Offshore wind investment strategy

Offshore Wind Energy Strategic Initiatives

Reduce the cost of fixed-bottom offshore wind to $51/megawatt-hour (MWh) by ...

The offshore wind industry is at an inflection point. Having proved to be an increasingly scalable source of renewable energy, the industry has enjoyed a decade of growth and value creation.1Renewable capacity statistics 2023, International Renewable Energy Agency, March 2023. Offshore wind is a clean renewable energy source--one of the least CO2-intensive forms of electricity generation, on par with onshore wind--and can help communities around the world meet their net-zero targets.2Life cycle greenhouse gas emissions from electricity generation: Update, NREL, September 2021.

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However, the current macroeconomic environment is impacting the offshore wind industry, putting pressure on its growth and profitability.3"Global offshore wind farm database and intelligence," TSG powered by 4C Offshore, accessed February 2022 to September 2023. Recently, stakeholders have questioned the outlook of the industry after seeing a relatively high density of project cancellations following communicated cost increases of between 40 and 60 percent. Can offshore wind costs rapidly return to attractive levels, or is the cost advantage of onshore wind and solar too large, despite offshore wind"s favorable production profiles?

In this article, we discuss why the industry has been so hard hit and when it could reemerge into structural profitability. We delve into potential scenarios--based on in-depth discussions with industry executives and leaders--that could affect the outlook of the industry. We conclude with key steps that developers can take to ensure ongoing growth.

In the 2010s, the offshore wind industry experienced significant growth, making this technology increasingly affordable. The industry has understandably held an optimistic view of the future. Developers have remained profitable and seen volume growth year after year. Governments have viewed offshore wind as a complementary and clean source of energy, with potential to play a major role in the energy transition. Last year, global government targets for total installed capacity by 2030 exceeded 400 gigawatts [GW] (Exhibit 1).

The global commissioned capacity of offshore wind increased from 3 GW in 2010 to approximately 66 GW in 2023--roughly enough capacity to meet Spain"s electricity demand, assuming a capacity factor of 45 percent.4"Global offshore wind farm database and intelligence," accessed September 2023. During this period, the cost of generation for offshore wind decreased by around 60 percent.5Renewable power generation costs

in 2022, International Renewable Energy Agency, August 2023. This dramatic reduction in cost was driven by increased competition, low interest rates, and technology development and industrialization.

Recent macroeconomic trends--rising raw commodity prices, interest rate hikes, and supply chain bottlenecks--have put pressure on offshore wind developers" profitability. This vulnerability is largely due to the industry"s exposure to material costs, which has impacted financing costs and slowed down growth, especially in Europe and the United States.

As a result, our analysis shows that since the beginning of the decade many developers have experienced inflated project costs, with communicated levelized cost of electricity (LCOE) increases of around 40 to 60 percent compared to 2020. Further, many projects have contracts for difference (CfD) that are not inflation adjusted, rendering these projects unprofitable.

The industry is experiencing severe consequences--for example, only about 40 percent of capacity that was expected to reach a final investment decision (FID) in February 2022 had taken FID by the end of 2023.8"Global offshore wind farm database and intelligence," accessed September 2023. In addition to these delays, projects have been canceled in markets such as the United Kingdom and the US East Coast.

Following the macroeconomic shocks, it is uncertain when the industry will achieve structural profitability again. We see five drivers impacting the future of the industry: the position on the cost curve, the regulatory landscape, market pull, supply chain capacity, and developer behavior. These drivers can help us understand recent and future developments in the offshore wind industry and what circumstances may affect profitability (Exhibit 2).