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Lessons Drawn from Poland on the Key to Supply Chain Development in the Wind Energy Industry: Leveraging Local Industries

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In April 2025, the Global Wind Energy Council (GWEC) published a position paper titled "An Industry Perspective on Localization."¹ This paper calls on countries to build strong, future-proof wind energy industry strategies, including easing Local Content Requirements (LCR) with a view to promoting the international development of the wind energy industry's supply chain.

The same may also be said for other industries, but if LCR is not properly designed or applied excessively when a country imports technology from other countries, it can increase project costs, hinder appropriate investment, and prevent the country from achieving its renewable energy adoption targets.

GWEC studied the cases of several countries that have introduced wind power from other countries and expanded their wind energy industries, analyzed the positive aspects of LCR along with its challenges, and made the following seven policy recommendations toward localizing production in a way that is aligned with policy goals such as economic efficiency, technological innovation, and energy transition.

- **Harness international competition:** Avoid supplier lock-in by maintaining open, competitive procurement practices.
- **Ensure policy coherence:** Align industrial, energy, and grid policies across all governance levels.
- **Provide long-term certainty (stability):** Guarantee auction visibility and stable market signals.
- **Leverage local strengths:** Build on existing industrial capabilities and transferable skills within the local economy.
- **Offer market-based incentives:** Use grants, tax credits, and infrastructure investment to encourage local supply chain development.
- **Empower the workforce:** Invest in training, apprenticeships, and technology transfer programs.
- **Promote regional collaboration:** Develop resilient, interconnected supply chains across borders.

All the policy recommendations contain valuable hints for Japan, which aims to promote the wind energy industry going forward. However, in this paper, I would like to focus on "leveraging local strengths."

Many countries that are introducing and expanding wind power generation are also often

¹ Global Wind Energy Council, *An Industry Perspective on Localization: Pro-business Measures to Drive Local Industrial Development*, April 2025, <<https://www.gwec.net/reports/global/industry-perspective-on-localization>>.

simultaneously attempting to make the transition from traditional industries, such as coal and steel, to next-generation energy. In doing so, rather than simply abolishing the existing local industries, the proposal is to identify and make full use of local industries that have skills and assets (facilities) that are compatible with wind energy technology. GWEC also states that it would be ideal for such efforts to be implemented within a framework of collaboration, not only with government agencies and the industry, but also with civil society. This also suggests the importance of treating industries that the people of the region are familiar with, which have formed the foundation of their lives, with due respect.

In this respect, GWEC cites the port city of Esbjerg, located on the west coast of Denmark, as a success story. Port Esbjerg, which used to be a marine infrastructure base for oil and gas development, became an installation hub for the world's first large-scale commercial offshore wind farm, Horns Rev 1 (2001). Since then, it has been involved in the installation and maintenance of around 50 offshore wind farms in Denmark and across Europe. By 2024, approximately 10% of Europe's offshore wind power capacity is said to have been shipped from Port Esbjerg.

The fundamental factors for this lie not only in Esbjerg's strategic location and suitable port infrastructure, but also the Danish government's strong commitment to green transition and the presence of local companies that had utilized their workforces, highly skilled in the fields of marine engineering and offshore operations, in the offshore wind industry in a timely manner.

Similar examples can be seen not only in Denmark but also in other countries that have adopted and expanded the scale of wind power generation. For example, Poland's wind power capacity, which was only 4 MW in 2000, has expanded rapidly since the late 2000s, reaching 9,307 MW in 2023.² In contrast to Japan, where growth has stagnated since the 2010s, Poland has seen a prominent rate of growth in its installed capacity, suggesting that there are likely to be significant factors behind this.

The recommendations on Poland's offshore wind energy and the optimization of its development,³ published by the Polish Wind Energy Association (PSEW) in 2021, bring up interesting points about how the country's supply chain has developed. Częstochowa in southern Poland is a city that developed through its steel industry during the communist era. Its steelworks (Częstochowa Steelworks) became an important supplier of steel sheets to wind turbine manufacturers from 2008 to around 2015 and contributed greatly to the rapid expansion of wind power generation facilities in Poland. Despite the significant economic downturn around this time in the shipbuilding sector, which was an important customer of the steelworks until 2011, it was able to maintain production (Częstochowa Steelworks filed for bankruptcy in 2019 but resumed steel production after being acquired by Sunningwell in the

² IRENA, *IRENASTAT Online Data Query Tool*, 2025. <<https://www.irena.org/Data/Downloads/IRENASTAT>>.

³ PSEW, *diagnoza obecnej sytuacji i potencjału krajowego łańcucha dostaw dla lądowej energetyki wiatrowej w polsce oraz rekomendacje na rzecz optymalizacji jego rozwoju*, 2021, <https://www.psew.pl/wp-content/uploads/2023/12/DIAGNOZA_E_BOOK-PL-1.pdf>.

same year.⁴⁾

The wind energy industry covers a wide range of supporting industries and creates employment at many stages of design and manufacturing. To understand the elements of job creation quantitatively and foster the skills required, leveraging industries that are rooted in the local community can be the most effective and acceptable approach. Since the main components of wind power generation facilities, including towers, turbines, and nacelles, are transported over long distances by ferry, production bases do not necessarily have to be located in areas suitable for wind power generation.

Japan and Poland have numerous local industries in common, such as steel, coal, and aircraft parts. Shipbuilding, which shares many technologies with offshore wind power generation, is also one of the traditional industries that Japan takes pride in. Examples of local industries being leveraged in Denmark and Poland may serve as important case studies for establishing the direction for the development of Japan's wind energy industry.

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⁴ Sunningwell, *Częstochowa Steelworks*, <<https://www.sunningwell.pl/en/czestochowa-steelworks/>>.