

INNOVATION AT THE HEART OF THE ENERGY UNION

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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 then centred on two critical issues, the paradigm shift led by the decision to put the consumer at the centre of the stage and the role of innovation, which is the topic tackled in this synthesis.

On February 25th 2015, the European Commission published its Energy Union communication which made “Research, innovation and competitiveness” one of the five pillars of the Energy Union. The communication further stated that: “A new strategy for Research and Innovation (R&I) must be at the very heart of the Energy Union.”⁴.

In December 2015, the Paris Agreement further sent a clear signal for the EU’s innovation policy: helping the world to become carbon-neutral by the second half of this century.

To discuss the issue of the role of innovation to foster a profitable and social energy transition, the Jacques Delors Institute gathered five speakers. The keynote speech for this session was given by Bertrand Piccard, Chairman and pilot of Solar Impulse. The four speakers were Peter Hesseldahl, manager of the We-Economy, Sami Andoura, Team leader for Sustainable Development at the European Commission’s Political Strategy Centre, Diego Pavia, CEO of KIC InnoEnergy, and Martin Porter, Executive Director, Industrial Innovation for Competitiveness (i24c)⁵.



1. A paradigm shift from technological products to innovative services.

The energy transition can be understood as a process with six articulated dimensions: technology, business models, consumer engagement, financial investment, regulation and human capital. Much of the focus has traditionally been mostly on one of these dimensions: technology. Today, the technologies necessary for the energy transition are already largely in place. As Bertrand Piccard puts it: **“We have the solutions today, so now the question is: why don’t we use them?”**. His pioneering project of Solar Impulse is making an airplane fly around the world only fuelled by solar panels; it thus delivers a very simple message: since we have the technologies to fly all over the world with solar energy, **we also have the technologies to make the energy transition on the ground.**

As technologies are not the bottleneck of the energy transition, a renewed approach to innovation requires a paradigm shift where the focus is less on the development of new highly technological products, but rather on creating and deploying new innovative energy services. In this instance, the energy transition works hand in hand with the digital revolution that changes the way value is created and the way innovation can occur.

2. New ways to create value, new ways for innovation

In an industrial society, products are commoditized, simple, stand-alone and self-centred. A thermostat is therefore a simple product that is only used to change the temperature.

In the emerging digital society, the value is created in networks, via the super-structure that is around the product, rather than on the product itself. A thermostat in the digital era is therefore a smart thermostat, like Google's Nest thermostat, that is connected to the internet, exchanges data and empowers users. The value here comes mostly from the superstructure (in this case, the use of energy data), rather than the selling price of the thermostat itself.

Innovation policy thus also needs to look at the superstructure, to see the broader picture. To illustrate, innovation to reduce car energy consumption can look at developing better technologies to make the car's engine more efficient, but it should first look at the entire mobility system: what creates mobility needs, how to better ensure the articulation between several means of transportation, who drives cars that have a vacant seat and can be thus subject to car-pooling etc. A simple application like GoogleMaps already allows passengers to see very easily whether one mean of transportation is more suitable than another at any given time. **Innovation therefore stems from anything that allows people to become more intelligent users of a system.**

Innovation can therefore lie in providing the toolkit that will allow others to innovate. This already exists in the digital sector with the rise of platforms like YouTube, BlaBlaCar, Uber or AirBnB. Those platforms do not design the solution, but enable stakeholders to coordinate external resources, enable the co-creation of solutions. This change means more

collaboration between economic actors and the emergence of what may be called the **We-economy**.

Some platforms are attempting to do something similar for the energy sector, like the dutch platform **vandebrom** for renewable electricity, **Yeloha!** for solar electricity in the US, **SolarCity** in the US, or the upcoming offer of solar panels that **IKEA** will launch.

3. Innovation makes European businesses competitive

For industrialized countries like European states, cost-competitiveness is not the best way to achieve long lasting competitive advantages. Innovative capacity is the key lever for industrial competitiveness. Yet, industrial strategies are still largely thought as defensive, sector-specific and backward looking. Innovation and industrial strategy should instead be thought as offensive strategies that are forward-looking and focus on the markets we know are going to be growing in the future⁶.

Yet, it would be naïve to expect radical innovation from energy incumbents. Just like the light bulb was not invented by candle producers, the first mass-scale produced electric car is coming from a company (Tesla) created by someone from the world of the internet.

In this context of significant changes in the energy world, energy incumbents still have a vested interest in preserving the status quo. Within those companies, there is currently a struggle between advocates of new business models and the defenders of the status quo. Incumbents are thus split internally, even at Board level.

The best way to make the energy transition happen would probably be through the combination of radical change created by outsiders and later embedded into the most forward-looking incumbents, as they remain the ones with the capacity to allow changes to be fast and massive.



4. Energy consumers are key players for energy innovation and the energy transition

Any innovation should always be put in its broader context: in a given society with specific values, mindsets, policies, technologies, behaviours and business models. This means that innovation can also come from consumers, for instance through the societal appropriation of energy. To improve societal appropriation of energy, consumers can rise through four levels of maturity: awareness, understanding, involvement and steering. Raising people's degree of appropriation of energy may allow to transform people that are opposing change (the so-called NIMBYs, for 'Not in my backyard') into active promoters of change (so-called PIMBYs, for 'please in my backyard'). Appropriation of energy can start in school: with the use of games, children learn and raise their own awareness and understanding, as well as their families.

One should however avoid to fantasize a consumer that deeply cares about energy. Most consumers will likely continue to care only about the outcome or may be aware enough to engage only in simple and entertaining ways. This entails that innovation should not only try to make things better or cheaper, but also to make them simpler and more entertaining.

5. The public sector can foster innovation

The EU can foster innovation through the use of different tools. Among those, it can act as a financier, an enabler and a regulator.

Today, around 20% of the EU budget is officially related to climate change. Boosting the role of **the EU as a financier** of energy innovations raises two complementary questions: whether the EU need to do 'more of the same' and whether the EU should try to do things differently by using existing public resources in a way that fosters more and better innovations for the energy transition.

Policy makers can **act as enablers** of the energy transition through different tools. They can for instance set a clear mid-term and long-term vision on issues like climate change mitigation, the energy transition and an EU industrial strategy. Policy makers, especially at local level, can have a convening role by gathering the right people around the table to experiment and create.

While regulation is a traditional activity of the EU, it is not enough conceptualised as a tool to boost innovation. Decades ago, Europeans used to throw their garbage in nature. This habit largely faded from Europe as it became prohibited. This regulation created new economic activities and millions of jobs to collect and recycle waste, or burn it to produce energy. According to Bertrand Piccard, this could serve as an example to boost innovation in the car industry: if the EU were to prohibit any car that consumes more than 3L/100 km, the car manufacturers would "scream for six months, work for four years, and in five years' time, you will have the result".

The Energy Union is a far-reaching political project that requires innovation to be at its very heart. Energy Union innovation should thus be conceptualised as something that goes way beyond mere technological innovation, that also targets business models, consumer behaviours and where the public sector⁷ can play its entire role to boost energy innovations and the energy transition.



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 2. Sami Andoura and Jean-Arnold Vinois, "From the European Energy Community to the Energy Union - A new Policy Proposal", *Studies & Reports No. 107*, Jacques Delors Institut, January 2015.
 3. Maroš Štefčovič, "Energy Union - 1 year on", *Tribune*, Jacques Delors Institute, 31 May 2016.
 4. European Commission, *Energy Union Communication*, 25 February 2015, p.16.
 5. i24C.
 6. Thomas Pellerin-Carlin and Pierre Serkine, "From distraction to action - for a bold European Energy Union innovation strategy", *Policy Paper No. 167*, Jacques Delors Institute, June 2016, p. 9.
 7. Mariana Mazzucato, *The entrepreneurial state: Debunking public vs. private sector myths*, Anthem Press, 2015.

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