



ETIP SNET

EUROPEAN
TECHNOLOGY AND
INNOVATION
PLATFORM

SMART
NETWORKS FOR
ENERGY
TRANSITION



ENERGY STORY:

Empowering energy consumers

Energy distribution operators as a neutral, active market facilitator: A key enabler bridging the gap between citizens and technology solution providers in the energy sector

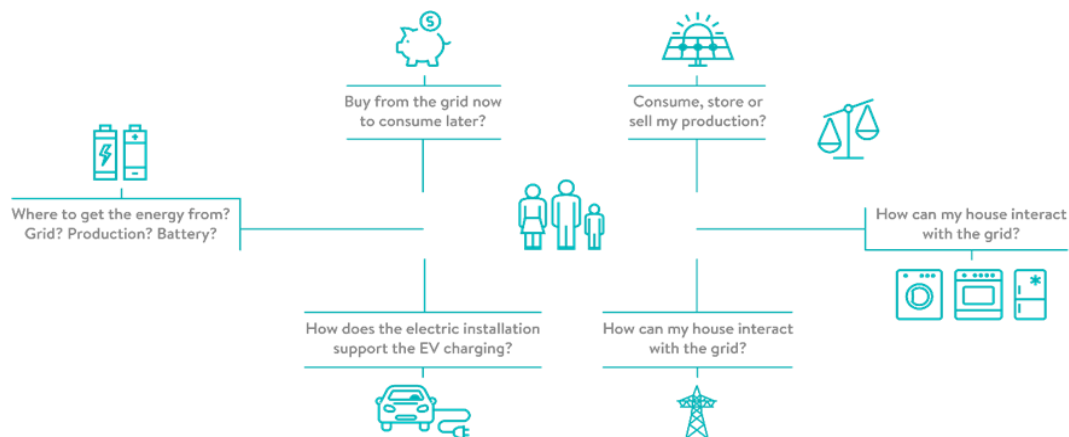
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We live in a world where carbon neutral energy consumption is becoming ever more important. However, many of us are not likely to change our behaviour to reduce our CO2 footprint at the price of lower comfort in living, mobility, or at the risk of missing out on the benefits induced by digitalisation. Hence, there is a strong need for a rapid transition to cleaner energy sources and for innovation in the energy transport and distribution system to maximize the positive impact of these sources for the decarbonisation.

For an efficient and successful energy transition, one of the main requirements is that consumers understand and play a central role. Consumers won't just be simple electricity, gas or heat users anymore but "prosumers", who participate with their own energy generation (distributed energy) and provide the system operators with data and information regarding their own consumption. Data management, flexibility and distributed energy resources (DER) are pivotal for the smart grid development and are also the focus of the InteGrid project.

How to bridge the gap between citizens and technology through Distribution System Operators (DSOs)?



The H2020 project InteGrid, coordinated by EDP Distribuição, intends to pave the way for smart grid development. The main purpose of the project is to use DSOs as a bridge to different stakeholders enabling them to participate in the energy market, providing a flexible energy system fuelled by renewables in a stable, secure and economic way. It is being carried out by several organizations across Europe and has demonstration sites in Sweden, Slovenia and Portugal, each of which focuses on a specific project area.

The Swedish demonstration aims at testing new home energy management solutions by implementing new user engagement strategies based on socio-economic incentives and platforms that motivate flexibility actions. This aim is to enhance consumer engagement while maintaining a secure and reliable grid-based system and promoting climate-friendly energy use behaviour. The demo will facilitate demand management by providing energy forecasts that facilitate home automation and better consumption decisions.



In the Slovenian demo a Virtual Power Plant (VPP) is being developed. This remote, cloud-based, distributed powerplant, aggregates the capacities of diverse energy resources with the aim of enhancing power generation, as well as the trading or selling of power on the electricity market. This technology allows for a more efficient generation and consumption of energy, while balancing the fluctuations stemming from renewable energy. An effective VPP can be a strategic instrument to provide efficient measures of flexibility to support the distribution grid in times of peak demand.

In Portugal, the consumer engagement strategies demonstrated in Sweden and the Slovenian VPP concept are implemented in a large-scale demo. Here lies the most disruptive development of InteGrid project – the Grid-Market Hub: a multi-service, multi-user service-based platform where the DSO acts as market facilitator. This enables disruptive business models, where the consumers' energy consumption flexibility is inserted in an integrated architecture. This aim is to improve the flexibility management of commercial, industrial and residential consumers in a context with high penetration of renewables while reducing grid constraints and ensuring the reliability of the network.

To move from single solutions to an integrated management at a higher scale, InteGrid integrates the activities in the three different demo regions. This way, the project ensures that the knowledge and developments from the three demo sites are replicated at the other sites, thus demonstrating the replicability and scalability of the solutions.

Impact

InteGrid is providing innovative ways of managing flexibility assets across consumers for a more efficient operation of the grid. Through this action, investment in grid infrastructure can be deferred and postponed, generating savings for the distribution system and, consequently, **lower prices to the consumers**.

The DSO acts as a market facilitator ensuring simultaneously the reliability and efficiency of distribution grid under a context of high penetration of renewables through a clean, reliable and cost-effective energy system. It does that also by empowering the consumer, which is at the same time a strategic actor of the system and one of its main beneficiaries.

Project Benefits

- More efficient management of the distribution grid
- Enhanced distribution grid reliability and resilience in a context of high penetration of renewables
- New energy services and business models

Keywords: DSO; DER; Flexibility; Disruptive Business Models

More info at: <https://integrid-h2020.eu/>

Note: Project benefits based on specific criteria outlined in [ETIP SNET monitoring exercise](#)



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