

# Clean energies in need of a long term vision

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Although cheaper and cleaner than fossil fuel-based energy, electricity derived from renewable sources lacks clear regulations that would enable it to be used at large scale.

The European grid already faces transmission challenges, as the alternative current (AC) infrastructure has almost reached its transport capacity. That's why large transport of [electricity](#) through the grid has stability problems, leading to the rise of overall system costs, outages and blackouts.

In addition, by 2050, the majority of Europe's electricity has to come from renewables. Therefore, the security of supply and energy affordability need to be ensured.

The offshore winds farms in the North and Baltic Seas have started to supply power for neighbouring countries. But to transport vast amounts of electricity produced in the European waters over longer distances, a power grid infrastructure at the sea should be built. "It is more challenging to bring [wind energy](#) to destinations inside the continent, especially from distant production locations from the Northern coast of Europe. In the future, we are going to develop a technology that can transport a much bigger amount of electricity, in case there are losses due to the long distances." says Andreas Wagner, managing director at the German Offshore Wind Energy Foundation, located in Berlin, Germany. He believes there is a huge potential of connecting wind farms to each other or to different countries and to transport the electricity to the markets that need it.

Growing the percentage of [renewable electricity](#) implies fundamental changes in the way transmission lines are designed, used and controlled. "I reckon now Europe is on track to develop a future grid able to deliver sustainable, cost-effective and reliable electricity to the customers," says Roberto Vigotti, secretary general at Renewable Energy Solutions for the Mediterranean (RES4MED), a nonprofit association in Rome, Italy.

Indeed, establishing the EU internal energy market will allow a smooth penetration of [renewable energy sources](#) and will lead to reduction of CO2 emissions, while ensuring an affordable market for electricity consumers.

Still, challenges remain. "The progress on building the needed interconnectors is slow, in some cases due to a lack of coordination between member states," explains Daniel Fraile, senior analyst on Grid and Market Integration at The European Wind Energy Association. EWEA is a network of the wind industry located in Brussels, Belgium. In his opinion, the low regulatory certainty has negative effects on the investments in renewable power generation, in particular off-shore wind power. "There are uncertainties on the cost allocation of projects: who should pay for what needs to be built, who is responsible for the operation, to which market will the electricity be sold?" Fraile adds.

For the time being, the unclear methodology for cross-border cost allocation led to unanswered questions. For example, it is hard to define who is financially responsible for building an interconnector from which more countries will benefit. "Will Bulgaria pay for an interconnector between Germany and Austria? Who benefits more from the use of wind energy?" says Fraile, explaining why is difficult for the decision makers to come up with a standard methodology.

There are also technical barriers related to the appropriate application of high voltage direct current (HVDC) technology designed to transport the

electricity over very long distances. This technology will also permit the connection between the remote wind farms and the continent or from the large solar farms in the south of Europe or North Africa to the European grid. These barriers are also analysed by the European project Best Paths. "The issues in progress in HVDC technology are related to the cables, the efficiency and the control of power conversion, communication and monitoring systems. Overcoming these barriers will create benefits in terms of economic savings, since this technology is less costly per unit of length than equivalent existing AC," explains Roberto Vigotti.

The lack of a common vision and a stable investment framework for renewables also need to be addressed. At the EU level, the European Commission set budget allocations for projects of common interest, which co-finance several cross border electricity connections. But the experts say it is not enough. "The regulatory framework between the Member States also needs to give incentives to the industry to develop the necessary technology." concludes Andreas Wagner.

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