Impact Outlook

- 'What we need in Europe is sustainable, affordable and reliable energy'
- 'By bringing together all the different energy stakeholders, providing a consolidated view of innovation priorities to the European Commission and to national research programmes, we try to focus their progress and learn from each other'

Innovation key to Europe's energy future

Konstantin Staschus, Chairman of European Technology and Innovation Platform Smart Networks for Energy Transition (ETIP SNET) and Vice-Chairmen Nikos Hatziargyriou and Thierry Le Boucher share their thoughts on some of the major energy challenges facing Europe and the role innovation plays in addressing these

In your opinion, what are some of the key challenges that Europe has to deal with in regards to energy use?

KS: I see that Europe, and actually the entire world, is facing three big energy challenges. One is climate protection, addressed primarily through renewable energy but also through energy efficiency, to have the entire energy system emit less greenhouse gasses and in particular CO_2. The second challenge is that now we have computers and digital equipment at our disposition that are much better than in decades past, and this by itself would bring upheaval to our industry as it has done to many others. But for us it is more an opportunity rather than a threat because it can help us put the customer at the centre of the energy system. It can put choices at the heart of how the market functions and of how we decarbonise the energy system. The third challenge is that a few decades ago electricity supply was monopolised, but today in Europe, there are well functioning wholesale markets. The perfection of these markets is an important task that will go on for quite a while, especially when it comes to the electricity retail market, but also when it comes to making the electricity markets interface in the right way with the markets for heating, for mobility, and with the usages of energy and industry.

There are quite a few things where Europe is well advanced, for example in markets, digitisation and also the introduction of renewables in the system in such a way that the system remains secure and also more affordable in future. But there are still big things that we need to learn how to do, and ETIP SNET captures system aspects really nicely. I see a key role for this ETIP is to prioritise and to push forward research and especially innovation, that helps define how Europe wants to run its system so that less and less CO_2 is emitted. When you are talking about the system there are many complexities: in transmission, in distribution, in how they interface with each other, in the sector coupling, and so on. ETIP SNET is taking a very systematic approach – to look at all these aspects of how the system fits together and to prioritise the right research with the right competence so that the customers in Europe can have a decarbonised system in the future that is still reliable and affordable.

What is your perspective on how Europe is best to balance competition for energy resources in the near future?

TLB: I think the way Europeans should work is first to analyse energy efficiency opportunities. The easiest energy is the one that you do not need, so we should never waste energy, provided the cost of not wasting this energy is cheap enough. Then I think we have to use our low CO_2 existing assets (such as hydro and nuclear energy), and we have to develop renewables, like photovoltaic panels and wind turbines. But we should not forget other renewables like the heat and the air around us or heat from the ground with heat pumps. This is a very attractive way to reduce energy needs in Europe. Of course all these renewable energies cannot always guarantee generation; that´s why we need storage, batteries being the best technology available, but it can also be demand response. I think we have a lot to do with our customers to give them the opportunity to store energy by accepting flexibility of their global energy supply. A customer wants his home to be heated, he wants the washing machines to work but it is not always necessary to have it working right when you push the button, probably many customers are ready to give the opportunity to someone else to decide according to the CO_2 content of the kilowatts per hour when it is the best time to have the washing machine work if over the year or in certain cases this saves them significant costs. If you have 10 million people happy to start their washing machine at 9pm in the evening instead of 7pm on a day when the sun did not shine, the wind does not blow and the wholesale cost of electricity is high, then you can shift a very important flow to a cheaper time: this can prevent emitting a large amount of CO_2 and can save the customers money.

Article continued on Page 43

Article continued from Page 39

Contact details

Marie Latour
European Technology and Innovation Platform Smart Networks for Energy Transition (ETIP SNET)

T: +32 25138122 (c/o Zabala Innovation Consulting)
E: info@etip-snet.eu
W: www.etip-snet.eu

How important is the mission of the ETIP SNET to securing Europe's transition to a smarter energy future?

KS: One aspect of ETIP SNET that I appreciate in particular is the addition of the letter 'I' for 'Innovation' to the ETP for European Technology Platform that existed before. That implies to me a much stronger push than in the past, for making sure that research and development results actually get implemented and get market-ready, they are used in Europe for the benefit of European customers, and might become even an export product that helps other parts of the world in their energy transition. Within ETIP SNET we have introduced one particular working group with the sole task of focusing on this innovation and implementation of research results in the best and fastest way that we can find. This working group makes sure the prioritisation and structuring of future research is pushed towards implementation of research results.

What are some of the key actions that the ETIP SNET will be taking to deliver Europe's Strategic Energy Technology Plan (SET Plan)?

NH: What we do at ETIP SNET is to help promote the necessary Research and Innovation for the SET Plan and we will help the Commission by providing roadmaps, by providing advice and recommendations. Not only on Research and Innovation but also policy and regulation issues as long as they are related to the technology transition. By bringing together all the different energy stakeholders of sometimes conflicting interests, providing a consolidated view to the European Commission and also combining the national research programmes we try to align their development, their progress and learn from each other. More specifically, we have already provided a 10 year roadmap, and very recently the related implementation plan. We are developing the vision of the energy networks for 2035–2040, and these are already activities we are doing as key actions to fulfil our role.

In what ways do you see the sector's strong R & D capabilities will play a major role in Europe's transition to a smarter energy future?

NH: It's clear that Europe now leads the renewable sector and it is strong in this aspect. Also, the whole industrialisation issue, how to use the ample data that will exist now as a result of the wide implementation of smart meters, many sensors in the network, etc. We need to understand how this will be used first to involve and engage the customer more, second to operate in a much more efficient and secure way by taking into account all the cyber security issues. If we speak about the conversion to electric vehicles that is happening all over the world, one key issue is how we develop new control and planning techniques for a network so you integrate all the ICT activities and take advantage of all the flexibility of the distributed energy resources. This is the key issue of smart grids. And it is at this point that we start looking at the interaction with gas, with flexible thermal generation, etc.

What do you consider will be the most important topics ETIP SNET will be looking at in the near future?

TLB: What we need in Europe is clean, affordable, reliable and sustainable energy. Clean and sustainable means low CO_2 emissions, low emissions of particles and other pollutants through generation. Affordable acknowledges that resources are limited: when you ask customers they are really concerned by climate change and CO_2 emissions, but they are not ready to pay much higher prices for the reductions of CO_2 emissions, so we have to keep it affordable. At the same time we have to keep it easy to use by the customers and reliable, the complexity has to be addressed by innovation developing new, easy to use technologies for the customers and improving performance regarding the environment. So I think this is the main question we have to tackle. We can make a great environment at a reasonable cost for all Europeans.