A Beacon of Hope in Stormy Seas

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By: Sebastian Schneider

A core objective of the energy transformation is the switch from fossil fuels to renewable energy sources. Offshore wind energy plays a key role in this. New offshore wind farms are enormous in size: projects planned today will reach several gigawatts of capacity, while onshore wind and solar farms rarely generate more than 100 MW. Their marginal costs of power generation are lower and the yield of turbines at sea fluctuates due to wind strength less than on land. The feed-in from offshore wind farms therefore leads to less load volatility in the electricity grid than that from photovoltaics or onshore wind. This is particularly important as we are phasing out the classic base load-capable generators powered by coal and nuclear energy.

Electricity generated by offshore wind farms is in high demand: the largest electricity consumers such as technology companies, the metal, plastics and chemical sectors, as well as transport and logistics groups, sign long-term, large-volume supply contracts for green electricity, known as Corporate Power Purchase Agreements (PPAs). This allows wind farm operators to plan their income over many years without state subsidies.

Policy makers have recognised the potential and set ambitious targets for accelerated expansion with the Offshore Wind Act 2023: The aim is to have 30 GW of generation capacity in the German North Sea and Baltic Sea by 2030, and 70 GW by 2045. By comparison, just 8 GW has been installed in the past 20 years. There is intense

competition for new offshore wind farm sites: eight sites were awarded in auctions last year. The four largest projects with a combined capacity of 7 GW were secured by two oil companies for a record total of 12.6 billion euros. In addition to energy companies, interest from financial investors such as infrastructure funds and pension funds, continues unabated. This broad range of investors is complemented by industrial companies with particularly high energy consumption. Some of them are not only signing PPAs, but also acquiring equity stakes in projects. Even in the current interest rate environment, banks are still providing large-scale loans at sufficiently attractive conditions.

With technological arguments on its side, the offshore wind industry receives political support and attracts a broad spectrum of investors. These should be the optimum conditions for successful projects and growth in the sector. But those who have been following the news recently may have gathered a different impression. In the UK and the US, companies have terminated the development of individual projects; a UK government tender for new sites failed to attract a single bid at the auction; leading turbine manufacturers first reported losses and ultimately received government support.

This raises questions: Why did this happen and what needs to be done?

There is not one answer to the first question, but several.

After the coronavirus pandemic, global demand for materials such as steel increased rapidly. But warehouses were empty and freight capacities limited. The war in Ukraine exacerbated inflation. Rising raw material prices increased the cost of manufacturing turbines, foundations and cables. This hit European manufacturers at a time of great uncertainty about the long-term project pipeline, and they were therefore reluctant to build up production capacities. And it is not only raw materials that are in short supply, but also highly specialised installation vessels that have been fully booked for years. There is also a lack of skilled labour to accelerate expansion.

Such distortions in the supply chain are particularly critical for the offshore wind industry because projects are planned years in advance, based on revenue modelling over a project term of up to 35 years. As the German tendering model de facto means that projects no longer receive state subsidies, conclusion of PPAs at an early project phase is a prerequisite for planning security on the revenue side. The models must also make assumptions about construction and operating costs as well as future interest rates. They determine the entry price for investors and the bid price that bidders are prepared to pay in the auctions for new project sites. These prices are fixed at an early stage of the project, while several decisive costs can still diverge significantly from the assumptions.

The planning horizon for offshore wind farms is long-term, in part also because permitting takes a long time – on average, two years for the complex plan approval

procedures to be finalised. Both European and German legislators have recognised the need for action. As part of *its European Wind Power Action Plan*, the EU Commission announced in October 2023 that it would improve the speed and predictability of permitting procedures across Europe. An EU emergency regulation already makes it possible to dispense with the environmental impact assessment. And the Renewable Energy Sources Act stipulates that wind farms are in the overriding public interest, which gives them priority over other interests.

The auction rules for new sites not only decide who is allowed to secure a project, they also influence costs and viability. Different criteria apply throughout Europe. There are two separate procedures in Germany: The Federal Maritime and Hydrographic Agency examines some sites for their suitability before the auction. A combination of bid price and qualitative criteria is then used in the auction. The qualitative criteria measure the contribution to decarbonisation, the amount of electricity already marketed via PPAs, the avoidance of adverse environmental impacts, and the contribution to securing skilled labour. Sites that have not yet been analysed for their suitability are awarded to the highest bidder.

Both procedures have attracted criticism. The expediency of some criteria is debatable. As the rapid expansion and efficient system integration of offshore wind have priority, it would make sense for the award criteria to reflect this. For example, they could take into account the bidders' track record of projects completed according to plan, or the use of the most suitable turbine technology. But where the highest bid is the only deciding factor, the winner will always be a bidder which determines its upper bid limit either according to a different logic or based on revenue and cost assumptions that no competitor agree to.

The legislator will nonetheless not rectify the known weaknesses of the auction design before the next auction rounds in 2024. But after that, it will have to take action – and will be driven to do so by Brussels. In the *European Wind Power Action Plan,* the EU Commission has also set itself the task of harmonising the European auction regimes. It wants to introduce objective, transparent and non-discriminatory qualitative criteria.

So what needs to be done to get the key industry for the energy transition back on track for success?

The strengths of offshore wind energy remain unchanged. And its potential has not been exhausted: floating wind turbines that are not anchored to the ground by foundations, the bundling of offshore wind farms via Energy Islands and their cross-border integration into the electricity grids, as well as the production of green hydrogen by electrolysis at sea – all these innovations serve as examples for further development to come.

The industry must be restored to a position that plays to its strengths. To do this, it needs auction procedures that do not encourage risky bets, but instead reward forward-

looking planning and realisation security. Permitting procedures must be efficient and take into account the importance of expanding offshore wind energy. Planning security is needed, not only for wind farm operators, but also for their suppliers.

In December 2023, the European Commission, 26 EU Member States and more than 300 companies jointly committed to implementing the measures of *the European Wind Power Action Plan* in the *European Wind Charter*. The initiatives at both an EU and a national level touch on important levers. They must now be consistently pursued and enhanced and then prove to be effective in practice.

AUTHOR

Sebastian Schneider
Partner
+49 69 17095 120
sebastian.schneider@hengeler.com