

PUTTING THE CONSUMER AT THE CENTRE OF THE EUROPEAN ENERGY SYSTEM

Thomas Pellerin-Carlin | *research fellow at the Jacques Delors Institute*

The Energy Union project was first proposed in 2010 by Jacques Delors¹ and later detailed by the Jacques Delors Institute in its 2015 Energy Union report² by Jacques Delors, Sami Andoura and Jean-Arnold Vinois. A year after the publication of the European Commission framework strategy for the Energy Union, the Jacques Delors Institute organised a conference on the first year of the Energy Union. The conference was opened by Jerzy Buzek, Chairman of the European Parliament committee on industry, research and energy. The Vice-President of the European Commission in charge of the Energy Union, Maroš Šefčovič, delivered a keynote speech, also published by the Jacques Delors Institute³. The conference then centred on two critical issues, the role of innovation, and the paradigm shift led by the decision to put the consumer at the centre of the stage, which is the topic tackled in this synthesis.

The original idea of the European Energy Union was proposed in 2010 by Jacques Delors, Jerzy Buzek, and the Jacques Delors Institute⁴. It was later endorsed by the European Commission that published its Energy Union communication on February 25th 2015. This communication stated notably that *“The goal of a resilient Energy Union with an ambitious climate policy at its core is to give EU consumers - households and businesses - secure, sustainable, competitive and affordable energy. (...) our vision is of an Energy Union with citizens at its core, where citizens take ownership of the energy transition, benefit from new technologies to reduce their bills, participate actively in the market, and where vulnerable consumers are protected. (...) We have to empower consumers through providing them with information, choice and through creating flexibility to manage demand as well as supply”*⁵.

To discuss the issue of the role of consumers, the Jacques Delors Institute gathered three key speakers who focused on the **role of consumers in the electricity market**: Frauke Thies, Executive Director of the [Smart Energy Demand Coalition](#), Adrian Harris, Director General of [Orgalime](#), and Antonio Mexia, CEO of [EDP](#). Their discussion was moderated by Dr. Leonardo Meeus, Professor at the [European University Institute](#).

1. The Energy Union’s key driver: putting the consumer at the centre

Energy plays a central role in human economies and societies. It is, alongside labour and capital, one of the three inputs that allow a productive system to deliver an output (e.g. goods, services, etc.). Energy is therefore first and foremost useful for energy consumers: households and businesses. What consumers need however, are not a specific of energy source (e.g. gas), but an energy service (e.g. electricity). Putting the consumer at the centre of the stage therefore leads to a paradigm shift: a shift away from a focus on supplying an energy source, towards a focus on providing the energy service needed by consumers. In short: a paradigm shift from supply to demand.

According to Frauke Thies, **this paradigm shift is the “big novelty” of the Energy Union**, and the European Commission’s willingness to embrace it has been made clear in its Energy Union communication. There is however a **gap between rhetoric and concrete actions**. As Antonio Mexia points out, this focus on energy consumers “is very easy to tell, politically very correct, nobody is against”, but concrete actions are lacking to bridge the gap between rhetoric and reality.

2. A new electricity market, a new role for consumers

The electricity market has changed dramatically over the past decade, largely because of two key changes.

First, all electricity companies based their business model on the assumption that electricity demand is rising. This is not the case anymore in Europe : the **EU's electricity demand has slightly declined during the last ten years**⁶.

- Second, the electricity market was a market where most of the supply costs were variable costs. As an order of magnitude, the old electricity supply costs were 20% fixed costs (i.e. the construction of the power plant) and 80% variable costs (i.e. the costs of the fuel burnt to generate electricity, the wages of the workers running the power plant etc.). The new electricity market where Europe is heading has the opposite supply cost structure: 80% fixed costs (e.g. the construction of the wind farm) and 20% variable costs (e.g. for an electricity generator, the wind and the sun is free while coal or gas ought to be bought). **The old electricity system was variable-cost driven; the new one is fixed-cost driven.**

In front of such deep changes, Antonio Mexia considers that “we are still in a denial phase in a lot of markets, both by politicians and also by regulators, so we need to understand the economics [of the electricity market] has changed, and we need to create the incentives”. The business model of energy utilities like EDP is also changing drastically: **“we are no longer asset managers, we are basically relationship managers”**, and a new electricity market design is needed to help this shift in business models to emerge clearly.

As for the role of the Distribution System Operators (DSOs), all speakers converged in saying that the DSOs should not become market players, but should rather play the role of market enablers. A key element DSOs hold in their possession is the data of the electricity consumption. Such data is of critical importance for the electricity sector but also for the economy as a whole as electricity consumption allows understanding habits: when one wakes up, when coffee is made, food is cooked, laundry is launched etc. Such **electricity consumption data is therefore a**

key matter of privacy that is yet subject to widely divergent national legislations.



3. Consumers demand response can help secure electricity supply

On an electricity grid, the supply and demand for electricity need to match, at any time, otherwise, black outs occur. This physical constrain is difficult to manage because electricity in itself cannot be stored. The only way humans have found to mimic electricity storage consists in using electricity to perform tasks that can latter deliver electricity. This can be done via a chemical process (e.g. battery storage), or via a mechanical process (e.g. pumping water downstream of a dam, to put it upstream of the dam), it is economically costly and consumes energy (e.g. one typically needs to charge a battery with 11 kWh for this battery to be able to deliver 10 kWh of electricity).

This difficulty is not new but has become much more critical with the development of some renewable electricity sources. While many renewables can provide electricity either continuously or on demand (e.g. biomass, hydropower, biogas, concentrated solar), the two growing renewable sources are wind and photovoltaic solar panels, and they produce electricity when there is wind and sun. The question therefore remains: what happens if consumers want electricity when there is not enough wind or sun to power them all? How can this security of electricity supply be achieved?

To secure electricity supply, most of the policy debate so far has focused on the supply-side: developing systems to subsidise conventional electricity generation for that purpose (the so-called “capacity mechanisms”⁷). It is however also possible to focus on the role of **demand response**. All the boilers, heat

pumps, freezers, electric vehicles could interact with the electricity system. The same can be done with many industrial productions, for instance aluminium production like it is currently being done in Dunkirk, in France. Demand response has a tremendous potential and can save money that would otherwise need to be invested in very costly back-up capacities (i.e. power plants that are built to generate electricity for only a couple of dozens of hours a year). When it comes to demand response, consumers have three choices:

- Choose real-time electricity pricing. This would allow him/her to delay consumption when electricity is costly, to a point in time when electricity is cheap. This could be done automatically, without the consumer even noticing it (e.g. in California, coolers can be switched off for only 15 minutes, which is enough to save money and electricity, and does not impact comfort). It could otherwise be controlled by the consumer that could do it manually, or remotely via one of the many already existing applications for smartphones.
- Consumers can outsource the issue of flexibility to an aggregator: i.e. a professional that aggregates the demand-response capacity of electricity consumers. The aggregator then manages this capacity to the best of its ability, and the remuneration is partially kept by the aggregator, partially passed on to the consumer.
- For instance, the British aggregator [Open Energi](#) is working with supermarkets to offer a fast frequency response to the electricity grid. In practice, Open Energi sets up a chip in the supermarket's cooling devices. This chip can cut the cooling device electricity consumption for an extremely limited amount of time that does not impact the quality of the service provided by the coolers. This allows the UK National Grid to be balanced in a more cost-effective and environmental way.
- Consumers can decide not to engage in demand-response and ask for a fully-flat tariff. The vast majority of consumers in Europe are currently in this third category, not because they chose it, but because they were not offered any alternative.

The next steps forward to empower consumers needs to set-up the adequate hardware and software.

- The hardware are smart meters that allow consumers to have real-time information on their consumption as well as prices. Smart meters are currently being rolled-out but they tend to be so in an 'electricity silo', meaning that electricity smart meters are rolled-out in isolation from other smart meters that could smart meter gas consumption, water consumption etc.
- The software has to do with the legislation that enables demand-response. Such legislation already largely exists in many EU countries, such as the UK, France and Belgium. It is however not the case in key EU states, like Italy and Spain.



4. The 'Energy efficiency first' principle at the heart of a consumer-centred approach

A new principle has been born in the EU policy making: the 'energy efficiency first' principle. It entails that before considering any other policy option, one should first consider energy efficiency. For instance, before using public money to subsidise a new gas pipeline to achieve energy security, one should first consider if the same objectives can be soundly reached thanks to energy efficiency measures⁸.

As Adrian Harris points out: "in the whole thinking of the EU, energy efficiency has been a nice word but has been very much the poor brother (...) we still get the impression that it is a kind of second class citizen in the regulatory packages that are coming". In other words, there is still a significant gap between rhetoric and actions.

Many regulatory hurdles are delaying energy efficiency choices and investments. Some distribution system tariffs are designed in a way that incentivises a consumption profile that is as flat as it possibly can.

For instance, industrial customers in Germany have an incentive to consume no more no less than their standard profile; otherwise, they would pay more grid charges. Such companies are thus enshrined in a system that punishes electricity savings.

To be meaningful, the EU Energy Union must be consistent. Rhetoric matters when it inspires concrete actions. The EU rhetoric is now crystal-clear: consumers and citizens ought to be put at the centre of the energy system and the energy policy. The concrete actions that would be inspired by such rhetoric are currently being discussed within and between the key EU policy makers: European Commission officials, Members of the European Parliament and

representatives of national governments. The ambition of their upcoming decisions on energy efficiency as well as on the electricity market design will give crucial hints into whether the ambitious rhetoric indeed inspires ambitious decisions that help to provide secure, sustainable and affordable energy services to all half a billion Europeans.



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