduction of autonomous cars	56,52% 13	43,48% 10	23	1,43

Q3 Please provide a score (1-5) on the importance of the actions below (1 as least important and 5 as most important)

Answered: 24   Skipped: 2

	1- NOT IMPORTANT	2- A LITTLE BIT IMPORTANT	3- SOMEWHAT IMPORTANT	4- QUITE IMPORTANT	5- EXTREMELY IMPORTANT	TOTALE	MEDIA PONDERA

Reduce costs of RES technologies	0,00% 0	4,35% 1	26,09% 6	30,43% 7	39,13% 9	23	4
Reduce administrative burdens – making installing PV systems as easy as buying an air conditioning unit	0,00% 0	0,00% 0	16,67% 4	29,17% 7	54,17% 13	24	4
Better city planning and new solutions/designs to include RES in historical centres e.g. RES for small places	0,00% 0	8,33% 2	16,67% 4	50,00% 12	25,00% 6	24	3
Improve the batteries' technologies and performance	0,00% 0	0,00% 0	12,50% 3	29,17% 7	58,33% 14	24	4
Integrate electricity with other sub-sectors (e.g. heating and cooling, transportation, passive houses): comprehensive strategy for balancing production and consumption	0,00% 0	4,17% 1	16,67% 4	25,00% 6	54,17% 13	24	4
Macro balancing between the individual production/selling of energy and the overall market system	0,00% 0	8,33% 2	37,50% 9	37,50% 9	16,67% 4	24	3
Discovery of new ways of producing energy, e.g. by supporting research on nature-based solutions	0,00% 0	8,33% 2	37,50% 9	29,17% 7	25,00% 6	24	3
Promote new urbanism into city planning: energy production systems as mandatory in all new buildings and regeneration projects	4,17% 1	4,17% 1	12,50% 3	33,33% 8	45,83% 11	24	4
Creation of jobs and consolidation of skills and knowledge related to installation of energy production systems as well as the energy services	0,00% 0	8,33% 2	20,83% 5	41,67% 10	29,17% 7	24	3

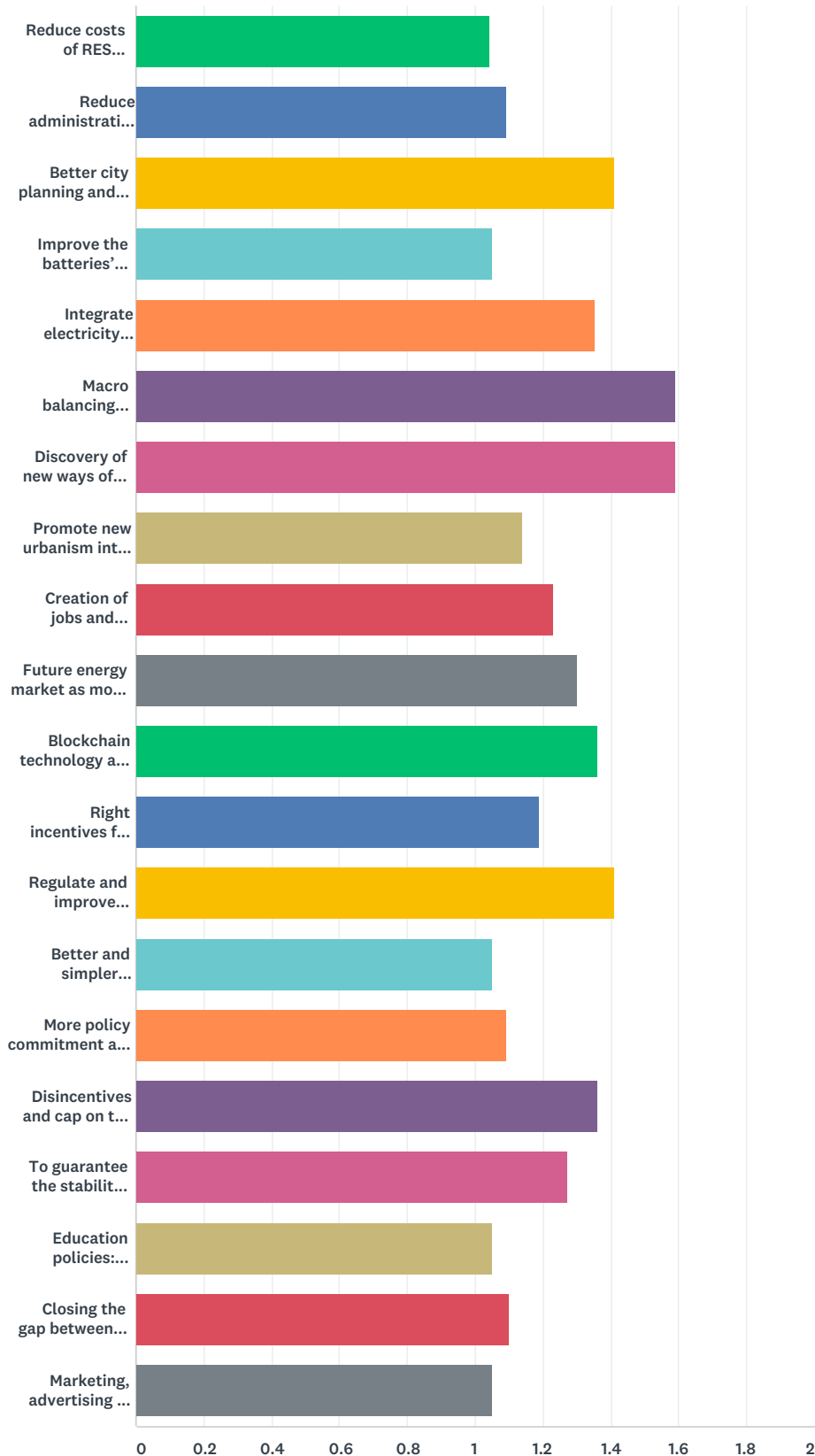|							
Future energy market as more transparent and diversified, a market-place with many actors and services, allowing citizens to buy, e.g., only energy produced by renewable energy sources	4,17% 1	20,83% 5	4,17% 1	41,67% 10	29,17% 7	24	3
Blockchain technology as a big opportunity to enable the energy trade, with all transactions being recorded on a shared ledger without needing a third party (energy utility) intervention	4,17% 1	25,00% 6	25,00% 6	37,50% 9	8,33% 2	24	3
Right incentives for the tenants of apartments to install solar panels or other devices, e.g. regulating the sharing of investment costs with the owners or conditional subsidies (e.g. by means of tax reductions for the owners renting apartments equipped with solar panels)	0,00% 0	16,67% 4	20,83% 5	41,67% 10	20,83% 5	24	3
Regulate and improve incentives for multi-apartment settings (e.g. condominiums), where the decision cannot be taken by a single household	0,00% 0	16,67% 4	20,83% 5	33,33% 8	29,17% 7	24	3
Better and simpler communication about the concrete way new energy installations can work and the benefits they can deliver	0,00% 0	13,04% 3	30,43% 7	26,09% 6	30,43% 7	23	3
More policy commitment and financial support scheme for producing energy at home	4,17% 1	4,17% 1	16,67% 4	45,83% 11	29,17% 7	24	3

Disincentives and cap on the use of fossil fuels in order to make them more expensive	4,17% 1	16,67% 4	20,83% 5	16,67% 4		41,67% 10	24	3
To guarantee the stability over time of the energy regulations and the financial mechanisms in order to ensure the citizens' investment viability	0,00% 0	8,70% 2	13,04% 3	52,17% 12		26,09% 6	23	3
Education policies: create 'hands on workshops' for children and adults on how to use technologies to produce energy at home	4,17% 1	8,33% 2	20,83% 5	29,17% 7		37,50% 9	24	3
Closing the gap between policy makers (EU/National), academia and citizens on energy and climate change (against misinformation and unreliable information)	4,17% 1	12,50% 3	25,00% 6	16,67% 4		41,67% 10	24	3
Marketing, advertising and information campaigns to make energy production more trendy, appealing, reliable and secured to all	8,33% 2	16,67% 4	16,67% 4	37,50% 9		20,83% 5	24	3

Q4 Please indicate the ideal timeframe of the actions below (2030 or 2050)

Answered: 24   Skipped: 2

	2030	2050	TOTALE	MEDIA PONDERATA

Reduce costs of RES technologies	95,65% 22	4,35% 1	23	1,04
Reduce administrative burdens – making installing PV systems as easy as buying an air conditioning unit	91,30% 21	8,70% 2	23	1,09
Better city planning and new solutions/designs to include RES in historical centres e.g. RES for small places	59,09% 13	40,91% 9	22	1,41
Improve the batteries' technologies and performance	95,45% 21	4,55% 1	22	1,05
Integrate electricity with other sub-sectors (e.g. heating and cooling, transportation, passive houses): comprehensive strategy for balancing production and consumption	65,22% 15	34,78% 8	23	1,35
Macro balancing between the individual production/selling of energy and the overall market system	40,91% 9	59,09% 13	22	1,59
Discovery of new ways of producing energy, e.g. by supporting research on nature-based solutions	40,91% 9	59,09% 13	22	1,59
Promote new urbanism into city planning: energy production systems as mandatory in all new buildings and regeneration projects	86,36% 19	13,64% 3	22	1,14
Creation of jobs and consolidation of skills and knowledge related to installation of energy production systems as well as the energy services	77,27% 17	22,73% 5	22	1,23
Future energy market as more transparent and diversified, a market-place with many actors and services, allowing citizens to buy, e.g., only energy produced by renewable energy sources	69,57% 16	30,43% 7	23	1,30
Blockchain technology as a big opportunity to enable the energy trade, with all transactions being recorded on a shared ledger without needing a third party (energy utility) intervention	63,64% 14	36,36% 8	22	1,36
Right incentives for the tenants of apartments to install solar panels or other devices, e.g. regulating the sharing of investment costs with the owners or conditional subsidies (e.g. by means of tax reductions for the owners renting apartments equipped with solar panels)	80,95% 17	19,05% 4	21	1,19
Regulate and improve incentives for multi-apartment settings (e.g. condominiums), where the decision cannot be taken by a single household	59,09% 13	40,91% 9	22	1,41
Better and simpler communication about the concrete way new energy installations can work and the benefits they can deliver	95,24% 20	4,76% 1	21	1,05
More policy commitment and financial support scheme for producing energy at home	90,91% 20	9,09% 2	22	1,09
Disincentives and cap on the use of fossil fuels in order to make them more expensive	63,64% 14	36,36% 8	22	1,36
To guarantee the stability over time of the energy regulations and the financial mechanisms in order to ensure the citizens' investment viability	72,73% 16	27,27% 6	22	1,27
Education policies: create 'hands on workshops' for children and adults on how to use technologies to produce energy at home	95,24% 20	4,76% 1	21	1,05
Closing the gap between policy makers (EU/National), academia and citizens on energy and climate change (against misinformation and unreliable information)	90,48% 19	9,52% 2	21	1,10
Marketing, advertising and information campaigns to make energy production more trendy, appealing, reliable and secured to all	95,24% 20	4,76% 1	21	1,05

Q5 Please provide a score (1-5) on the importance of the actions below (1 as least important and 5 as most important)

Answered: 25   Skipped: 1
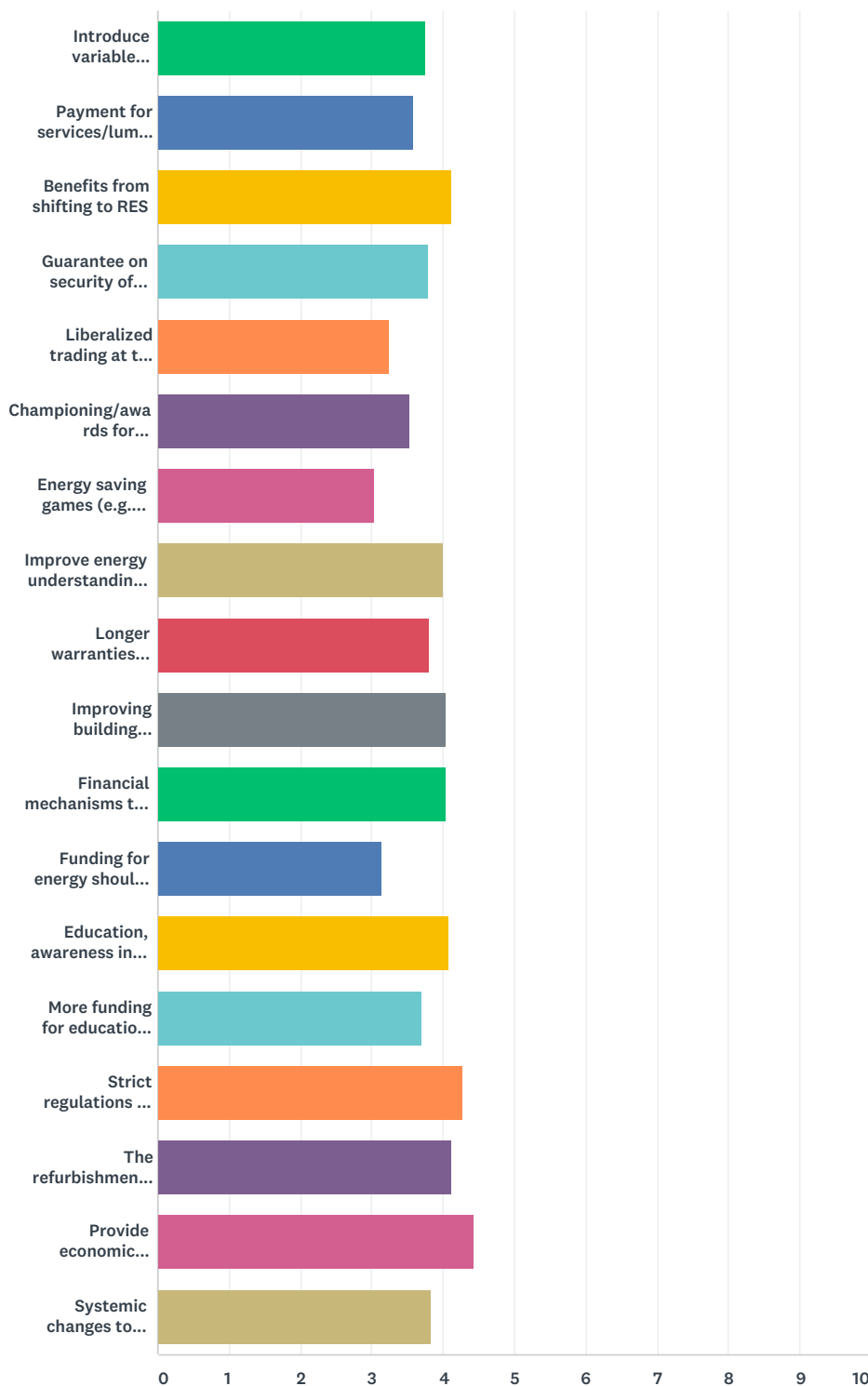
|	1- NOT IMPORTANT	2- A LITTLE BIT IMPORTANT	3- SOMEWHAT IMPORTANT	4- QUITE IMPORTANT	5- EXTREMELY IMPORTANT	TOTALE	MEDIA PONDE
Introduce variable tariffs	0,00% 0	0,00% 0	41,67% 10	41,67% 10	16,67% 4	24	
Payment for services/lump sum	4,17% 1	8,33% 2	29,17% 7	41,67% 10	16,67% 4	24	

Benefits from shifting to RES	4,17% 1	0,00% 0	16,67% 4	37,50% 9	41,67% 10	24
Guarantee on security of supply, with no loss of comfort and no interruption of service	4,17% 1	8,33% 2	20,83% 5	37,50% 9	29,17% 7	24
Liberalized trading at the consumer level, so that you can buy energy directly from your neighbour	16,67% 4	16,67% 4	8,33% 2	41,67% 10	16,67% 4	24
Championing/awards for virtuous behaviours	8,33% 2	12,50% 3	16,67% 4	41,67% 10	20,83% 5	24
Energy saving games (e.g. apps)	12,00% 3	20,00% 5	32,00% 8	24,00% 6	12,00% 3	25
Improve energy understanding and technological solutions. Advocacy around energy consumption and its costs (e.g., smart metering, home displays, apps with a visual display, consumption per device)	4,00% 1	12,00% 3	8,00% 2	32,00% 8	44,00% 11	25
Longer warranties against planned obsolescence to have longer lasting home appliances	4,00% 1	8,00% 2	28,00% 7	24,00% 6	36,00% 9	25
Improving building materials and providing targeted information and skills training on them	4,35% 1	0,00% 0	8,70% 2	60,87% 14	26,09% 6	23
Financial mechanisms to eradicate fuel poverty by providing upfront costs for the installation of PV systems, heat pumps, etc.	0,00% 0	8,70% 2	8,70% 2	52,17% 12	30,43% 7	23
Funding for energy should be based on taxes and not on bills (through tariffs)	12,50% 3	16,67% 4	25,00% 6	37,50% 9	8,33% 2	24
Education, awareness in programs, courses and training of schools and universities	0,00% 0	4,17% 1	20,83% 5	37,50% 9	37,50% 9	24
More funding for education programmes: carbon taxes or other levies on companies or on household fuel bills, or general taxation as directed towards energy education	8,33% 2	4,17% 1	20,83% 5	41,67% 10	25,00% 6	24

Strict regulations for new buildings – setting very high standards and requiring the implementation of all the technologies that are available on the market	0,00% 0	8,70% 2	8,70% 2	30,43% 7	52,17% 12	23
The refurbishment of buildings should happen and the minimum thresholds of energy efficiency for them should be increased more frequently, so to take into account new opportunities and advancements offered by technological progress	4,35% 1	4,35% 1	8,70% 2	39,13% 9	43,48% 10	23
Provide economic incentives to encourage citizens in making their energy consumption more efficient and effective	0,00% 0	0,00% 0	13,04% 3	30,43% 7	56,52% 13	23
Systemic changes to promote individual changes, e.g. renewable energies at the district level more than individual houses	4,35% 1	4,35% 1	26,09% 6	34,78% 8	30,43% 7	23

Q6 Please indicate the ideal timeframe of the actions below (2030 or 2050)

Answered: 24   Skipped: 2
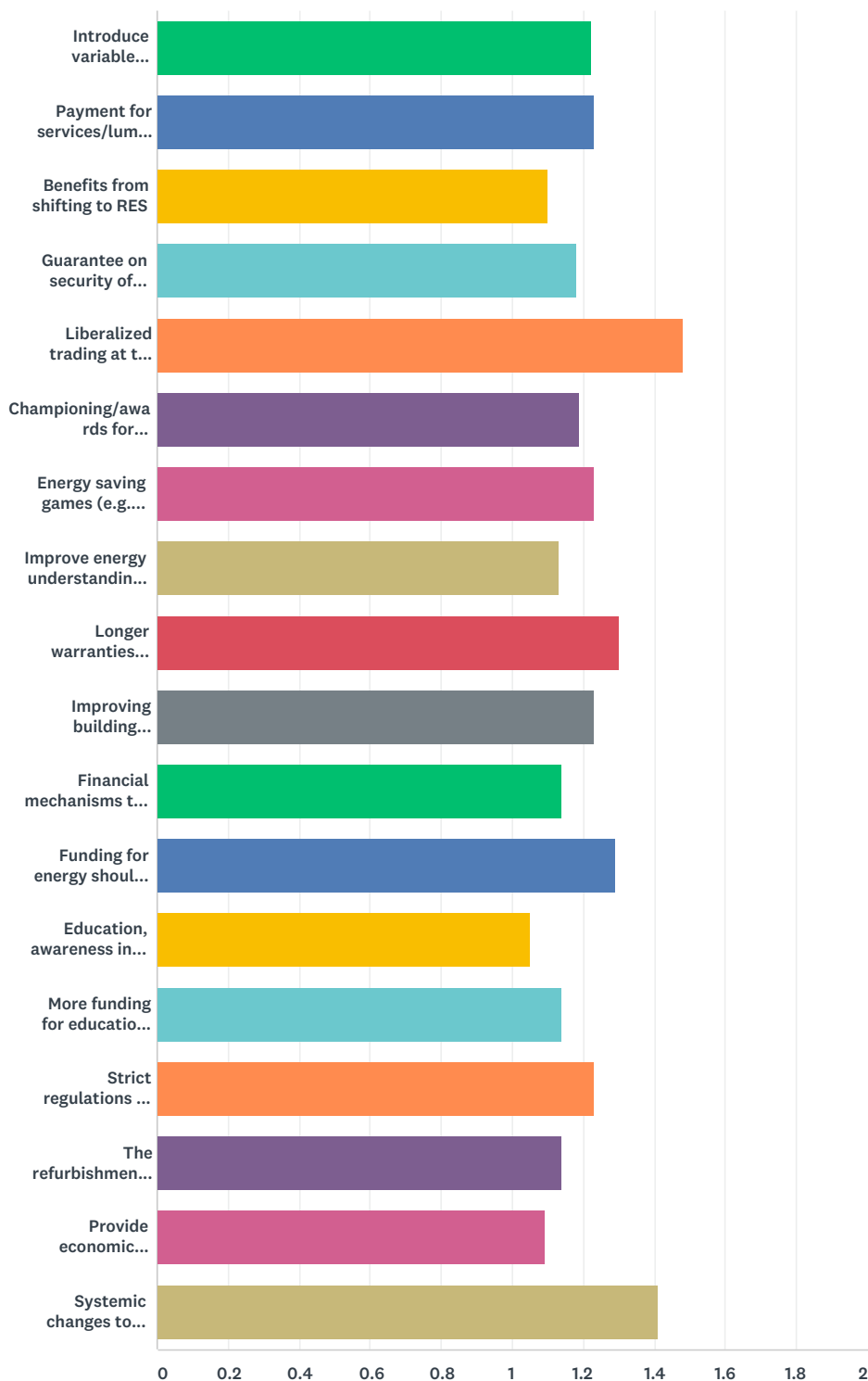
	2030	2050	TOTALE	MEDIA PONDERATA
Introduce variable tariffs	78,26% 18	21,74% 5	23	1,22
Payment for services/lump sum	77,27% 17	22,73% 5	22	1,23
Benefits from shifting to RES	90,48% 19	9,52% 2	21	1,10

Guarantee on security of supply, with no loss of comfort and no interruption of service	81,82% 18	18,18% 4	22	1,18
Liberalized trading at the consumer level, so that you can buy energy directly from your neighbour	52,38% 11	47,62% 10	21	1,48
Championing/awards for virtuous behaviours	80,95% 17	19,05% 4	21	1,19
Energy saving games (e.g. apps)	77,27% 17	22,73% 5	22	1,23
Improve energy understanding and technological solutions. Advocacy around energy consumption and its costs (e.g., smart metering, home displays, apps with a visual display, consumption per device)	86,96% 20	13,04% 3	23	1,13
Longer warranties against planned obsolescence to have longer lasting home appliances	69,57% 16	30,43% 7	23	1,30
Improving building materials and providing targeted information and skills training on them	77,27% 17	22,73% 5	22	1,23
Financial mechanisms to eradicate fuel poverty by providing upfront costs for the installation of PV systems, heat pumps, etc.	86,36% 19	13,64% 3	22	1,14
Funding for energy should be based on taxes and not on bills (through tariffs)	71,43% 15	28,57% 6	21	1,29
Education, awareness in programs, courses and training of schools and universities	95,24% 20	4,76% 1	21	1,05
More funding for education programmes: carbon taxes or other levies on companies or on household fuel bills, or general taxation as directed towards energy education	85,71% 18	14,29% 3	21	1,14
Strict regulations for new buildings – setting very high standards and requiring the implementation of all the technologies that are available on the market	77,27% 17	22,73% 5	22	1,23
The refurbishment of buildings should happen and the minimum thresholds of energy efficiency for them should be increased more frequently, so to take into account new opportunities and advancements offered by technological progress	85,71% 18	14,29% 3	21	1,14
Provide economic incentives to encourage citizens in making their energy consumption more efficient and effective	90,91% 20	9,09% 2	22	1,09
Systemic changes to promote individual changes, e.g. renewable energies at the district level more than individual houses	59,09% 13	40,91% 9	22	1,41