

Ahead of the curve – Investments in distribution grids are needed, now

A Eurelectric manifesto

Eurelectric represents the interests of the electricity industry in Europe. Our work covers all major issues affecting our sector. Our members represent the electricity industry in over 30 European countries.

We cover the entire industry from electricity generation and markets to distribution networks and customer issues. We also have affiliates active on several other continents and business associates from a wide variety of sectors with a direct interest in the electricity industry.

We stand for

The vision of the European power sector is to enable and sustain:

- A vibrant competitive European economy, reliably powered by clean, carbon-neutral energy
- A smart, energy efficient and truly sustainable society for all citizens of Europe

We are committed to lead a cost-effective energy transition by:

investing in clean power generation and transition-enabling solutions, to reduce emissions and actively pursue efforts to become carbon-neutral well before mid-century, taking into account different starting points and commercial availability of key transition technologies;

transforming the energy system to make it more responsive, resilient and efficient. This includes increased use of renewable energy, digitalisation, demand side response and reinforcement of grids so they can function as platforms and enablers for customers, cities and communities;

accelerating the energy transition in other economic sectors by offering competitive electricity as a transformation tool for transport, heating and industry;

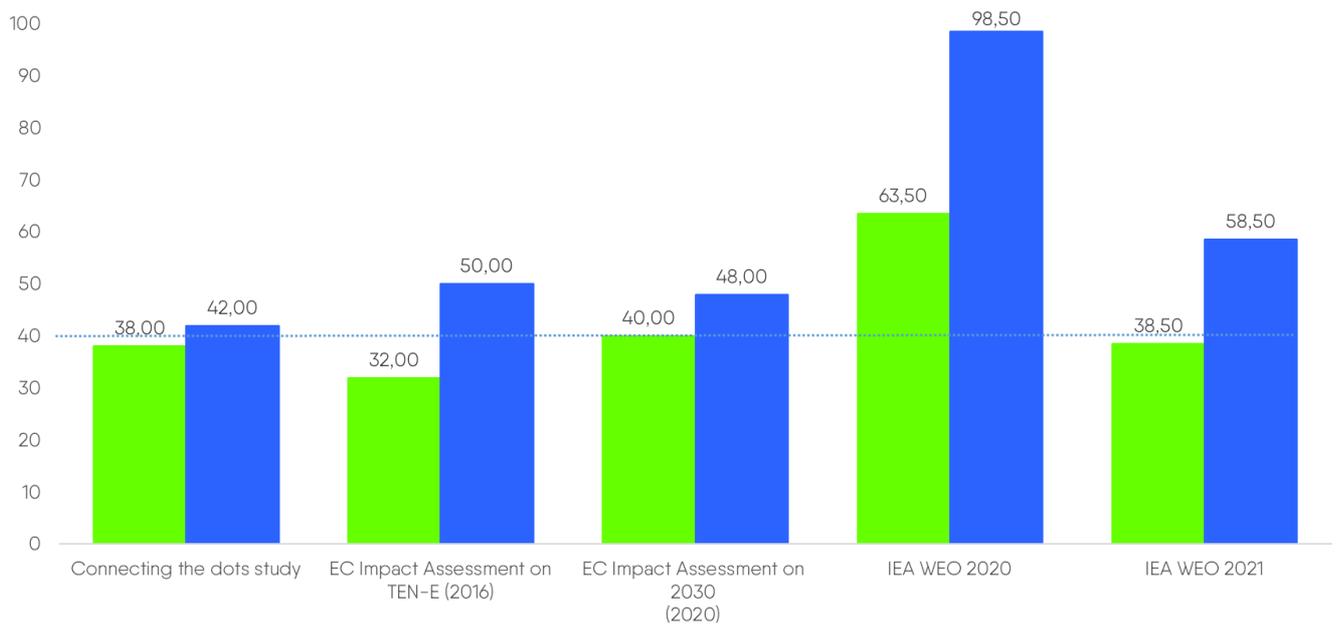
embedding sustainability in all parts of our value chain and take measures to support the transformation of existing assets towards a zero carbon society;

innovating to discover the cutting-edge business models and develop the breakthrough technologies that are indispensable to allow our industry to lead this transition.

Distribution grids are the backbone of the digital and energy transition, they ensure a continuous and reliable electricity flow, integrate most renewable energy sources, and enable the creation of new consumer services. Europe’s distribution grids need to urgently increase cost-efficient investments to be fit-for-purpose in an increasingly decarbonised, decentralised and digitalised power system.

Connecting the dots, a first of a kind study, conducted by Eurelectric and E.DSO with analytical support from Monitor Deloitte, revealed that distribution grid investments will require €375-425 billion by 2030. The bulk is driven by renewables related expansions and replacements (70% of new solar and wind capacity will be connected at distribution level), modernisation, and the increase of electrification rates in industry, e-mobility, and heating and cooling¹.

Investment estimation ranges in distribution grids in Billion EUR p.a. by 2030, EU-27 & UK



Interestingly, our study results appear rather conservative compared with other distribution grid investment projections.

Why is Europe still underinvesting in distribution grids?

Business as usual is the enemy of innovation. European national regulatory agencies (NRAs) keep regulatory frameworks in place with short term remuneration models that allow DSOs to connect customers while keeping all stakeholders in the power sector ticking over. Meanwhile, parts of distribution networks, built to satisfy peak demand, are already congested and unable to readily connect new renewable capacity.

European countries and their NRAs do not appreciate that to achieve our decarbonisation targets Member States need to plan with a long-term horizon and the perspective of a true Energy Union. We need to work with European policymakers so that the climate change challenge we all face can be met by the investment community and by Europe as a whole, with a holistic approach for network investments.

¹ [Connecting the dots](#) study, 2021

What does it mean to be ahead of the curve?

Connecting the Dots found that over one third of the EU's grids are already over 40 years old. This number is likely to surpass 50% by 2030, meaning that the link between electricity generation and consumers runs on obsolete infrastructure, substantiating the case of an unprecedented investment cycle in distribution grids being overdue. A case in point is e-mobility: We have the technologies to deploy EVs on a large scale as well as ambitious targets for their rollout across Europe. Nevertheless, the car industry, regulators and DSOs are in a stalemate as concerns around infrastructure limit sales of EVs but relatively low EV numbers on the road limit plans for the required grid reinforcements, a real chicken and egg situation.

The current model of grid investment is running out of road and we need to acknowledge that more anticipatory investments with a long-term planning horizon are ultimately cost efficient. They would optimise flows stemming from ever increasing shares of variable renewables while ensuring seamless integration of loads coming from electrified heating and transport and maintaining constantly high levels of security of supply².

What are the benefits of this?

The societal benefits related to sustainability, the economy and competitiveness, brought about by this transformation, will far outweigh the financial costs. To name a few: the EU could save €17-22 billion in CO₂ costs annually, over €175 billion in fossil fuel imports, and ultimately reduce average electricity costs by €28-37 billion in the long term.

Additionally, €30-35 billion (~90% of future investments) could be captured by EU manufacturers and service providers, contributing to the post-pandemic economic recovery. What's more, investments in distribution grids will sustain 440-620,000 quality and local jobs per year in the EU27 and UK.

What role will flexibility play?

Without flexibility the investment requirements would be substantially higher. The study finds that flexibility could mitigate projections in peak demand and electricity growth scenarios as well as reduce investments needs. This is notably the case for e-mobility, where it is assumed that at least 50 % EV charging will take place in off-peak hours.

With access to the flexibility coming from MV and LV grids, DSOs could better optimise the use of the distribution network and minimise the need for future grid reinforcements. This is possible through procuring flexibility services like peak load management through distributed energy resources (DERs), network congestion management and voltage support from the assets already connected to their distribution network. Nevertheless, the substitution or complementarity potential of flexibility must be carefully assessed since ongoing electrification requires additional investment efforts to facilitate new uses of electricity and RES integration.

A high level of system flexibility requires itself additional investment in digitalisation and automation of the grid and an acceleration of smart meter deployment. The different starting points between countries and projected needs, notably due to their network situations, should also be considered. In this context, it is difficult to assume that any of these sector electrification and modernisation-driven investments can be plausibly replaced only by flexibility measures.

DSO's will always pursue an optimal CAPEX/OPEX balance including optimal activation of flexibility sources if the regulatory framework incentivises DSOs in a consistent way. However, many rules

² See also [Frontier Economics/IAEW paper](#), 2020

introduced by the Clean Energy Package are still in the implementation phase and notwithstanding a European framework to use flexibility and optimise network investment decisions we are still lacking appropriate national regulatory frameworks for the procurement of flexibility services.

In the context of competitive decarbonisation in Europe, distribution grids are a no-regret investment for society. To make European grids fit for a decarbonised future, policy makers should work towards improving investment frameworks, facilitating access of distribution grid companies to EU funds³, and accelerating the authorisation and permit granting processes.

³ See also Eurelectric [EU funding guide for DSOs](#), 2021

Eurelectric pursues in all its activities the application of the following sustainable development values:

Economic Development

- Growth, added-value, efficiency

Environmental Leadership

- Commitment, innovation, pro-activeness

Social Responsibility

- Transparency, ethics, accountability



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