

Exploring Asia Pacific Offshore Wind Development from a Japan-Taiwan Relations Perspective

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Preface: Blue Wind, a Japanese turbine installation vessel

In the summer of 2023, due to the global shortage of installation vessels, the East Asia's largest offshore wind farm, Greater Changhua 1&2a, had only about 10 turbines left to be installed. It wasn't until the end of 2023 when the Japanese offshore wind installation vessel, Blue Wind, finished its work in Hokkaido, arrived at the Changhua offshore wind farm to install the remaining turbines. However, due to weather restrictions and global shortage of installation vessels, Blue Wind could not complete the installation and had to redirect its efforts to other projects.

It's evident that there's a global shortage of large-scale offshore wind construction vessels. Moreover, it's foreseeable that countries in the Asia-Pacific region will accelerate offshore wind power deployment in the coming years. This acceleration is driven by the establishment of Net-Zero targets and the increasing pressure on companies to reduce carbon emissions. For example, TSMC, the largest semiconductor manufacturing company, is actively seeking to purchase green energy.

However, despite these opportunities, the offshore wind industry is facing several issues, which are likely to become more challenging in the future.

The struggles of the APAC offshore wind industry

Inflation, rising costs in supply chains and increased interest are the main challenges for offshore wind industry. Asia, in particular, faces numerous hurdles compared to other regions. Following the Ukraine-Russia war, European countries accelerated multiple offshore wind projects to mitigate the conflict's impact, aiming to expedite energy transition goals and enhance energy independence. These projects have successfully reached financial closure and are expected to commence construction between 2028 and 2030. Europe's highly integrated and mature market makes it an attractive place for both funding and supply chain resources.

Furthermore, vessel operators may prefer European markets due to more flexible regulations and larger economic scales. For investors, Europe offers stability, predictability, and a geopolitically less challenging environment. Consequently, the primary challenge for the Asia-Pacific region is to compete with Europe for supply chain resources, vessels, and, critically, capital. Additionally, local content requirements (LCRs) significantly contribute to high supply chain costs, directly impacting renewable energy prices.

Local content requirements (LCRs)

The offshore wind industry in the Asia-Pacific region continues to grapple with high costs, with LCRs policies being a significant contributing factor. In Taiwan, for instance, LCRs have led to increased expenses for foundations, wind turbines, and vessels, ultimately affecting the price of renewable electricity. While proponents argue that LCRs creates job opportunities, others contend that it raises costs and may violate principles of international free trade. When making policy decisions, blindly supporting or opposing local industries based on singular reasons is impractical. Instead, it's essential to assess whether the objectives of LCRs policies align with current consequences.

Currently, Taiwan's LCRs policy has resulted in offshore wind projects with LCRs obligations costing twice as much as those without such obligations. While the original intention of LCRs was to promote cooperation and long-term investment, it has led to offshore wind industry developers being compelled to purchase the most expensive items locally, driving up construction costs for wind farms and enhancing high green energy prices. However, every country in the Asia-Pacific region has its own competitive edge, which can be maximized through cooperation for mutual benefit.

For instance, Ørsted's involvement in the Greater Changhua 2b&4 offshore wind farm project in 2025 exemplifies this. Without LCRs obligations, Ørsted is sourcing steel from Japan and foundations from South Korea and Vietnam. By developing a more efficient Asia-Pacific supply chain and fostering geopolitical resilience through local partnerships with companies like Siemens and Vestas establishing wind turbine factories in Taiwan, there's potential for Taiwanese wind turbines to be exported to South Korea and Japan, while companies like Blue Wind can operate across various markets in the Asia-Pacific, forming an efficient, interdependent supply chain.

Countries in the Asia-Pacific region, including Japan, South Korea, Taiwan, Vietnam, the Philippines, and Australia, can collaborate to create a substantial offshore wind power market, further integrating to pursue maximum benefits and overcoming limitations of local production.

Beyond efficiency and competition, this cooperation carries a crucial message: democratic countries in the Asia-Pacific, such as Japan, South Korea, and Taiwan, can foster closer ties in industry and sustainable development, strengthening their alliance and building geopolitical resilience together.

Through mutual cooperation in the supply chain, not only can costs be reduced, but the world's current challenges, such as supply shortages, rising costs, and inflation, can also be addressed through tighter, more efficient cross-border collaboration to establish resilience. Imagining a world where Asia-Pacific countries closely cooperate

in green energy paints a picture of sustainable development, economic prosperity, and geopolitical stability.

A Proposal for Taiwan-Japan Cooperation

There isn't a single mechanism for different countries to establish supply chain cooperation, but we can start with collaboration in working vessels. Due to Taiwan's maritime laws, offshore wind developers must prioritize the use of domestically registered vessels in Taiwanese offshore wind farms.

If Taiwan and Japan can establish a joint market for offshore wind vessels, given the proximity of the two countries, vessels from both countries can work in each other's country during idle periods, reducing vessel mobilization downtime. Starting from vessel cooperation and expanding to other offshore wind projects, it will be possible to increase cooperation between Taiwan and Japan in the offshore wind industry, reduce costs, and increase resilience.

Conclusion : A World of Close Cooperation among Asia-Pacific Countries in Green Energy

The Fukushima incident in 2011 prompted global reflection on energy usage patterns, accelerating not only Japan but also other Asia-Pacific countries including Taiwan, and Europe in the process of energy transition.

Within the Fukushima incident lies a human tragedy, but we can find a shared human vision: a sustainable energy system.

And this sustainable energy system cannot be achieved without regional cooperation. The vision is that firstly, we will extensively deploy offshore wind energy and other feasible renewable energy facilities. Secondly, we will consider energy islands as centers for energy transmission and P2X facilities. Thirdly, green energy can be transformed into renewable hydrogen and green fuels, requiring the establishment of an integrated smart grid.

The new demand for green energy, green hydrogen, and green fuels will shape the entire new energy ecosystem, an area where the Asia-Pacific region can continue to strive for, building a cooperative supply chain and an integrated large market.