

# Europe Offshore Wind Turbine Market Segmented By Installation Type (Fixed, Floating), By Turbine Capacity (Up to 3 MW, 3 MW to 5 MW, > 5 MW), By Country, Competition Forecast and Opportunities, 2028

<https://marketpublishers.com/r/E12E2B8582B4EN.html>

Date: October 2023

Pages: 140

Price: US\$ 4,400.00 (Single User License)

ID: E12E2B8582B4EN

## Abstracts

Europe Offshore Wind Turbine Market is anticipated to grow during the forecast period as a result of factors like favourable government regulations, rising investment in planned offshore wind power projects, and the decreased cost of wind energy, which has led to higher use of wind energy. On November 19, 2020, the Commission released a specific EU policy on offshore renewable energy that outlines practical next steps to assist the sector's long-term sustainable growth. By 2030, the strategy aims to have at least 60 GW of offshore wind capacity installed, along with 1 GW of ocean energy, and by 2050, 300 GW and 40 GW, respectively. Also, using the enormous potential of the five EU sea basins, the installed offshore wind capacity in the EU was 14.6 GW in 2021 and is anticipated to expand by at least 25 times by 2030.

A wind turbine is a machine that uses the wind's kinetic energy to generate electricity. A wind turbine's blades can rotate at a constant or variable speed between 13 and 20 times per minute, depending on the technology utilised. The rotor's velocity varies according to the wind speed to maximise efficiency. Wind turbines come in two different varieties: horizontal axis and vertical axis.

Europe Offshore Wind Turbine Market: Drivers & Trends

Technological Advancements:

Technology innovation is helping the future of offshore wind. Up until recently, installing

wind turbines required bottom-fixed foundations situated in waters with typical depths of up to 50 metres, requiring a very small continental shelf. Modern floating foundations, on the other hand, can be built no matter the subsurface topography and may be useful for ocean depths of 1,000 metres and more. For instance, the first floating commercial project in France has already received all bids. Italy has discovered an offshore wind potential of more than 17 GW, 70% of which are in deep waters and require for floating foundations.

In addition, excess offshore wind capacity can now be used as a substitute fuel source for hydrogen electrolysis, a flexible energy transmission, fuel, and storage technology that can be applied to decarbonize a variety of challenging sectors and applications. Companies are trying to increase usage because electrolysis is so expensive to develop. Offshore wind contributes to this goal because of its high capacity. Denmark approved a project in 2021 to build an offshore hub with up to 10 GW of capacity in the form of a man-made island in the North Sea that can store power and generate green hydrogen using on-site electrolyzers.

Due to these advancements, the levelized cost of electricity (LCOE) for offshore wind has significantly decreased, falling from about USD 163.43 per megawatt-hour (MWh) in 2015 to a predicted level of less than USD 54.48 per MWh by about 2024. As a result, it is projected that the market for offshore wind turbines in Europe would expand in the forecast period.

#### Green Hydrogen Production:

Increasing inclination toward clean energy has been compelling the European government and the energy companies (including oil & gas firms) to provide due consideration to alternative sources of energy that are cleaner and energy efficient. Green Hydrogen, a zero-emission fuel that can be produced using offshore wind energy as a power source, is being looked upon as a viable option to be utilized as an alternative fuel source.

Apart from the government and the energy firms, various other end users looking to utilize green hydrogen are the steel producers and chemical companies. Other applications where green hydrogen can be used are transportation, heating, and grid storage. Various projects have been proposed where offshore wind turbines shall be used for production of green hydrogen. For instance, the European Commission has proposed to produce 10 million tonnes of renewable hydrogen by 2030 and to import 10 million tonnes by 2030. The rising inclination towards green hydrogen is anticipated to

propel the Europe Offshore Wind Turbine Market.

R&D On Cost-Effective Offshore Wind Farms:

Offshore wind farm development is an immensely capital-intensive project with robust and challenging infrastructure development requirements. Over the years, the industry experts have been collectively working on pushing down the overall capital expenditure associated with offshore wind farms and benefit from economies of scale after optimizing manufacturing efficiencies. Research and development in this direction is being done by the leading companies in the Europe Offshore Wind Turbine Market with regards to the increasing size of the turbine blades that would boost the efficiency of the wind turbine. Increasing the size of the wind turbine blade to increase each wind turbine's power generation capacity shall reduce the number of total wind turbines installed in a wind farm to generate the desired energy output.

Therefore, the overall capital cost of the project can be reduced by increasing the size of the wind turbine. As of today, turbines with a capacity of 9.5 MW turbines are in operation. Moreover, 12 MW wind turbines have been tested and will soon commence commercial operations. Furthermore, advanced monitoring and control systems are being developed to maintain the operational efficiency of offshore wind turbine systems.

**Increasing Investment in the Clean Energy Sources is Projected to Drive the Market Growth**

To reduce carbon emissions, governments across the countries are taking necessary measures. Thus, encouraging governments to invest in renewable energy sources such as solar and wind energy. As a result, the amount of electricity generated from wind energy has grown significantly in recent years. Rising electricity demand and increasing concern for non-renewable energy sources are propelling the growth of offshore wind energy.

According to the World Economic Forum, offshore wind is set to become a USD 1 trillion industry by 2040. Additionally, the declining price of wind turbine and advancements in wind technology have reduced the cost of generating electricity from wind energy. Moreover, growing competition among market players has led to decrease in installation cost, contributing to decrease the cost of electricity generated from wind turbine. As a result, the European countries are steadily increasing their offshore wind capacity, thereby driving the market growth.

## Government Policies and Initiatives:

Governments of Europe countries have been driving a green economy through various actions and initiatives. Offshore wind energy is an abundant and renewable source of energy. Governments of countries with a considerable coastline like the United Kingdom, Germany, and Denmark have been working on framing various initiatives to capture and utilize offshore wind energy.

For instance, in 2022, the UK Minister for Energy and Climate has signed a landmark agreement on renewable energy cooperation with EU and North Seas countries. Initiative expected to support the UK's ambitious targets to increase offshore wind fivefold to 50GW by 2030. Such initiatives being framed will likely push the Europe offshore wind turbine market forward.

## Disinvestments From Coal-Fired Power Plants

With rising pollution concerns, governments have been putting a hold on power generation through coal-fired power plants. Over the years, there has been a significant drop in approvals for coal-fired power plants worldwide, especially in countries prone to pollution, such as Turkey and Poland. However, with the increasing population and the ever-increasing demand for electricity, the countries must look out for renewable sources of energy to fulfil the demand. Thus, with the disinvestments into coal-fired power plants, the Europe Offshore Wind Turbine Market demand is likely to be boosted.

## Europe Offshore Wind Turbine Market: Challenges

### Capital-Intensive Projects

Though possessing long-term benefits, offshore wind energy throws immense challenges regarding the capital investments required to set up offshore wind turbine infrastructure. The offshore wind farm developers must consider the huge costs associated with the fabrication of wind turbines and the transportation of the same to the offshore sites.

The construction of the submerged foundation for the wind turbines poses additional challenges given the hostile marine conditions and the superior quality of a material and skilled set of manpower required to execute the same. Various wind farm developers have experienced cost overruns during the construction phase despite carefully analysing the project's financial feasibility before the initiation. Such capital-intensive

nature of the project is likely to hamper the growth of the Europe Offshore Wind Turbine Market.

### Disruptions in Turbine Blade Supply

Instead of improving the wind turbines' efficiency and reducing the overall cost of offshore wind energy farm infrastructure, the manufacturers have started fabricating larger turbine blades (with a rating of 10+W). However, transporting such large-sized blades to the offshore sites can be immensely challenging. Once the blades reach the shores, supplying them to the wind farms within the sea from the shores is another challenge, necessitating both skilled manpower and appropriate equipment to transfer the blades to the proposed wind farm location. Such supply chain challenges are likely to hamper the growth of the Europe Offshore Wind Turbine Market.

### Market Segments

Europe Offshore Wind Turbine Market is segmented into installation type, turbine capacity, and country. Based on installation type, the market is segmented into fixed and floating. Based on turbine capacity, the market is segmented into Up to 3 MW, 3 MW to 5 MW, > 5 MW. Based on country, the market is segmented into United Kingdom, Germany, Denmark, Netherlands, Belgium, Sweden, Finland.

### Market Players

Major market players in the Europe Offshore Wind Turbine Market are Schneider Electric SE, Nordex SE, Equinor ASA, Siemens Gamesa Renewable Energy, Vestas Wind Systems A/S, GE Renewable Energy, Enercon GmbH, Goldwind Science & Technology Co. Ltd, Orsted A/S, ABB Ltd.

### Report Scope:

In this report, Europe Offshore Wind Turbine Market has been segmented into following categories, in addition to the industry trends which have also been detailed below:

Offshore Wind Turbine Market, By Installation Type:

Fixed

Floating

## Offshore Wind Turbine Market, By Turbine Capacity:

Up to 3 MW

3 MW to 5 MW

> 5 MW

## Offshore Wind Turbine Market, by Country:

United Kingdom

Germany

Denmark

Netherlands

Belgium

Sweden

Finland

## Competitive Landscape

**Company Profiles:** Detailed analysis of the major companies present in Europe Offshore Wind Turbine Market.

## Available Customizations:

Europe Offshore Wind Turbine Market with the given market data, Tech Sci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

## Company Information

Detailed analysis and profiling of additional market players (up to five).

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