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Europe's power sector can decarbonise by 2045

- The European power sector can be fully decarbonised ahead of the 2050 targets set by the Paris Agreement through strong electrification of key economic sectors, according to the second part of the Eurelectric study [Decarbonisation Pathways](#).
- Increased investments in renewables and grids will be necessary, however total decarbonisation costs will be lower than expected, thanks to more competitive renewables costs.
- The study will be presented at a high-level event in Brussels on 27 November featuring EU Vice President Maroš Šefčovič, IEA Chief Fatih Birol and several prominent power sector CEOs.

The second part of the study gives concrete pathways on how to achieve Eurelectric's industry vision for the European power sector's full decarbonisation well before mid-century, to deliver on Paris Agreement objectives. According to the study's findings, cost-effective pathways to 2045 will depend on four key elements:

- 1) electricity supply with over 80% from renewables;
- 2) diversification of power sources to ensure system reliability and flexibility;
- 3) changing role of conventional generation, which will provide back-up energy while gradually being less used for energy production;
- 4) maturity of CO₂ offset and power-to-gas technologies.

Higher investment levels in renewables and infrastructures are required to reach full decarbonisation while simultaneously meeting higher power demand stemming from increased electrification. According to the first part of 'Decarbonisation Pathways', at least 60% of the EU's economy should be electrified by 2050 to achieve 95% GHG emission reduction versus 1990 levels. Annual average investments of 89-111 billion euros will be required to decarbonise the power sector and other segments of the EU economy such as transport, building and industry. Investments will also be needed to strengthen electricity network interconnections across Europe and reinforce distribution grids.

The study shows that, despite this massive ramping up of investments, the overall cost of electricity supply in a fully decarbonised system is lower than estimated due to the rapid cost-reduction trend of renewable technologies. By 2045, wholesale power prices are expected to reach 70-75 euros per MWh, which is significantly lower than other existing projections, such as the 105 euros per MWh estimated by the European Commission.

"Renewable energy is increasingly cost-effective, easier to develop as well as to build and as such it is playing a key role in the energy transition. The transformation requires a change in the energy mix of the power sector, which is achievable through the implementation of predictable regulatory frameworks and clear long-term price signals to unlock the necessary private capital," said Francesco Starace, President of Eurelectric and CEO of the multinational power company Enel. *"The concerted effort of the power sector together with society as a whole*

has already allowed for significant progress on our electrification pathways, bringing full decarbonisation within reach. Let's go forward decisively to seize all the opportunities it presents."

Flexibility requires new cooperation

An increasing share of renewables in the EU's generation mix will require greater system flexibility, calling for the build-out of interconnectors, reinforcement and digitalisation of distribution grids, as well as the scale-up of storage systems and demand-side response services. In addition, a fleet of conventional back-up plants will still be needed to provide reliability in a more variable power system.

Accelerating the energy transition requires new forms of cross-societal cooperation, speeding up the electrification of other sectors and engaging them more actively in system balancing. In addition, engagement with authorities and customers is key to driving the demand and public acceptance of low-carbon solutions.

Different starting points

The study shows that each European country has its own path and investment requirements to reach full decarbonisation due to their different existing electricity mixes and available resources. The commercial availability of key transition technologies and the allocation of dedicated EU funding will be required to ensure a just energy transition in those Member States facing a more difficult starting point.

"At this speed and scale, the transformation will require unprecedented cross-sector cooperation, public acceptance and consumer engagement," said Kristian Ruby, Eurelectric Secretary General, who added:

"We must also pay due consideration to the different starting points of the various Member States and ensure a just transition where no region in Europe is left behind."

Background: The Union of the Electricity Industry - Eurelectric is the sector association representing the common interests of the electricity industry at pan-European level. Eurelectric brings together over 3500 companies with an aggregate turnover of €200 billion. It covers all major issues affecting the sector, including electricity generation and markets, distribution networks, customers, as well as environment and sustainability aspects.

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