GLOBAL AND EUROPEAN OFFSHORE WIND POWER MARKET OUTLOOK: HOW HIGH DOES IT GO?

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The past decade has undergone exponential growth in the offshore wind power sector. The market outlook to 2030 has grown more promising since governments set their ambitions higher and new countries enter the marketplace.

The global prospects for offshore wind are improving as production costs are falling drastically. As reported by the International Energy Agency (IEA), the levelized costs of electricity (LCOE) produced by offshore wind is currently below $140 per MWh and is due to drop a further 40% by 2040, making the technology competitive with other renewable sources e.g. onshore wind and solar power as well as natural gas.

While China dominates the global onshore wind turbine market, the picture for offshore wind turbines is quite different, with almost 80% of the world's capacity of 23.1 GW located in Europe. Offshore wind has a higher power factor and more stable power than onshore wind or solar power. The United Kingdom and Germany present themselves as the leading European markets, followed by Denmark, Belgium and the Netherlands.

Beyond the next decade, key government and industry bodies will give more thought to offshore wind power. The EU's staggering 450 GW target by 2050 envisions industrial clusters in the North Sea, Atlantic Ocean, Baltic Sea and southern European waters. Plants will be mainly concentrated in the UK, the Netherlands, Germany, France, Denmark and Poland, as well as several other EU markets with double-digit production.

The European offshore wind demonstrated double-digit growth of 11%, making it the largest regional in the world. This leading position predicts continued robust growth, however, new installations outside the EU, mainly in Asia and North
America, are likely to surpass Europe in the coming years.

In 2020, Europe invested more than €26 billion in new offshore wind farms, financing 7.1 GW of new capacity despite the COVID pandemic. Nine new offshore wind farms were launched in five countries, including the Netherlands, which connected 1,493 MW, and Belgium, which connected 706 MW. New farms have also started producing energy in the UK and Germany, and Portugal has completed the installation of a floating offshore wind farm.

The main challenge for offshore technology is the cost and complexity of building solid foundations at depths greater than 50-60 meters, which significantly limits the choice of potential locations. Offshore wind turbines are also more expensive than their onshore counterparts to install and connect to onshore power grids. Thus, the development of floating foundations could prove to be a game-changing technology that could expand the global deployment of offshore wind turbines.

Huge amounts need to be invested in grid infrastructure to connect 300 GW go offshore wind to Europe’s electricity markets. That requires extensive planning and coordination between transmission system operators (TSOs), governments, offshore wind developers, farms, national regulatory authorities. Significant investments are needed in European port infrastructure. The recovery plan and national recovery and resilience plans have a key role to play in facilitating investment in this type of port logistics and supply chain infrastructure. Moreover, offshore wind may be and should be a part of a broad sea planning, taking into account other sectors. Given the abundance of electricity available in a renewable and highly efficient electricity system, surplus wind power should be made available to other sectors for decarbonisation and flexibility.

The EU seeks to stimulate the development of offshore wind energy. Continuous improvements in turbine manufacturing and design, as well as increasing power factors, have reduced the cost of wind energy and confirmed its position as a key driver of the transition to clean energy.

Due to the potential and interest in some of the EU’s neighboring countries, the offshore wind power could be an area where EU leadership could be on fertile ground. To speed up developments on the ground, the European Commission could consider setting specific benchmarks for offshore wind, possibly in combination with other renewable energy sources, and the revised Trans-European Networks for Energy Regulation should lay the groundwork for grid extensions, electricity and hydrogen.

Progress made over the next decade will lay the foundation for determining how high and how far offshore wind can scale in the years to come. With a strong economy, exciting technology developments and growing interest from offshore markets around the world, offshore wind energy will be a game changer in the global energy transition.