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Seeking shared success

Empowering consumers in the energy transition

Key messages

Through a joint collaboration, Eurelectric, Accenture and national associations representing the electricity industry in nine countries (Ireland, Norway, Netherlands, Italy, Spain, Portugal, Germany, Czech Republic and Poland) set out to understand what is holding back consumers from engaging in the energy transition, and what different players in the energy system can do to overcome these barriers. We sought the input from professionals across Europe, collecting existing expertise in the energy ecosystem and recognising differences between European countries.

1. The growing momentum among consumers offers opportunities for greater participation in the energy transition.
2. Proven and emerging energy and digital technologies hold enormous potential to offer consumers new services, better insights and more control.
3. Local communities can be powerful accelerators for the uptake of energy efficiency, renewable energy, demand response and electric vehicles (EVs).
4. Consumers are often confronted with a wide range of options when considering low-carbon measures. Yet there is a need for more insight into the real costs and benefits of these measures, particularly compared to consumers' current energy use and living situation.
5. Affordability of low-carbon solutions—whether EVs, solar photovoltaic (PV), batteries or heat pumps—is a key issue, especially for low-income households that might benefit the most from adopting them.
6. The growing role of technology in the home creates a wealth of data with huge potential for engaging consumers in the energy transition and for tailoring new services, but these benefits need to be balanced with protecting the safety and privacy of the individual. Consumers will need transparency about how their data is being used, with whom it is shared and the ability to make their own choices.
7. Energy suppliers and energy service providers can help overcome existing barriers by acting as trusted partners and intermediaries. Fulfilling this role requires that they monitor technology development to provide consumers with the most effective, relevant solutions.
8. Climate action is a group effort: energy suppliers and service providers must act as partners to accompany consumers in their journey of their own energy transition, as individuals and in the community, in collaboration with wider energy transition ecosystem.

Taking the pulse of consumer involvement in the energy transition

In recent years, the EU stepped up its efforts to address climate change and drive forward the energy transition. It played a leading role in developing the Paris Agreement commitments for reducing greenhouse gas (GHG) emissions. It adopted the "Clean Energy for all Europeans" package to facilitate the transition away from fossil fuels toward cleaner energy. It is currently considering revising upwards the 2030 and 2050 targets with the ultimate objective of making Europe a climate-neutral economy by 2050.

The Clean Energy package places consumers at the heart of the energy transition. Its provisions aim to give them more choice, better information and protection and the ability to produce and sell their own electricity, individually and collectively, should they wish to do so.

Many consumers are also eager to contribute to improving energy efficiency, increasing the share of renewable generation or making the shift to electric mobility. However, those consumers still encounter many real and perceived obstacles. Other consumers are still unaware or unclear about the benefits for their own wallet and comfort, as well as for the environment.

With this in mind, Eurelectric, Accenture and national associations (Electricity Association of Ireland, Energie Norway, Energie Netherlands, Elettricità Futura, AELEC, ElecPor, BDEW, CZSE, PKEE) representing the electricity industry in nine countries, set out to understand what is holding back consumers from engaging in the energy transition, and what different players in the energy system can do to overcome these obstacles.

Together, throughout 2019, we convened eight workshops in Ireland, Norway, Netherlands, Italy, Spain, Czech Republic, Germany and Poland. In these workshops, we brought together a diverse group of stakeholders, including representatives from nongovernmental organizations (NGOs) and consumer associations, electricity, automotive and technology companies, as well as policymakers and regulators. In each workshop, participants discussed barriers, opportunities and solutions for consumer involvement in three areas of focus: energy efficiency, renewable energy and demand-side flexibility, and e-mobility.

The workshops used interactive and creative design thinking methodologies to stimulate cross-pollination of innovative ideas. This enabled lively, informal exchanges among multi-disciplinary experts, and resulted in a constructive dialogue between stakeholders to uncover fresh, practical solutions for consumer empowerment at the local level.

This report summarizes the central insights from those workshops. We identify common trends and local differences across the nine countries, and highlight the issues that experts found most pressing for consumer involvement in the energy transition. These findings informed Eurelectric's "15 Pledges to Consumers: Together for a sustainable, inclusive and smart energy future."

Research methodology

The workshops used interactive and creative design thinking methodologies to foster innovative thinking and cross-pollination of ideas.

Design thinking refers to the adoption of human-centred design methods to solve problems, frame opportunities and achieve innovation. During the workshops we leveraged the following key principles of design thinking:

Human-centred.

Start with empathy and work to understand people through direct observation and research.

Creative and playful.

Reframe the problem, looking at it from different perspectives, considering many solutions.

Iterative.

Refine the problem definition and potential solutions based on feedback and testing, learning from early failures.

Prototype-driven.

Simple yet tangible representations of potential solutions allow early feedback.

Collaborative.

Teams with diverse perspectives co-creating to drive creativity, spark breakthroughs and innovate.

Insights

Key trends and areas of attention for consumer engagement

Workshop participants highlighted four common barriers and three common areas of opportunity for consumer participation in the energy transition across the nine countries.

Opportunities

Participating experts highlighted new technologies and the ability to build on existing community networks as important opportunities for accelerating consumer engagement.

Growing awareness and sense of urgency of action on climate change.

Workshop participants emphasised that the growing momentum among consumers offers opportunities for greater participation in the energy transition. They cited examples such as the student protests happening around the world and the growing number of consumers seeking to reduce their carbon footprint by eating less meat or travelling by train instead of flying. As consumers increasingly seek actions they themselves can take, there are new opportunities for providing energy advice and services to help them achieve their ambitions.

Technology is a key enabler for empowering consumers.

The workshops highlighted that proven and emerging energy and digital technologies hold enormous potential to offer consumers new services, better insights and more control. Smart meters are just the beginning. The proliferation of connected home devices—including home appliances, mobile and computer technology, heat pumps and EVs—radically increases the potential for managing residential energy use. The reasons are two-fold: 1) the size of the load that can be managed increases, simultaneously improving the business case and 2) each of the loads can be monitored and controlled in real time. Intermediaries can help consumers use the power of new technology to reduce hassle and costs while increasing control and gaining new revenues; for instance, from selling their own electricity.

- The power of technology can make new energy services very simple for consumers to use, even if the underlying functioning is extremely complex. Demand response is a case in point, as highlighted by participants in Germany and Norway. The technological and organisational complexity of providing demand-response services to the electricity balancing market is irrelevant for most consumers, as long as they can control the comfort levels in their homes and benefit from the impact on their energy bills.

- Energy suppliers and service providers have a critical role to play in designing easy-to-use services and offers, confirming a simple, intuitive demand-response experience.

Activating the community.

Participants agreed that local community organisations, such as sports clubs and community centres, can be powerful accelerators for the uptake of energy efficiency, renewable energy, demand response and EVs. Consumers are typically more likely to trust people they know, and hearing neighbours or friends talk about their experiences tends to be powerful. Members of a community can inspire and motivate each other toward action.

- Participants suggested that community organisations and local energy advisors can have a leading role in informing consumers about new energy solutions and encourage uptake by sharing experiences. Given their (physical) proximity to the consumer, energy suppliers can play a role in empowering energy communities.

Barriers

The abundance of choices, a lack of awareness, knowledge and information, as well as difficulty in accessing finance and data privacy concerns were mentioned in all countries as issues that are holding consumers back from engaging in the energy transition.

Too many choices.

Consumers are often confronted with a wide range of options when considering home insulation, renewable energy systems or an EV, without fully understanding the attributes of the offer. Our participants noted that navigating these choices can leave consumers confused and sometimes overwhelmed. Consumers want choice, but equally want to know which solution is best for them. They also want to be confident that they choose the most suitable solutions for their personal situation.

- Participants agreed that simplification of the range of offers available to consumers and personalisation of offers is needed. Personalisation can build on proven practices for common housing types and living situations (such as apartment buildings) to ensure efficient deployment of effective solutions.

Not enough information.

Accenture research indicates that many consumers show an interest in low-carbon solutions.[1] However, workshop participants agreed that adopting any of these services can feel like a big step into the unknown and can deter consumers from using them. They pointed to a need for better insight into the real costs and benefits of these activities, particularly compared to their current energy use and living situation.

- Participants in Rome, Prague, Warsaw and Dublin, among others, stressed the importance of creating better consumer awareness by trusted authorities, such as government, industry, employers, and social ambassadors. Ideally, this information is communicated through various channels to reach a broad audience.

Lack of financing options.

The experts we spoke to agreed that affordability of low-carbon solutions—whether EVs, solar PVs, batteries or heat pumps—is a key issue, especially for low-income households who might benefit the most from adopting them. They pointed out that banks and other financial institutions may be hesitant to provide loans for residential energy-efficiency or energy management solutions if they have insufficient incentives and information to judge expected payback of the technology investment. A better understanding of costs and benefits would also encourage consumers to adopt low-carbon solutions.

[1] Accenture (2017): New Energy Consumer: New Paths to Operating Agility. https://www.accenture.com.

- Participants in Amsterdam suggested that this uncertainty could be overcome via a valuation tool that assesses the financial viability of energy-efficiency investments. This tool would be validated by an independent authority and broadly accepted by banks and mortgage lenders. It would be available to financial institutions and consumers. The increased clarity about costs and benefits would reduce the investment risks of banks and increase financing availability for consumers, giving them more ways to act upon their sustainability ambitions.

- The workshops also highlighted the opportunity of activating communities to directly help each other by investing together; for instance, in joint renewable energy systems or mass procurement of individual measures. Peer-to-peer financing could help raise additional capital to invest in energy-efficiency measures; for example, by helping community members provide financing to other community members who want to install solar panels or increase the insulation of their homes but do not have the money to do so.

Uncertainty about data use and privacy.
The growing role of technology in the home creates a wealth of data with huge potential for engaging consumers in the energy transition and for tailoring new services. Moreover, the potential for a better consumer experience as well as the opportunities for more effective energy performance measures often rely on organisations being able to share data. For example, companies offering energy management solutions can offer more personalised, effective solutions if they have insight into existing consumption patterns from (smart) meter data. And network operators can better confirm sufficient network capacity for integrating e-mobility with information about charging patterns and planned charging point expansion.

While participants recognised these opportunities, they highlighted the importance of data security and privacy for providers and consumers. They referred to incidents involving the sharing of personal data without consent, data breaches and stricter regulations on the use and protection of personal data that have all made consumers more wary of sharing their data.

Experts emphasised the importance of balancing the benefits of access to data for personalisation and efficiency with protecting safety and privacy of the individual. Strict data protection should be considered in light of the maximum benefit to the consumer.

In all workshops, participants stressed the importance for consumers to have more transparency about how their data is being used and with whom it is shared without having to read lengthy terms and conditions. Consumers also want to be able to make their own choices; for instance, by being asked to opt in rather than opt out. Many also tend to prefer companies that are proactively committing to providing this transparency and control: the Accenture Interactive Consumer Pulse research found that 73% of consumers worldwide say they're willing to share more when brands are transparent, compared to 66% in 2018.[2]

Participants expressed their concerns that companies will be hesitant to use and share data for better customer experience and services, where there are no clear regulations or guidelines for how this is to be done, or that companies might be overly restrictive because of concerns about penalties related to GDPR and other regulations.

- The workshops suggested that further guidelines or regulations that set out practices for responsible use of data, such as ensuring transparency and traceability of use, can be an effective way of safeguarding consumer trust in new data-driven energy services.

[2] Accenture Interactive (2019): See people, not patterns, https://www.accenture.com.

Workshop deep dives

Workshop theme

Maximising energy efficiency in heating and cooling

Buildings are responsible for 40% of the EU's final energy consumption. Energy-efficiency improvements must accelerate if the EU is to meet its 2030 target of at least 32.5% overall improvement in energy efficiency. Measures to improve the energy performance of buildings have been introduced to achieve this target, and in turn will improve comfort and reduce living costs for consumers. The energy-efficiency target is likely to be revised with the announced increased ambition of the European Commission as part of the Green Deal.

Workshop participants agreed that energy efficiency and modernization of home heating and cooling—through heat pumps, for example—offer direct benefits to consumers and will be key to fighting energy poverty. Energy costs are optimised, and the home comfort levels increase. Yet they acknowledged that the adoption of residential energy efficiency at scale has proven difficult without the proper support. They identified three areas for additional action: raising awareness, helping consumers choose, and ensuring that energy-efficiency measures are financially accessible for all.

Raising the awareness and appreciation of energy-efficiency opportunities

Many consumers have little time to think about ways to save energy or improve their home heating and cooling, especially those consumers struggling to make ends meet.

- **National information campaigns** can help raise awareness of energy-efficiency opportunities among the general public. Energy suppliers can help raise awareness by offering comparison with other typical consumers on energy bills and combining this with advice for energy-saving measures.

Helping consumers explore and choose options

When consumers do have the opportunity to explore investments in efficiency, consumers often need to wade through myriad options and providers, with little to guide them toward choosing the most effective solution.

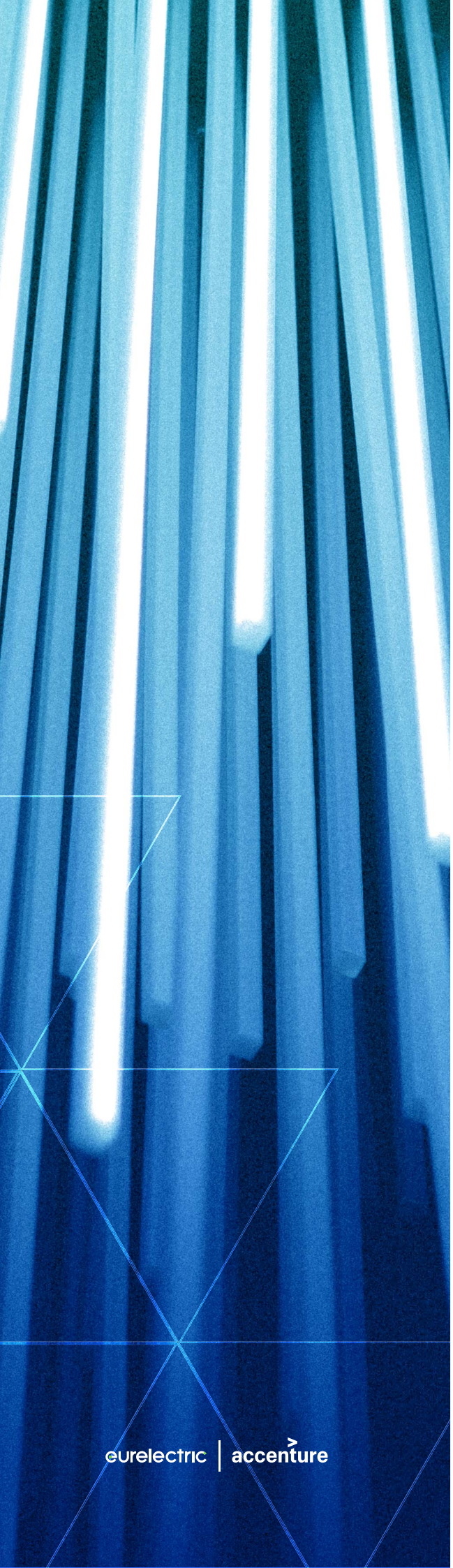
Restrictions in building codes and permit requirements can add to this complexity, as participants in Oslo highlighted.

Consumers will benefit from a set of simple solutions already pre-selected for their personal needs, the experts told us. This means offers that reflect the type of house they live in, the composition of their household and their living patterns. Participants in Madrid and Amsterdam suggested the use of short questionnaires, as well as the use of data as potential levers to help providers offer the most personalised advice.

- **Packaged solutions/bundled offers.** Consumers could buy a single packaged solution customised to their needs, including all necessary technology, installation, financing and, possibly, operation and maintenance. Such energy services business models, where the consumer owns and the company installs and operates the technology and recoups its costs by sharing in the savings, can also play a role in making energy efficiency easy and affordable for consumers. That is why participants in Prague stressed the importance of making such energy performance contracts available for households. To make these contracts work, it is important that regulation allows for long-term partnerships in which consumers have made an investment and commit to staying with the energy services supplier, while allowing for consumer choice and the ability to switch energy providers. The more standardised the elements of these packages, the easier it becomes to roll out energy-efficiency measures at scale. "Sustainable in a day" is an example of a service proposition ideated by the participants in Amsterdam that nicely captures the idea behind offering standardised packaged solutions that allow consumers to easily and readily adopt low-carbon solutions. The proposition would offer a complete package, including isolation, solar and EV, plus financing. All the measures would be implemented in a single day.
- **Choice in purchasing models.** It will be important to offer consumers choice in buying and implementing energy-efficiency measures that fit their situations. Alternatives to one-off investment like flat or subscription products, energy as a service and bundled products will allow consumers to connect products and services more easily and simply, and enable more consumers to access energy-efficiency measures.

Having a trusted intermediary that can help consumers make the best choices and connect them to the relevant companies involved in energy efficiency would help considerably. Next to professional advice from accredited energy services providers, peer-to-peer advocacy among consumers and sharing of experiences can be very powerful.

- **Initiatives that allow consumers to exchange experiences and share advice can play an important role.** These can include local community energy advisors, involving individuals who already have an existing relationship of trust with community members. It can also be effective to use existing community structures, such as sports clubs or local community centres, as pointed out by participants in Dublin.
- Participants in the Netherlands suggested **energy-saving competitions and awards can play a role in engaging consumers and encouraging them to share experiences and raise awareness.** In addition to recognising individuals and communities for significant achievements in energy efficiency, they also serve as leading-practice guidance. For example, gamification has been used in community groups or among students or colleagues to set joint challenges for saving energy. Similarly, a community-based app was suggested in Italy and Ireland as a good way for sharing experiences and tips.



Ensuring energy-efficiency measures are financially accessible for all

Energy-efficiency measures may be inaccessible for households unable to make the upfront investment, even if it would pay for itself relatively quickly.

This is particularly relevant for households in or close to energy poverty, who stand to benefit most from such initiatives.

- Participants agreed that there is a **need for more financing solutions that make energy-efficiency measures affordable for all—such as low-interest loans and green mortgages**, which can be paid back from savings on the energy bill, as is commonly done for packaged solutions. Property-based financing can be an attractive way to overcome the barrier that the homeowner may want to move before the measure has paid itself back, but this may require changes in regulation.

Workshop theme

Promoting renewable energy integration and demand response to improve people's lives due to lower GHG emissions and energy costs

The increased instability of the electricity grid resulting from a growing share of intermittent renewables creates a need for more flexibility to manage variability and volatility. Traditionally, (fossil-fuelled) power plants have been used to accommodate changes in supply and demand. As such conventional generation sources are progressively phased out, other solutions are needed to handle the variability of renewables.

Participants agreed that consumers can benefit from supporting the integration of renewable energy into the system through demand-response programmes. Such programmes allow them to adapt their electricity consumption to better match the demand for power with the supply in return for a (financial) reward. In addition to providing financial benefits, they can empower consumers to become engaged participants in the energy system, giving consumers who are so inclined control over their energy usage in real time. For consumers who do not want to spend time actively managing their energy use, this can be facilitated by digital technologies and managed on their behalf by intermediaries.

The workshops highlighted that participating in demand-response programmes can seem like a big step for many consumers, for multiple reasons: the complexity of the topic, the lack of financial incentives, the perceived effort of participating, and concerns about data privacy and security.

Helping consumers understand benefits and implications

Workshop participants stressed that demand response is a complex topic that requires clear, easy-to-understand communication.

The experts argued that it should be easy for consumers to choose the demand-response programme that best suits their needs.

- Making demand-response programmes attractive and accessible requires **clear communication of costs and benefits along with ease of opting in or out**. For instance, demand-response apps or home energy management systems that allow consumers to choose between the desired outcomes of home energy management—such as optimising for price, comfort or emissions—are easy to understand and use.

Creating meaningful financial incentives for participating in demand response

Workshop participants emphasised the lack of meaningful, understandable financial incentives for consumers to participate in demand response as a major barrier.

Flat tariff schemes, where consumers pay the same price regardless of the time of day, are still the default option in many European countries, including in Italy and the Netherlands, where the lack of incentives featured prominently in our discussions. Flat tariff schemes give no incentive for consumers to shift demand to off-peak times. Regulated tariffs that do not differentiate based on time have a similar restrictive effect.

Financial signals and benefits for consumers to participate in demand-response programmes are further weakened when a large share of the electricity price is made up of fixed costs (including taxes, levies and network tariffs). This means consumers or intermediaries acting on their behalf are not incentivised to adjust their consumption to the patterns of supply and demand in the system—even when technology ensures that this requires very little effort.

- Participants agreed that it is critical to ensure **clear, meaningful financial incentives for consumers through pricing that rewards shifting consumption away from peak times**. This means differentiating tariffs over the time of the day. The experts suggested that, ideally, the variation in tariff would reflect both the balance of supply and demand and existing constraints in the electricity network.

Simplifying participation in demand response

Many consumers want simplicity and stability.

When interested in participating in demand response, consumers appreciate the insight and control of their energy use, but they may not want to spend additional time managing it actively.

- The experts in the workshops pointed out that **technology can be used to lower the threshold for consumers to participate in demand-response programmes**. Everyday devices such as smartphones or digital assistants can deliver instant insight and control over one's energy production and use; for example, by managing when electrical devices in the home are switched on and off with simple set-and-forget solutions.
- Experts argued that **standardisation of the data exchange format and interface of home energy monitoring and control tools** are critical factors to facilitate the adoption of such technology solutions. This would ensure, for instance, that connected appliances (e.g., IoT-enabled heat pumps) can easily interact with existing systems in the house such as the home area network and the electricity meter.

Safeguarding responsible and secure use of (personal) data

The experts also discussed the importance of data privacy.

Effective demand-response programmes run on data about the state of the electricity network, market prices, and the energy demands of individual consumers and devices. Some of this data can be sensitive in nature, for instance, in showing the living patterns in a household.

- **Adoption of demand-response services raises the importance that companies keep consumer data secure** and avoid using and sharing the data in ways that may jeopardize their privacy. Regulations such as GDPR provide an important standard for this, but companies should also assess potential new or unforeseen data privacy or security issues when developing new services. Participants in Germany pointed out that clarity about responsible data practices is especially important for developing suitable models for cooperation and data exchange for demand response.

Workshop theme

Supporting adoption of electric vehicles

Electric mobility holds great potential for improving people's lives through cleaner air, less noise pollution and transport cost savings. E-mobility has taken large steps in recent years, with EVs a much more common sight on European roads. EV costs continue to decrease, and an increasing range of models is available. But more progress is needed, especially in building the necessary charging infrastructure for convenient mobility. Forty million EVs (battery EVs and plug-in hybrid EVs) need to hit the road by 2030 for the EU to be on track to meet its climate objectives.[3]

[3] Eurelectric (2019): EV public charging infrastructure factsheet, https://cdn.eurelectric.org.

The participants in our workshops agreed on the progress and potential of e-mobility, but also highlighted three barriers that need to be addressed: making EVs affordable for all, extending awareness of the benefits of electric driving, and expanding the availability of charging infrastructure.

Making EVs affordable for all

In all countries, workshop participants highlighted affordability as a key barrier to the uptake of EVs.

The average EV is still not within every consumer's reach. The number of available EV models is expected to jump from fewer than 100 to 175 by the end of 2020,[4] but with a typical price tag of upwards of €30.000, the majority will remain more expensive than petrol or diesel cars. Moreover, the second-hand market for EVs is still very small.

The main problem is in the high upfront capital cost, both for the car itself and for the home charging station, as the total lifetime cost of an EV is typically lower than for a conventional car.

- Workshop participants suggested various measures for overcoming the barriers of high capital costs. These included **offering cheap electricity for charging at night** (Norway) and **companies subsidizing EVs for low-income households to offset their own GHG emissions** (Germany).
- **Package deals that combine the vehicle and home charging station** can also be an attractive way of making EVs more affordable, especially when offered with a low-interest loan or leasing plan. Alternatively, various governments and municipalities have offered free installation of home charging stations and subsidies or tax benefits for EV purchase, but experts warned that this can place a heavy burden on public funds as adoption scales.

[4] "2020 set to be year of the electric car, say industry analysts," The Guardian, 25 December 2019, Factiva, Inc. All Rights Reserved.

Providing insights on the costs and benefits of e-mobility

Participants identified lack of awareness as an important barrier to the uptake of EVs.

Many consumers are still insufficiently aware of the benefits EVs could have for them. They may have concerns about the EV's performance or "range anxiety" about the distance they can drive on a single charge. Similarly, car dealers and repairers are often less familiar with EVs, limiting their ability to advise consumers considering purchasing one.

- Participants proposed that better information provision and awareness campaigns could be effective in this area; for instance, by sharing real examples on social platforms to show potential consumers the benefits of EVs. Experts in Ireland and Norway suggested that a finance calculator could show the benefits of using an EV for individual drivers or families, comparing typical EV use versus internal combustion engine (ICE) use. The calculator could show users what they can save per month (both in emissions and in actual fuel costs) based on their personal driving patterns. Such solutions can also include information about other benefits such as lower emissions, better air quality and lower maintenance costs.

Expanding the availability of charging infrastructure

Experts told us that concerns about the availability of charging infrastructure are also holding consumers back, especially in Southern and Eastern European countries (Spain, Italy, Czech Republic and Poland).

At home, consumers may have limited space for private charging infrastructure, especially when living in apartment buildings and in urban areas. The availability of public charging infrastructure may also be limited, especially in rural areas. And with few charging points present, they may be occupied by another vehicle, or blocked by a conventional car that has used the parking space. Experts in Prague also mentioned the lack of harmonised charging systems across Europe, making it cumbersome for EV drivers to charge when travelling across borders. They pointed to the importance of cooperation between EV and charging providers, policymakers and regulators to work towards harmonising standards for charging infrastructure and coordinating the management of charging services (e.g., with a single database of locations and billing methods).

- The workshops suggested that the expansion of charging infrastructure can be accelerated through **partnerships with construction companies** (for installation at new housing developments) **and malls and retail outlets** (offering discounted or free charging to attract customers).
- They also pointed to an opportunity for expansion and improvement of **integrated charging platforms that give insight into location and availability of charging points and facilitate charging across all providers**.
- The ongoing **revision of the Alternative Fuels Infrastructure Directive** was also considered as an opportunity to accelerate the deployment of charging infrastructure.

Conclusion

Conclusion

Consumers and communities are at the heart of the energy transition, and they are ready to engage. Our discussions with experts across Europe have confirmed this opportunity but have also made it clear that barriers continue to exist related to regulation, financing, awareness and trust. Equally, these discussions have shown us many inspiring examples and innovative ideas for empowering consumers to take an active role.

Experts in the energy ecosystem across Europe believe that energy suppliers and energy service providers can help overcome existing barriers by acting as trusted partners and intermediaries. These intermediaries ensure consumers have choices and are offered personal advice and services tailored to their individual situations. They serve as sources of trustworthy, up-to-date information about technologies and services and their associated costs and benefits. And they coordinate and streamline access to providers and installers of the solutions, facilitate access to financing by cooperating with banks and other financial providers.

Experts see technology as a critical enabler for simple, personalised and hassle-free services. Everyday devices offer familiar interfaces for consumers to manage their energy consumption, while data platforms and analytics can coordinate and optimise the complex systems behind the interface. A wealth of new data offers significant opportunities for engaging consumers as well as managing the electricity system.

Workshop participants emphasised that energy suppliers and energy service providers must monitor technology development to be able to provide consumers with the most effective, relevant solutions. They stressed that technology applications must be designed to reduce and not increase complexity, and should be easy and intuitive to use for all consumers. And they noted the importance of giving consumers influence and control over applications of technology and use of data, practicing transparency to safeguard consumer trust.

Climate action is a team effort. Experts emphasised the role energy suppliers and service providers play as partners rather than just as providers. This means accompanying consumers on their own energy transition journey, as individuals and in the community. This further implies collaboration between all players in the wider energy transition ecosystem—including businesses, policymakers, academia, consumer associations and NGOs—to remove existing barriers, reduce complexity and elevate opportunities for all.

Appendix

Overview of country workshops

Date	Location	Host Organization
22 March 2019	Dublin, Ireland	Electricity Association of Ireland
28 May 2019	Oslo, Norway	Energi Norge
2 June 2019	Amsterdam, Netherlands	Energie Nederland
2 July 2019	Rome, Italy	Elettricità Futura
9 July 2019	Madrid, Spain	Aelec and ELECPOR
10 September 2019	Prague, Czech Republic	ČSZE
18 October 2019	Frankfurt, Germany	BDEW
7 November 2019	Warsaw, Poland	PKEE

Dublin

Workshop key takeaways

Dublin

Introduction

Participants in the Dublin workshop identified three key priorities to be addressed to ensure effective consumer engagement:

1. Identify the relevant actors at each level (national, regional and local) and use existing networks to engage, educate and exchange experience.
2. Spend more resources at the local level and tailor solutions to the local context (role of local authorities, local experts).
3. Develop a partnership model, involving different parties to make solutions more effective.

Key barriers and opportunities

	Opportunities	Barriers
Energy efficiency	• Development of new technology products • Energy-efficiency obligation schemes • Participation of communities	• Lack of financial trusted advisors • High costs of renovation processes and upfront costs • Landlord/tenant dilemma
Renewables integration and demand response	• Regulation and policy: integration with spatial planning/housing standards • Potential new revenues for consumers	• Lack of technical understanding • Fuel poverty • Trust related to data privacy
E-mobility	• EVs are cheaper to run than ICE • Benefits for health • Comfort to drive	• Development of microgrid and smart-home solutions for EVs required • Limited knowledge of consumers and car dealers
Overall considerations	• Growing social and political awareness of climate change and consensus on the need to act	• Lack of consumer knowledge and information on the energy sector • High upfront costs • Inertia; i.e., people resistant to change

Challenges: How might we...?

Energy efficiency

- How might we support consumers trading up to manage the end-to-end process of a retrofit?
- How might we support suppliers to scale a "trusted advisor" service across financial, architectural and technical domains?
- How might we support first-time buyers or low-income consumers to get access to finance for energy-efficiency products?
- How might we support socially aware consumers in progressing energy-efficiency targets?

Renewables integration and demand response

- How might we support residential rural consumers to incentivise participation in community energy schemes with individual and collective ownership?
- How might we support elderly residents in towns to avoid complexity of/simplify utility offerings?
- How might we support a low-income single parent living in a city to avoid energy/fuel poverty?
- How might we support a busy family to minimise privacy and security risks and build trust?

E-mobility

- How might we support people who spend more than 20% of their income on fuel to understand tangible benefits of e-mobility?
- How might we support car commuters to encourage them to embrace e-mobility solutions?
- How might we support rural communities to participate in microgrids?
- How might we support the 25 to 50 year-old age group to make informed decisions when purchasing an EV?

Key solutions identified

Energy efficiency

- Encourage partnerships with local actors and structures, taking into account local specificities.
- Develop simple-to-use software technologies and services.
- Develop innovative financing schemes (feed-in tariffs, 0% financing for heat pumps).

Renewables integration and demand response

- Share experience within and between communities (peer to peer), and leverage existing community networks.
- Leverage existing support/social services to raise awareness and provide support for people in fuel poverty.
- Run campaigns to raise awareness of data privacy.

E-mobility

- Promote low-interest loans to finance EVs.
- Give incentives for installing bi-directional chargers and schemes for feeding energy back to the grid.
- Develop consumer awareness on the impacts of EVs at local level through social media.
- Develop a platform to trace and compare typical EV use versus ICE use and to allow EV carpooling and car sharing.

Oslo

Workshop key takeaways

Oslo

Introduction

Participants in the Oslo workshop identified three horizontal priorities to be addressed to ensure effective consumer engagement:

1. High upfront costs.
2. Low level of consumer interest and knowledge.
3. Grid constraints.

Key barriers and opportunities

	Opportunities	Barriers
Energy efficiency	• IoT makes it possible to use energy only when consumers need it • Energy efficiency is a consensual subject (as opposed to e.g., windmills -> high conflict levels)	• Consumers don't know how to lower their consumption • High investment costs; e.g., to insulate homes and/or buy heat pumps
Renewables integration and demand response	• Create added value (product differentiation) • Promising area thanks to big data/AI/machine learning/IoT	• Lack of knowledge of consumers • High costs to develop the necessary infrastructure
E-mobility	• Possibility to provide carrots instead of sticks to increase EV adoption • EVs have a lot of unexplored technological potential	• Grid constraints • EVs are not yet as easy to use as fuel vehicles (slow charging, lack of charging infrastructure)

Challenges: How might we...?

Energy efficiency

- How might we help households reduce their energy costs?
- How might we help households contribute to a conflict-free energy system?
- How might we help consumers understand that their energy-efficiency efforts matter?
- How might we help businesses invent new business models by taking advantage of IoT?

Renewables integration and demand response

- How might we (help the regulators) reduce the cost of infrastructure development for consumers?
- How might we help families better understand and control their energy consumption?
- How might we help consumers take advantage of IoT/big data and feel safe at home, while saving costs for them and for society?
- How might we create simple products in order to reap the benefits of demand response and reduce grid costs for society?

E-mobility

- How might we enable households to utilise the technological opportunities of EVs?
- How might we provide incentives instead of sanctions to make families choose electric transportation?
- How might we help rural consumers adopt EVs?
- How might we ensure that the electric grid is sufficient for a fully electric transport sector?

Key solutions identified

Energy efficiency

- White certificates/saving obligations (ENOVA): create energy-efficiency incentives for those parties with the know-how and tools to do so.
- Comfort and functionality as a service: a different way to sell energy—more telling to people.
- Use grid tariffs to change behaviour: "time of use" is easier to understand for consumers than dynamic tariffs.
- Energy-efficiency advisors: advisors to every household financed by ENOVA.
- Develop an app comparing consumers' individual energy consumption to the average national consumption, highlighting what can be done to lower energy use.

Renewables integration and demand response

- Standard data format interface—standard metering data and standard data access/analytics will open for new market actors and products that can improve demand response for consumers; e.g., allowing consumer to share data in exchange for smart services.
- Make it easy for households to set criteria for demand response; e.g., price, comfort, climate.
- Promote a free market for demand-response services.

E-mobility

- Increase share of EVs in public transportation through targeted public procurement and intensified R&D.
- Make "time of use" easily understandable for consumers—use simple language.
- A car-sharing concept where EVs are bought and made available for public employees during the day and accessible to everyone else outside working hours.

Amsterdam

Workshop key takeaways

Amsterdam

Introduction

Participants in the Amsterdam workshop identified two key priorities to be addressed to ensure effective consumer engagement:

1. Act at local level to promote energy-efficiency initiatives, particularly through collective homeowners (VVE).
2. Encourage a real simplification and transparency of procedures for consumers for the installation and financing of energy equipments and technologies.

Key barriers and opportunities

	Opportunities	Barriers
Energy efficiency	• Digitalisation as a tool of the energy transition • Growing understanding of consumer needs and values • Impact on comfort and flexibility of use	• High investment cost and lack of financing • Too much hassle of implementing energy-efficiency measures in the home • Complexity of market and solutions • Instability of the regulatory framework
Demand response and e-mobility	• Economic savings • Positive impact on the environment • Network planning	• Instability of the regulatory framework on flexibility • Limited flexibility for EV users (range anxiety and lack of infrastructures) • High cost of investment

Challenges: How might we...?

Energy efficiency

- How might we streamline the process of finding information, choosing/purchasing, and implementing energy-efficiency measures?
- How might we encourage VVE's (collective homeowners' association) to take part in energy-efficiency schemes?
- How might we access capital by demonstrating financial return (with an insightful independent tool)?
- How might we engage others in their community to follow their example?

Demand response and e-mobility

- How might we help middle-income consumers with low engagement in energy but open for change have access to total solutions that are simple, financially appealing and address their basic needs?
- How might we engage the masses in EV and flexibility to save money and energy?
- How might we help the average consumer realize the financial benefits from flexibility while keeping comfort or even improving comfort?

Key solutions identified

Energy efficiency

- Create a yearly VVE award (collective homeowners) to promote energy efficiency among VVEs across the country. It would provide recognition to households who are leading in implementing energy-efficiency measures and raise awareness about what is possible to do and share leading practices.
- Develop software—accepted by banks—to assess the financial viability of energy-efficiency investments. This would reduce investment risks for banks and increase financing options for consumers. As a result, banks could start promoting energy efficiency proactively, through efforts such as green mortgages.

Demand response and e-mobility

- Launch a "sustainable in a day" initiative: this would be a complete package, including e.g., isolation, solar and EV charging point, which would be installed at a consumer premise in a single day.

Rome

Workshop key takeaways

Rome

Introduction

Participants in the Rome workshop identified two key priorities to be addressed to ensure effective consumer engagement:

1. Simplify access to support schemes and incentives available for energy efficiency and e-mobility and simplify demand-response offers.
2. Launch information campaigns to let consumers know about the options available for energy efficiency, e-mobility and renewables and their benefits for the environment and their wallet.

Key barriers and opportunities

	Opportunities	Barriers
Energy efficiency	• Financial saving on energy consumption to be reinvested on other family expenses; leveraging new business models and innovative financing schemes will increase innovation and competition • Opportunity to increase comfort while giving insights into cost savings, consumption reduction and CO_2 emissions	• Low level of interest and knowledge and resistance to change • Current offers are very invasive and often expensive with a business case not sufficiently attractive for homeowners
Renewables integration and demand response	• Ability to leverage "everyday" devices such as smartphones to create greater integration between devices and enable energy management • Promote awareness tools and institutional communication • Value for managing network loads and increasing system flexibility	• Consumer understanding: unclear cost/benefit analysis for individual consumers • Lack of information and awareness about available incentives • Complexity: inelastic energy demand and non-linear consumption costs
E-mobility	• Environmental impact: emissions reduction and reduced noise pollution, increased energy efficiency • Network integration: participation of EVs in demand-response programmes/services, active consumer participation to electricity demand, V2X communication	• High purchase costs (EV + charging infrastructure) on top of running energy costs • Public infrastructure: regulatory constraints for charging infrastructure installation, issues with non-compatibility and scarcity of available public charging points, EV-dedicated parking places often occupied by non-EVs, etc.

Challenges: How might we...?

Energy efficiency

- How might we effectively leverage traditional and social media to promote energy-efficiency benefits?
- How might we identify new benefits to make energy-efficiency offerings more appealing and to make energy-efficiency solutions adoption go "viral"?
- How might we simplify the access to incentives that today are over-engineered and difficult to understand for the majority of residential consumers?
- How might we support consumers towards a need that in most cases they do not feel (or do not perceive) as relevant?

Renewables integration and demand response

- How might we create a greater interest in changing consumer behaviour to provide flexibility services?
- How might we increase (and communicate) benefits to end users?
- How might we simplify tariff structure and provide price signals that encourage and reward demand response?
- How might we help integrate demand response in the electricity system?

E-mobility

- How might we promote the environmental benefits linked to EV adoption?
- How might we highlight that despite the higher upfront costs, the total EV running costs are much lower than those of traditional combustion vehicles?
- How might we prevent non-EVs from occupying EV dedicated parking lots?
- How might we encourage EV drivers to provide and benefit from flexibility services to the system?

Key solutions identified

Energy efficiency

- Simplify options available for incentives and financing schemes.
- Develop partnerships between energy-efficiency service providers and actors having trust from consumers.
- Create mobile apps and other exchange tools to promote energy-saving behaviours among consumers such as peer comparison among individual households or condominiums.

Renewables integration and demand response

- Create an ecosystem of players from different industries to enable energy-as-a-service offerings.
- Develop smart IoT devices and apps, foster 5G and other enabling digital infrastructures for remote control.

E-mobility

- Provide tax benefits reflecting environmental benefits of EVs compared to traditional ICE.
- Develop an app to create consumer awareness of emission reduction coming from EVs.
- Educate car dealers and technicians about EVs and their benefit including reskilling to reduce cultural barriers among car salespeople.
- Enable peer-to-peer charging infrastructure; e.g., communities of users sharing their charging points, also leveraging renewables assets.
- Update traffic regulation; e.g., introduce possibility to fine non-EVs parked on dedicated EVs-parking/charging; create an app to notify the police when parking spots are improperly occupied, etc.

Madrid

Workshop key takeaways

Madrid

Introduction

Participants in the Madrid workshop covered both Spain and Portugal. They identified three key priorities to be addressed to ensure effective consumer engagement:

1. Ensure consumers have easy access to their data to allow them to better manage consumption.
2. Allow for clear, simple and fast financing procedures for households.
3. Work with public authorities to encourage the take up of EVs, particularly through taxation regime.

Key barriers and opportunities

	Opportunities	Barriers
Energy efficiency	• Possibility to make economic savings • Contribution to the environment • Digitalisation	• Lack of technical knowledge about efficiency • Lack of financial trusted advisors • High costs of renovations processes and upfront costs
Renewables integration and demand response	• Savings on the invoice • Foster the role of consumers in the energy transition	• Regulatory instability • Technology costs and access to financing • Disinformation by some of the operators
E-mobility	• Economic savings • Improving air quality • Network planning	• Price of the vehicle • Lack of information • Lack of charging points

Challenges: How might we...?

Energy efficiency

- How might we help consumers better manage their energy consumption?
- How might we help consumers bear the upfront costs of energy efficiency and facilitate access to financing?
- How might we make consumers more aware of the savings potential and improve comfort?

Renewables integration and demand response

- How might we help an average family learn about the opportunities offered by demand-side management?
- How might we help an average family bear the upfront technology costs?
- How might we help an average family manage its energy consumption more actively?

E-mobility

- How might we help consumers be well informed about e-mobility?
- How might we make EV price more affordable?
- How might we help consumers calculate the life-cycle savings to be made by moving to e-mobility?
- How might we foster drivers' commitment to the environment?

Key solutions identified

Energy efficiency

- Ensure all consumers have access to a single point of contact which can inform them about support schemes and financing options available and enable simpler, more transparent and quicker administrative procedures.

Renewables integration and demand response

- Guarantee the possibility for all consumers to use their personal and consumption data for several energy applications: billing, comparison tools, home automation.

E-mobility

- Advocate for a legislative proposal defining a new regulatory and financial framework encouraging the use of e-mobility, particularly by defining a new taxation regime for decarbonised transport.

Prague

Workshop key takeaways

Prague

Introduction

Participants in the Prague workshop identified three key priorities to be addressed to ensure effective consumer engagement:

1. Ensure simplicity and transparency in energy-efficiency processes.
2. Promote renewables and their benefits.
3. Speed up deployment of charging infrastructure and improve convenience of charging experience with EVs.

Key barriers and opportunities

	Opportunities	Barriers
Energy efficiency	• Possibility to make economic savings • Energy-efficiency measures provide long-term comfort and increase property value	• Complexity of energy-efficiency topics • Lack of offers by service providers • High upfront costs, with a long-term return of investment
Renewables integration and demand response	• Potential savings • Growing consumer awareness on the benefits of renewables • Important share of homeowners in Czech Republic • Upcoming new national legislation, including obligation to offer dynamic contracts	• Complexity of demand-response solutions • Lack of political support to renewables development • Inadequate grid infrastructure to integrate renewables in the system • Low willingness of consumers to enter community projects
E-mobility	• Lower operating costs than ICE and economic savings • Incentives and tax benefits for the purchase of EV/charging stations • Improving battery technologies (larger range and shorter charging times)	• Lack of charging infrastructures • High purchase price • Limited number of EV models available

Challenges: How might we...?

Energy efficiency

- How might we make energy-efficiency technologies more accessible to citizens?
- How might we increase availability of financial support for households so they can invest in energy efficiency?
- How might we support tenants in setting up energy-efficiency measures and help them lower their energy costs?

Renewables integration and demand response

- How might we improve knowledge and trust in renewables and smart solutions?
- How might we ensure a positive business case for market actors offering demand-side response contracts?
- How might we simplify the use of demand-side response solutions for the consumer?
- How might we limit uncertainty in the legal framework applicable to demand-side response?

E-mobility

- How might we lower purchase price of EVs?
- How might we increase the range of EV batteries?
- How might we support the development of EV technologies and services?
- How might we facilitate the integration of EVs within cities and municipalities?

Key solutions identified

Energy efficiency

- Set up an energy-efficiency government agency providing both advice to households and access to financing for accredited service providers, so they can offer energy performance contracting to households.
- Develop a "comparison tool," allowing consumers to evaluate the energy used in their flat and compare it with the consumption of similar flats.

Renewables integration and demand response

- Launch a media campaign, with the participation of a national celebrity, to improve the image of renewable sources.
- Increase the availability of renewables and demand-side response technologies through bundled offers.

E-mobility

- Set-up an EV-sharing service in municipalities.
- Develop a battery-changing service via pit stop, allowing a quick change of battery all along the roads. Batteries would be charged at pit stops by renewable or nuclear electricity to provide environmentally sustainable solution.

Frankfurt

Workshop key takeaways

Frankfurt

Introduction

Participants in the Frankfurt workshop identified three key priorities to be addressed to ensure effective consumer engagement:

1. Work on financing options for consumers as the technologies needed for the transition have high upfront costs.
2. Reduce complexity of offers and services. Simplicity and convenience are key for consumers.
3. Create partnerships between stakeholders to foster cooperation and together develop interesting solutions for consumers.

Key barriers and opportunities

	Opportunities	Barriers
Energy efficiency	• Important savings potential • Increasing consumer awareness about energy efficiency and openness to collaboration	• Lack of consumer knowledge and understanding • Products/services are often too complex
Renewables integration and demand response	• Interesting business opportunities with energy management services and grid optimisation • Regulatory incentives to promote sustainable investments • High potential of demand-response services in supporting the energy transition (integration of renewables, EVs, etc.)	• Lack of consumer understanding of flexibility products and services • Technological/economic uncertainty with changing rules and support schemes • Complex business environment with different industries involved (housing, energy, grid, etc.)
E-mobility	• Reduction of air and noise pollution • Increase in self-sufficiency when coupled with renewables and demand-response services • Monetary savings and shift to sustainable behaviour • Potential for increased connectivity	• Not yet a convenient alternative (lack of infrastructure, high prices of EVs) • Lack of information and uncertainty linked to the novelty of the technology • Lack of appropriate regulation (weak incentives, lack of infrastructure, no national targets)

Challenges: How might we...?

Energy efficiency

- How might we help reduce the complexity of energy-efficiency services and offer consumers financial predictability?
- How might we establish an ecosystem of technicians and business partners to foster collaboration instead of existing top-down organisation?
- How might we earn money as businesses while serving our customers?

Renewables integration and demand response

- How might we help bring affordable and sustainable products and services to residential consumers in general?
- How might we help bring affordable and sustainable products and services to home owners?
- How might we bring affordable and sustainable products and services to tenants?

E-mobility

- How might we make the benefits of e-mobility more tangible to consumers and society?
- How might we make e-mobility cheaper?
- How might we make charging time more attractive?

Key solutions identified

Energy efficiency

- Form partnerships to foster cooperation with technicians.
- Work on financing options for consumers whether public funding, private funding or consumer incentives.
- Offer bundles to simplify services (e.g., electricity together with hardware and maintenance).
- Improve interface and help consumers visualise consumption data.

Renewables integration and demand response

- Develop neighbourhood flexibility concepts and strengthen local community approaches; e.g., central market clearing within community.
- Work on financing options for consumers such as tax benefits or dedicated funding for smart homes, batteries and solar PV.
- Offer a "one-stop shop"/call center for energy management advice.
- Develop solutions for sharing EVs or PV panels for low-cost housing.

E-mobility

- Promote 0% interest loans for EVs and reduce taxes in final electricity prices.
- Develop incentives such as special EV lanes or free parking spaces for EVs.
- Promote e-buses, e-taxis, e-car sharing and increase EV fleets for rental agencies.

Warsaw

Workshop key takeaways

Warsaw

Introduction

Participants in the Warsaw workshop identified two key priorities to be addressed to ensure effective consumer engagement:

1. Tackle the information issues by launching a media campaign on the benefits for consumers and society of energy efficiency and e-mobility.
2. Make sure vulnerable consumers directly benefit from the energy transition by designing special offers and business models adapted to their needs.

Key barriers and opportunities

	Opportunities	Barriers
Energy efficiency	• Possibility to make economic savings • Increased comfort and quality of life • Possibility to benefit from renovation financing schemes • Positive impact on the environment	• Cost of investments and lack of information on support mechanisms • Lack of knowledge and awareness on energy-efficiency technologies • Lack of district heating infrastructures • Lack of interest from consumers
Renewables integration and demand response	• Increased energy security • Savings on electricity bills • Possibility to earn money by becoming prosumers	• Lack of trust in offers and operators • Lack of knowledge and awareness • Complexity of regulatory framework
E-mobility	• Increased energy efficiency through EV storage • Possibility to benefit from privileges (free parking, access to city centre, etc.) • Positive impact on air quality	• Lack of charging infrastructures • Range anxiety • Lack of EV models on the market

Challenges: How might we...?

Energy efficiency

- How might we help owners of single-family house have access to relevant information about energy-efficiency support mechanisms?
- How might we help seniors engage in energy efficiency and thus increase comfort and make savings on their bills?
- How might we increase the involvement of young people in energy efficiency?
- How might we help improve quality of life through communities and cooperatives?

Renewables integration and demand response

- How might we help vulnerable consumers out of energy poverty?
- How might we support senior consumers willing to take part in flexibility schemes?
- How might we induce consumers to reinvest their savings in factors to further increase energy efficiency?
- How might we induce consumers to invest in energy efficiency through appealing to their higher values?

E-mobility

- How might we increase the number of charging stations?
- How might we encourage people to use the available subsidies to opt for an EV?
- How might we help reduce journey times?

Key solutions identified

Energy efficiency

- Launch an "energy-saving-house" information campaign, supervised by the energy ministry and organised by relevant companies, in order to ensure large-scale access to information on support mechanisms, technologies and leading practices available on the market. Such an initiative would prove to be useful for all parties (consumers, state and private companies).

Renewables integration and demand response

- Ensure the participation of vulnerable consumers in the energy transition by designing special schemes and business models adapted to their profiles and allowing them to get financial incentives (participation in flexibility or self-consumption scheme).

E-mobility

- Launch a massive information campaign for the promotion of EVs, using all communication channels, to increase the awareness on e-mobility.

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This report, drafted by Accenture with input from Eurelectric, aims at describing the outcomes of a unique consultation process launched in January 2019 by Eurelectric to assess the current barriers and opportunities for consumer engagement in the energy transition. With the support of Accenture and the respective national associations, Eurelectric has organized eight workshops across Europe, gathering representatives from NGOs and consumer associations, electricity, automotive and technology companies, as well as policymakers and regulators. In each workshop, participants discussed barriers, opportunities and solutions for consumer involvement in three focus areas: energy efficiency, renewable energy and demand-side flexibility, and e-mobility.

This report gives a detailed synthesis of the key learnings and takeaways raised in these discussions. It has helped Eurelectric reflect on the evolving role of electricity suppliers and on the deep transformation required. Eurelectric's "15 Pledges to Customers" builds upon this interactive process and show that electricity suppliers are committed to become true energy partners for consumers."

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