



Become a Smart Consumer

Highlight of the policy insights:

1. Consumers are one of the key drivers of the energy system transformation – energy transition has to take account of the social and economic impacts on individuals and communities, and treat people as active participants.
2. A societal appropriation of energy should be taken into consideration, when addressing the fundamental changes in the energy supply of the future.
3. Consumer empowerment encapsulates both the process of information disclosure as well as the outcome of acting upon such information - regulators should primarily focus on improving the process of empowerment and safeguard the rights of “active customers”.

Introduction to the topic

As the total energy demand is expected to significantly increase in the coming years, addressing energy generation and consumption is a number one priority of the EU’s sustainable energy transition strategy. On the other hand, the way we produce and use energy accounts for more than 80% of the total greenhouse gas emissions. Hence, the radical transformation of the energy sector is key to both secure energy supply and bring a sustainable energy future within reach.

On the way towards this energy transition, a decarbonized power sector, dominated by renewable sources, form the cornerstone of a viable climate solution. In short, renewables and the rapid decline of the renewable energy cost, along with rapidly improving energy efficiency as well as the widespread electrification, increasingly “smart” technologies, continual technological breakthroughs

More substantially, Europe’s strength in the energy transition lies in the drive of millions of citizens, who make this transformation or “Green Deal” a reality. As the expected changes will affect multiple aspects of individuals’ life, both as citizens and

consumers, the wholesale transformation of energy sector cannot be achieved without their active involvement and engagement. After all, it is ultimate people who drive demand for energy related goods and services, thus societal norms and personal choices will play a pivotal role in steering the energy system onto a sustainable path.

In this context, the transition from the liable status of energy consumers to that of “smart” or active consumers, who self-generate energy to accommodate their own needs (prosumers) or store/ share/exchange/even sell it via Energy Communities or other carriers, will play a decisive role in achieving the desirable energy transition and in safeguarding consumers against the dire effects of energy poverty. Active participation in the energy system will allow consumers to monitor energy consumption closely and to respond promptly and adequately to the pricing variations. In this way, energy consumers can reinvent their energy behavior and timely intervene in the process of transitioning to cleaner energy.

Identified challenges

In the future scenarios for the sustainable energy transition, it is important to embrace as the key drivers of the energy system





transformation. Towards this, the reorientation of policy and industry efforts often have a focus on digital transformation processes. However, there is not only a technological dimension, but also, and most critical, a societal and behavioral dimension, which has to be explored and addressed. In this regard, a societal appropriation of energy is suggested to be taken into consideration.

According to this process, the empowerment of energy consumers to contribute to the EU's energy transition involves four level of actions, namely the awareness, the understanding, the involvement and finally the steering of the transformation of the wholesale energy system by the end-user. While the first two levels are consistent with the general interest and might be promoted by public authorities, the next two levels ("involvement" and "steering") require solutions from the private sector as well as an appropriate policy framework.

Existing challenges to end-user empowerment can be categorized into the following types:

1. Informational barriers that consumers face when attempting to find, sift, understand and use the information they need to make better decisions. Some issues underlying here have to do with **information access**, referring to the availability of information and consumer education (the ability to understand and use this information – which is linked to 'imperfect knowledge'), **information asymmetries and trust**, which can fuel a generalized sense of distrust and undermine consumers' confidence that they can tackle an issue effectively, and **cognitive overload**, which can sometimes have the opposite effect of

inducing consumers to disengage even further. Due to information barriers and consumers' awareness of the difficulties of obtaining accurate, trustworthy information discourage them from even trying. Likewise, their fear that they may not fully understand the information they are presented with, thereby creating the risk of a "bad" decision, may undermine their confidence in their ability to act effectively.

3. Technical and Structural Barriers are related to the end-user technologies and the availability of "smart" technological solutions that could simplify consumer involvement in the new retail market. Smart integrated solution for the grids and the households could facilitate consumer action by connecting smart metering systems with smart home energy management systems, and smart appliances which make it simple to manage consumption, participate in demand response, or match consumption with their micro-generation as closely as possible according to energy price information. However, it is not just the acquisition of these technologies, but mainly their "domestication" that should be considered as the most important constrain factor.

On the other hand, investment in profitable energy efficiency technologies depends on the ownership status of a house, with renters being less likely to invest in renovation or efficient appliances. This owner-tenant dilemma, in which only tenants benefit from an energy efficiency measure (e.g., lower energy costs) whereas the owner has to bear the investment costs, is the most common example of a structural barrier here.





4. Economic barriers consist of missing monetary incentives both on the profit side (e.g., premium for load shift) and the cost side (e.g., subsidies.). Liquidity constraints are an example of economic barriers, as some individuals do not have access to capital to invest in energy efficiency technologies. When owners need to rely on capital markets to finance costly investment and if those markets do not function efficiently, then credit constraints may limit the adoption of more efficient and active behavior. This happens even if expected future savings are higher than the costs.

Policy insights

1. Provision of Information. Active consumers are empowered through the provision of information and the exercise of choice, which in turn disciplines market players. In this regard, informational instruments are intended to influence consumers' behavior by disclosing crucial information and raise awareness on two levels:

- The need of improving general knowledge or "energy literacy" and technical know how;
- Motivate people to change and actively contribute to energy transition when they are in their comfort zone.

Within this group of instruments are also included low-cost motivational and persuasion strategies also called "nudges" that end up guiding the consumers in the decision process, and consequently they lower the cognitive costs of energy decision-making. It could be argued though that its most essential outcome is the empowerment of the energy consumers' role resulting from their transition from mere

consumers to prosumers. On the other hand, simple energy saving and bill reduction tips along with adopted practices applied in daily routine can also be an essential constituent of the awareness campaigns for all target-groups.

In either way, the awareness and information campaigns in question should constitute horizontal interventions. Starting first locally, targeted dissemination of information and prioritizing can play a vital role in ameliorating vulnerable households' living conditions. Municipal authorities in collaboration with local entrepreneurs, associations and organizations will be able to provide information on current energy trends, including prices and available new technologies, as well as demonstrate the current conditions in the energy sector.

2. Economic and financial instruments, such as grant and loan facilities, subsidies, tax deduction, tax credits, rebates, guarantees, and energy taxes. Additionally, economic incentives address capital market failures. Moreover, some individuals choose to make energy efficiency investments because their awareness has already been raised by the existence of the incentive schemes. Economic incentives are also particularly relevant for persons who are risk averse because they lower the upfront costs of an investment. Finally, subsidies and taxes can address the same type of barriers as standards, in particular rational inattention, bounded rationality, and present bias. This is because, in case of these behavioral barriers, product subsidies and taxes can divert purchases towards the most efficient appliances.





3. Regulatory instruments. Planning and operating the energy system in a holistic way, considering the interlinkages between energy vectors, energy uses as well as supply and demand, will allow optimizing the resources and costs faced by all. Crucially, it promotes efficient choices, at least cost to consumers and to the environment. For Europe's energy systems to be effectively integrated, they must be assessed and adapted at several stages, from the planning of system needs and investments, to the design of the market to their resulting operation in practice. Given the responsibilities of regulatory authorities in these various aspects, regulation has an important role in identifying and overcoming barriers as well as highlighting the need for new areas of regulation (for example RES or prosumers) and improvement of existing processes. In this respect, particular attention should be placed on regulatory oversight and governance (including the proper separation between market & regulated areas), consistency of rules and increasing the efficiency of the procedures that apply across the energy sector.

3.1 Consumer-centric design. For consumers, green transition policies should help reduce their carbon footprint, improve energy efficiency, especially in buildings, and speed up the transformation of energy markets by enabling the take-up of new technologies, sustainable energy carriers and new business models. At the same time, consumers stand to benefit from greater flexibility and digitalisation. This will contribute to a decarbonisation at least cost and help the energy system to cope with a much higher degree of electrification and increased production of electricity from renewable

sources. In addition, during the energy transition, it is important to protect all consumer types, in particular vulnerable and disadvantaged groups. Ensuring that consumer rights are promoted and protected, whilst delivering on the EU's sustainability and climate neutrality objectives, is a key priority for the future vision for Energy Consumers.

3.2 From consumers to prosumers. The residential prosumer has a significant role in the development of a future energy system in line with a green transition in the EU region. A mainstay of EU policies is therefore to empower consumers to act, meaning providing consumers information, protection and alternatives that enable them to achieve more sustainable energy consumption, lower costs and opportunities for becoming suppliers and managers of their energy needs. As motivations for becoming prosumers are quite varied, including financial benefits, environmental aspects, technological interest, security etc, this also urges the importance of a varied promotion of this empowerment both underlining economic and environmental issues as well as creating interest among people. Finally, simplification of the bureaucracy, support in the assessment of the suitability of solar to the household's circumstances and selection of the products and installers, as well as minimization of the burden linked to registration and monitoring of the systems on the part of prosumers are some key aspects to enable and foster prosuming.

3.3 Promoting Synergies and cooperation. Combining various stakeholders in a collective scheme may prove essential in developing energy upgrade projects for consumers' active participation. To guarantee success, Public-





Private Partnerships (PPP) could be formed by local government agencies, citizens' associations, construction – or pertaining to construction companies, energy service companies, energy providers operating in the obligation schemes, banks, non-governmental organizations etc. The new legal framework for Energy Communities drives and facilitates development of such schemes.

Methodology for collecting results

The challenges and policy insights presented in this policy brief were collected during national-level policy seminars that were held by each ECO2 partner in May-June 2021. The seminars gathered policy-makers, academia, NGOs (incl. consumer organisations) and businesses and looked into EU level, as well as national and local level policy interventions for improving the impact of policy on consumers' behavior towards increased energy efficiency.

The ECO2 project in a nutshell

ECO2 (Energy Conscious Consumers) is a Horizon2020 funded project. Its main objective is to increase the awareness of EU consumers regarding their energy consumption and ways to improve the energy efficiency of their homes. Since consumers play a key role in the transition towards more sustainable energy use, the project both engages and empowers them by enhancing their knowledge on how to consume energy more consciously in their everyday lives.

The main outcome of the ECO2 project is **ACT4ECO**, an interactive online platform available at www.act4eco.eu. It is aimed at motivating energy consumers to explore various solutions in terms of home

improvements and implementation of energy-saving best practices.

ECO2 also aims at establishing a dialogue with policy-makers and innovators at national and EU level through policy seminars, to discuss energy efficiency measures available to households and their impact on consumer behaviour.

Project partners

Fonden Teknologirådet – Danish Board of Technology Foundation (DBT), Denmark – Project coordinator

Hebes Intelligence Single Member Private Company (HEBES), Greece

Sinergie Società Consortile a Responsabilità Limitata (SINERGIE), Italy

Helsingin Yliopisto – University of Helsinki (UH), Finland

Associação Portuguesa para a Defesa do Consumidor (DECO), Portugal

Strategic Design Scenarios (SDS), Belgium

Applied Research and Communications Fund (ARC Fund), Bulgaria

Asociacija Žinių Ekonomikos Forumas (KEF), Lithuania

University College Cork, National University of Ireland, Cork (UCC), Ireland

