

Energy Transition: A multifaceted Challenge for Europe

3rd Symposium: How to foster innovation in a fast changing EU energy landscape

- Report -

On the 8th of October 2013, Egmont – Royal Institute for International Relations and the Development Group organised a symposium entitled “How to foster innovation in a fast changing EU energy landscape?” The symposium was the third in a series of five events held in Brussels this year that relate to “the multifaceted challenges of the EU energy transition towards a low-carbon economy.”

Keynote address: Energy Policy, Research Policy and SET-Plan

The keynote address was provided by Marie Donnelly, Head of the Directorate for Renewables, Research and Innovation, and Energy Efficiency at the DG Energy of the European Commission. She started by posing the following question: If you had a blank page, how would you design an energy system that accords with the EU’s three energy policy criteria, i.e. competitiveness, security and sustainability of energy supplies? The EU has already made three important choices that are considered “no regrets” options: increased energy efficiency, a higher share of renewable energy sources, and smart, flexible infrastructure.

Ms. Donnelly reminded the audience that the Horizon 2020 programme has launched research calls to distribute its funds. In order to use these funds effectively, the energy sector’s fundamental issues have been divided into three categories: 1) Energy efficiency (e.g. How to mobilize people and funds?); 2) Low-carbon energy systems (The SET-plan has already delivered a lot, but crucial questions remain, including the following: How can we make different technologies fit together? How can we bring the costs of new technologies down? And finally, how do we manage energy flows between centralized and decentralized generation systems?); 3) Smart cities and communities (e.g. How do we fit the different elements we have to scale?)

Last but not least, she outlined that the Commission will release a legislative package on the environmental aspects and the exploration of shale gas in the EU within the next months.

Session 1: What is the future for fossil fuel resources in terms of innovation?

Pavel Řežábek, Director of Market Analysis and Prognosis at ČEZ Group, began the first session by stating that innovation in the power sector needs a stable and predictable business environment, which does not currently exist for two major reasons. Firstly, the development of renewable energy sources (RES) pushes traditional sources out of the merit curve, threatening their profitability and making new investments risky. Moreover, national support schemes for RES increase electricity prices, while wholesale market prices remain too low to foster the development of low-carbon technologies for fossil fuels. Secondly, carbon prices are too low, unstable, and unpredictable to incentivise further investment and innovation. Consequently, an

insufficient amount of proceeds from carbon allowance auctions are dedicated to innovation. Therefore, the best strategy for utilities nowadays is to generate energy in old existing plants instead of investing in innovation. To overcome this situation, Mr. Řežábek proposed to progressively integrate RES into the market, as they are maturing. Moreover, the EU ETS should be made more flexible via a mechanism that would adapt the amount of allowances on the market to economic situations.

Afterwards, Brian Ricketts, Secretary General at Euracoal, began his presentation by stating that the objectives of competitiveness, security of supply and sustainability must be well balanced. While sustainability has dominated the debates during the past few years, security of supply and competitiveness are becoming increasingly important elements of the EU energy policy. As an abundant, affordable and accessible source of energy, coal remains a good investment. Mr. Ricketts also pointed out that the EU's carbon footprint extends well beyond the EU's borders. Therefore, on a consumption basis, the EU carbon footprint grew 47% from 1990 to 2006. Finally, he presented the Euracoal's 3-step strategy for coal technologies. Firstly, introducing new coal power plants to boost efficiency, enhance flexibility and reduce emissions. Then, developing the next generation of high-efficiency, flexible technologies for coal-fired electricity generation. Finally, developing and deploying carbon capture transport and storage not only in the EU but also around the world. However, it should be noted that this last initiative will require a long-term carbon price.

Then, Dr. Robert Judd, Secretary General at the European Gas Research Group (GERG), presented the potential of gas technologies in the European energy transformation. He explained that, when joined with renewable energy, new gas technologies can increase the load factor, flexibility, and total capacity of renewables. Moreover, the existing gas network provides a high flexible storage medium for electricity (through a mix of power to gas and biomethane injection). This will avoid costs of electricity grid reinforcement and underutilisation of renewables. Then, the development of smaller-scale flexible gas powered generation can support the intermittency of renewables. In summary, the gas network and new gas technologies will be essential in ensuring a low-carbon integrated network and the smart management of supply and demand.

Finally, as discussant, Marco Gazzino, responsible for innovation strategy and market in the Innovation Unit at ENEL, opened the debate. He explained that the utility business model is currently shifting. With the development of a new energy system based on renewables, energy efficiency and pro-active consumers, investing in conventional generation assets has become increasingly difficult, as it no longer ensures long-term profitability. A new role must thus be given to traditional generation assets. They could well provide flexibility in the system. However, yet again it is difficult to know if this role is a long-term or a short-term answer for the utilities.

Session 2: What is the potential for further innovation in RES, smart grids and energy efficiency technologies?

Jon Stretch, Executive Vice President EMEA at Landis+Gyr (a leader in Smart Metering), began the second session with a discussion on the potential for further innovation in the Smart Grid industry. Currently, smart meters are limited in function, and often only record the amount of electricity being used in a given building. In order to move to a "smart" system, and in turn secure Europe's energy future, smart meters

must be able to provide energy suppliers, network operators, and consumers with real time information. With these capabilities, smart meters could help to create an integrated energy system, and enable energy companies to provide consumers with the energy they need in the most efficient and environmentally friendly way possible. He stressed that Europe as a whole is not investing enough of its resources in the development of smart technology. In his opinion, innovative technologies like smart metering are the key to opening and interconnecting energy markets, and in turn empowering consumers to manage their electricity use.

Then, Filip Smeets, General Manager for On-Site Generation at Hydrogenics, introduced other innovative energy technologies, including water electrolysis, hydrogen fuel cell power systems, and Power-to-Gas energy conversion. Due to the innate intermittency of renewable energy, capturing and storing renewable energy in an economically efficient and environmentally friendly way is tremendously difficult. In order to overcome this obstacle, Mr. Smeets emphasized, Europe must invest in Power-to-Gas technologies. Such technologies convert electrical power into gaseous energy, which can then be stored, transported, and used in industry and transportation. Although Power-to-Gas is currently among the most secure and widely-used technologies, investment in this technology is necessary in order to expand its storage capacity and in turn reduce both Europe's dependence on foreign energy sources and its net greenhouse gas emissions.

Afterwards, Monica Frassoni, President of the European Alliance to Save Energy, gave a presentation on the potential for further innovation in energy efficient solutions. She began by reminding the audience that the EU is not on track to meet its energy efficiency target, to which Member States are not legally bound. In order to foster innovation in energy efficiency, a consistent, stable and predictable regulatory framework is needed. This framework should not only include a binding EU energy savings target for 2030, but also a selection of the most promising technologies, so that investments are made where it matters. By adopting an ambitious and mandatory energy savings target for 2030, Europe could reduce energy prices, create jobs, decrease energy consumption, cut energy imports, decrease carbon emissions, offset investments needed in energy infrastructures and boost growth. Ms. Frassoni concluded by emphasizing that energy efficiency is not so much a problem of technologies as it is an issue of financing and public mobilisation. That is why the EU must develop and adopt a clear regulatory framework.

In his role as discussant, Dries Acke, Policy Manager at the European Climate Foundation, stated that most of the presentations were focused on decentralised local solutions, and wondered if a contradiction between these local solutions and a centralised energy system exists at the EU level. The following discussion showed that innovation is not so much a question of developing new technologies, as it is an issue of combining all existing technologies into a joint solution.

Concluding remarks: Towards an Integrated Roadmap for the SET-Plan

To conclude this symposium, András Siegler, Head of the Directorate for Energy at the DG Research and Innovation of the European Commission stated that the solutions we need to successfully facilitate the energy transition are not yet fixed, and the majority of them are not yet developed. The availability, affordability and performance of these solutions will depend largely on the investments in research and innovation we will make today and tomorrow. Nevertheless, Mr. Siegler asserted that four key principles should guide our action in research and innovation. These principles are: 1) To ensure a clear link between research and innovation and the energy policy; 2) To adopt a holistic energy system approach, to keep

options open and to exploit synergies between sectors (e.g. energy, ICT, transport); 3) To cover the entire research and innovation chain; and 4) To pool resources to reach a critical mass at the EU level so as to leverage investments. Finally, Mr. Siegler reminded that research and innovation investments need to be strongly linked and supported by a stable and predictable market framework.

Together with Marie Donnelly, András Siegler stressed the importance of improving our understanding of energy systems' integrated structure. That is why more than 140 experts from the energy, innovation and financial sectors have been invited to contribute to the development of an "integrating roadmap" from the Commission. Among others, the objective is to prioritise the development of innovative solutions, which will respond to the needs of the European energy systems by 2020, 2030 and beyond.

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