Accelerated grid development is indispensable for speeding up the European energy transition
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The European Union’s (EU) recently sharpened climate goals have officially set the wheels in motion for Europe’s speeding up of the energy transition. The challenge of increasing the share of renewables in energy consumption to at least 32 percent by 2030 will require tremendous efforts in terms of the building of green energy plants. Tremendous investments will also be required in Europe’s electricity networks, which are essential for powering the continent with green energy.

We have invited Chris Peeters and Stefan Kapferer, two leaders from the frontlines of this transmission challenge, to share their thoughts about how speeding up the energy transition will impact their businesses. Chris Peeters is the CEO both of Elia Group and of one of its subsidiaries, Elia Transmission, which is Belgium’s transmission system operator; Stefan Kapferer is CEO of Elia Group’s second subsidiary, transmission system operator 50Hertz, which operates in eastern Germany and Hamburg. They are jointly investing close to €1.5 billion this year in new and existing power lines and have earmarked offshore energy as one of the cornerstones of the energy transition. They argue that local acceptance and political support are crucial to accelerating green energy growth and that it is only through cooperation with each other that member states can reach their full renewable energy potential.
Catalysts for renewable integration

Q: What does the increased renewable energy target included in the European Green Deal mean for your businesses?

Chris Peeters (C.P.), Elia Group: It is acting as a catalyst for necessary increases in investments in the grid. The electricity sector has a central role to play in reaching those targets, but the only way to reach them is by integrating renewables into the value chain more rapidly. The consequence of this, of course, is that the grid needs to be adjusted in line with this new reality: more of the energy generated offshore needs to be brought onshore to demand centers. There is quite a lot of pressure on us to grow our infrastructure within the given timeframes and, if possible, to do so even faster than was previously thought necessary. Finding ways to accelerate those investments – that is a clear consequence of the European Commission (EC)’s ambition.

The most important challenge with regard to building more infrastructure is local acceptance. Everybody agrees that the targets the European Commission has set are the right ones but when you spell out the consequences, people complain about the cost and the impact on their neighborhood. This is a difficulty we, as a society, face: we don’t necessarily accept the consequences of the goals we set ourselves. That is a challenge for us as grid operators, because we have to spend an enormous amount of time on permitting processes.

Stefan Kapferer, 50Hertz: The climate-neutrality target has made it clearer than ever that electricity has a key role to play in all sectors, not just in the energy sector. It is also becoming more relevant for the mobility and heating sectors. The grid infrastructure is the backbone of that transformation process.

At 50Hertz, we have set ourselves the target of meeting 100 percent of the electricity demand across our grid area with renewable energy by 2032, up from 62 percent in 2020. 2032 is only 11 years away. In Germany, the issue is not a lack of capital to be invested in renewable energy: often, there is a lack of investment opportunities, especially in the area of onshore wind. This needs to change. How long does it take for a public body to respond to an investor about a permit application? How long does it take for legal claims to be addressed by a court? The German authorities should be very clear in establishing their priorities in areas such as these. If climate neutrality is a top political priority, politicians should ensure that public bodies are recruiting additional staff to match the rise in the number of infrastructure projects. This would be a relatively affordable step to take which would greatly help us to speed up the energy transition process.

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Role of offshore wind

Q: Both of your grids have offshore wind farms connected to them. What role is offshore energy playing in the energy transition?

S.K.: Offshore energy will become increasingly relevant for the energy transition because of the EU’s very ambitious goal of becoming the world’s first climate-neutral continent. It is obvious that offshore energy can make the biggest contribution to the transition because offshore wind turbines have higher full load hours than photovoltaic energy sources or onshore wind turbines. Moreover, we all know about the restrictions which prevent the expansion of onshore capacity in densely populated countries in Europe, so the volume of energy we will be able to create with offshore technologies is extremely relevant.

Additionally, it is obvious to me that the integrated EU energy market will include connections across the Baltic and North Seas. As TSOs, we are discussing the building of more interconnectors, the creation of offshore energy islands and the laying of hybrid connections like the Combined Grid Solution (CGS), which we opened last year together with our Danish partner Energinet. Indeed, we have started making plans with Energinet for an energy island on Bornholm, and, in fact, this project is open to the involvement of other countries with a Baltic Sea coastline. I can imagine that, for example, Sweden or Poland will also eventually be connected to the island. The more connections we create across the Baltic and North Seas, the better. Projects like Bornholm are blueprints for how we can come together and connect and grow the EU energy market.

C.P.: Given that we operate in two countries which will not be able to produce enough renewables to meet their energy demand, it is important that we are involved at an early stage in the further development of the Baltic and North Seas. The vision driving our energy island projects is that without our early involvement in the process (as other countries are developing their offshore strategies), developments may occur which are not beneficial for all EU countries. Countries that have an excess of renewables might consider other options, or not fully capitalize on their potential. So it’s necessary for us to engage in dialogue and project development at an early stage, to ensure that everyone can benefit from development in the North and Baltic Seas.

Stefan Kapferer

The flexibility that decentralized generation brings is very relevant. What we can see is that more and more people will not only have the ability to produce their own energy, but will also be able to store it, through technology like electric vehicles or heat pumps.

Stefan Kapferer
Dealing with the energy transition

Q: A growth in offshore energy capacity also means a higher influx of direct current electricity, which needs to be converted onshore. How are your businesses dealing with this?

S.K.: Of course, we need additional investments to be made in the onshore grid, but we shouldn’t overestimate the challenge this presents. In terms of production, offshore wind is comparable to other forms of baseload energy, which makes it much easier to plan the onshore grid infrastructure in line with the needs of offshore wind farms. On top of this, large investments are needed in the distribution grid at local levels to meet the capacity of onshore renewable energy sources like solar and onshore wind farms. Having a good understanding of the additional offshore capacity which can be fully utilized in the North and Baltic Seas over the next decade means it’s relatively easy to plan out the onshore grid infrastructure. Over the past five years, we have been able to reduce onshore grid constraints and, as a result, costs have been shrinking in Germany. We have been very successful in preparing the grid for the connection of offshore capacity.

C.P.: The challenges we face vary according to geographical locations. In Germany, the north-south connection needs to be completed. You’re essentially replacing thermal capacity in the south with wind power from the north, so you have to adjust the grid in line with that reality. If you look at a small country like Belgium, it’s about connecting regions that have the most potential in terms of renewables with regions that have the least potential. This means the focus in Belgium needs to be on building interconnection capacity – and, indeed, we have made significant progress on this over the past few years. We have focused a lot on reinforcing existing interconnection capacity, for example with the Netherlands. Last year, we also commissioned the first direct connection with Germany. It’s an HVDC connection that ensures security of supply in an environment where thermal capacity is being replaced by renewables at a relatively high speed. We have also created new interconnections by building a direct link to the UK via the Nemo submarine cable.

Q: How has your presence in both Belgium and Germany helped you tackle the challenges caused by the energy transition?

C.P.: This gives us enormous advantages as a Group. At a macro level, both countries face the same challenges, but in terms of concrete details, they are very different. If you look at the 50Hertz area, it’s already one of the leading regions in the world today in terms of renewable integration. A 62 percent coverage of demand by renewables is extremely rare, especially considering there is not much renewable power that can be dispatched (like hydroelectricity), which is able to compensate for less windy and sunny days. That makes Germany a very unique place, where a lot of learning is happening. In addition, 50Hertz is one of the front-runners in offshore wind development. We have brought many of the lessons we have learnt about offshore wind to Belgium. Our Modular Offshore Grid (MOG) platform, for example, was a direct result of this sharing of expertise and our collaboration.

If we look at what Elia’s experience in Belgium brings to the Group, we are a highly interconnected country with lots of experience in market coupling and bringing electricity to energy-intensive industries. We are also a leader in Europe in terms of the development of flexibility in the power system, and this expertise has been used by 50Hertz. Every day we learn from each other, and that makes Elia Group an interesting and truly European company for young talent to join.

As we pursue our European goal to become climate-neutral, collaborating with EU member states will become more and more relevant. We at Elia Transmission and 50Hertz already have to collaborate a lot, which creates an opportunity for the future in that a culture of collaboration is already embedded in our teams.

Q: The Belgian and German governments have decided to phase out nuclear and coal-fired power, respectively. What challenges have these decisions caused for your businesses?

S.K.: 50Hertz’s control area has traditionally been influenced by coal power production, because it includes the coal-producing areas of Lausitz and Mitteldeutsche Revier. A few weeks ago, all four German TSOs published a report about the situation and concluded that in terms of security of supply and market stability, we are ready to handle the phasing out of coal-fired plants. Obviously, however, the situation will involve a change for Germany: it has traditionally exported electricity, but it will now gradually become an electricity importer. This is one more reason why these investments in renewable energy are so relevant for Germany in the future.

C.P.: In Belgium, it’s obvious that the decision to phase out nuclear power is a purely political one. We as a TSO only provide facts and figures in order to support politicians in their decision-making. Once a decision has been taken, we have to ensure that the right measures are in place to manage the situation. At the moment, we are supporting the Belgian government as they set up a capacity remuneration mechanism, which is currently under review by the EC. If it’s approved – it is necessary for fully phasing out nuclear power by 2025 – we will be responsible for managing the capacity auction process. We will support the government in selecting the plants that can be connected to the grid over time, so that we can ensure a smooth transition.
On decentralized generation

Q: An important change brought about by the energy transition is the rise of prosumers. What impact has decentralized generation had on your businesses?

S.K.: Coming from a TSO, this may surprise you, but it is of course a development we welcome. We welcome seeing more people engaging with the energy transition and being interested in producing energy themselves. Obviously, Germany’s energy system has changed: it was traditionally based on a few big power plants, but it now has millions of dispersed renewable generation sources. We need more digital technologies to run the business in future, meaning that the need for us to transform into a fully digital TSO is becoming more and more pressing.

The flexibility that decentralized generation brings is very relevant. What we can see is that more and more people will not only have the ability to produce their own energy, but will also be able to store it, through technology like electric vehicles or heat pumps. How do we communicate with and integrate the flexibility of these prosumers into the system? This is one of the most pressing questions we need to answer for the coming decades.

C.P.: The big game changer is not so much solar panels themselves – because they are already being used – but what happens when you add the option of flexibility to the equation. We will see an increase in optimization of supply and demand, with people saying: “I see I am producing electricity at the moment, so I might use it to charge my vehicle.” There will be a real change in the dynamic.

For us, as grid operators, this is a real opportunity. We are active in a part of the sector that will continue to grow, whatever happens. Consumers can build as much generation capacity as they want, local communities can set up as many energy cooperatives as they like, and at the end of the day, you will need a larger grid, because the bulk of the energy needed for industry and big cities will come from the sea and large installations.

Chris Peeters

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