Distribution grids: a cornerstone towards the Energy Union

Over the last five years, thanks to the efforts of the French and European grid operators, energy infrastructure have come to the forefront of European debates. It has been a long process, but the EU has now realised that nothing will happen without the grids. A year after the publication of the first European strategy dedicated to electricity grids, a large number of legislative initiatives are underway, and will form the legal framework on European grids announced by the new Commission. Yet, much remains to be done.

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No electrification without a distribution network

France and Europe are currently experiencing a second wave of electrification. According to current government projections, electricity consumption on the grid operated by Enedis should increase by around 15% by 2035[1]. The transition away from fossil fuels consumption and towards electricity will require increasing the production of low-carbon electricity, including from renewable energies. This evolution will create new challenges for distribution system operators (DSOs). By 2030, 70% of the new renewable capacities in Europe will be connected to the distribution grid[2]. In the case of France, this share will reach 90%, while Enedis has surpassed the historic milestone of a million renewable energy installations at the end of September 2024.

Electricity grids however were mostly overlooked in the *European Green Deal* and in the *Fit for 55* package. The publication of the *Grid Action Plan* changed this by better taking account of access to finance, increased equipment requirements, increased deployment of electric mobility and the use of flexibilities. We now expect the Commission to follow up on this *Grid Action Plan*. The promised evaluation of the regulatory framework on grids is more than necessary to support the growth of renewable electricity, so that the grid is ready to meet the new needs of consumers, industry and producers.

2,400 distribution operators in Europe, but a single electric system to finance and strengthen

No two DSOs on the continent are alike. With 38.8 million customers and 1.4 million kilometres of lines, Enedis is Europe's largest DSO. Yet, we all share colossal investment needs. The latest study by Eurelectric, the European association for the electricity industry, confirms this trend and warns of the delay that has already been accumulated. Investments in the distribution network in Europe must reach 67 billion euros per year until 2050, that is double the current level of investment[3]. To achieve this, the European Commission will present guiding principles in the beginning of the new mandate identifying conditions for anticipatory investments in grid projects.

Grid operators also share the same technical challenges, associated with an increasingly complex and decentralised energy system. The EU DSO Entity, which brings together all the DSOs, works hand in hand with ENTSO-E, representing the 30 transmission system operators in the EU. Together, they establish common rules to ensure a reliable, modern and efficient European electricity system. From next year, new regulations on flexibility, drawn up with the European Commission and European regulators, will enable us to optimise our investment needs.

1. *Source: Étude prospective 2035-2050, Enedis, 2024.*
2. *Source: EU DSO Entity.*
3. *Source: Grids for Speed, Eurelectric, 2024..*

Digitalisation of the energy sector must also remain at the heart of European concerns. With the deployment of smart meters, grid operators are now data operators and aim to strengthen interoperability at the European level. Yet, the digital world has no borders and vulnerabilities are shared. When it comes to cyber security, European cooperation is essential and must be based on the rigorous framework adopted in the previous mandate.

Electricity distribution as jobs and skills that must be protected

Europe must protect the industrial tool that is the distribution grid. Europe's production capacity as regards certain grid equipment is already saturated and insufficient. That is why, European DSOs will need twice as many transformers by 2050. The new industrial strategy, to be developed by Executive Vice President Stéphane Séjourné, must not forget the global competition that the power grid industry is facing. The industry must also be able to rely on the creation of a European Competitiveness Fund, on the simplification of European legislation on public procurement and on standardisation efforts to strengthen the resilience and competitiveness of the European market.

We will also need to attract tomorrow's workforce and ensure that they are equipped with the skills that they will need in the long-term. The Union of Skills promised by Ursula von der Leyen could be largely inspired by the programme of the Grid Schools for the Energy Transition, initiated in France by a diverse panel of electricity network players (including Enedis and RTE), professional branches, skill operators, public authorities, players in the fields of education, retraining and reintegration.

Europe must also guarantee regulatory stability to allow DSOs to prosper. This applies in particular to legislation on environmental protection and pollution control. Enedis is pursuing an ambitious policy to reduce greenhouse gas emissions and chooses its transformers to meet European environmental and energy performance standards. The new package of measures promoting a circular economy, reducing waste and limiting PFAS must guarantee that enough alternative solutions remain available for DSOs. The implementation of European biodiversity protection projects such as LIFE, is also a challenge that is tackled by grid operators as their infrastructure can have a negative impact on natural environments.

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DSOs have to do as well despite the impacts of climate change, which can already be felt. Since 1980, climate change and major weather events have cost the EU more than 650 billion euros[5]. The new European plan for adaptation to climate change should strengthen the resilience of electricity grids in the face of increasing risks. In this perspective, Enedis is already investing more than a billion euros a year to modernise the grid and strengthen the resilience and adaptability of the French grid in the face of increasingly intense and frequent weather events.

Getting all these new electrons moving is a technical, financial, industrial, environmental and human challenge for electricity grids. The expertise and operational performance of Enedis are the foundations of the French model for electricity distribution as a public service, which we must continue to promote and defend during this new European mandate. ●

4. Source: Grids for Speed, Eurelectric, 2024.
5. Source: Banque mondiale, 2024.