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Will wind power be established as a key industry in Japan?

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I believe that we must first look back rather than look forward, when we are to discuss “Perspectives on the current and future International Energy Landscape”.

If, in this paper, I were to consider only listing the conditions required to establish wind power as a key industry and make policy recommendations, this would be nothing more than a wish list, lacking in both practicality and persuasiveness. In sincerely reflecting on why it has not become established to date, it is surely important, if possible, to compare and contrast the establishment of wind power as a key industry in countries around the world.

As a zero-carbon source of electricity, wind power has attracted attention as a leading option for achieving Japan’s goal of carbon neutrality by 2050. Regarding wind power, the Cabinet decision of July 2023, “Strategy for Promoting Transition to a Decarbonized, Growth-Oriented Economic Structure” notes that “We will move forward with forming a large-scale, robust supply chain for the offshore wind industry including turbines and their related components, floating platforms and more.” However, just because it is positively mentioned in the foreword to a policy document does not mean that businesses will actually invest to create strong growth in wind generation.

The wind industry consists of a pyramid-shaped supply chain that has the manufacturer (vendor), which designs and assembles wind turbines, at its peak. It is a wide-ranging sector that also includes materials and processing equipment. While of a different magnitude in terms of units produced, this industry has a similar structure to the automotive and aircraft industries.

However, as of October 2023, there are no large-scale turbine manufacturers to represent the peak of the pyramid in Japan. In the past, a number of companies including Mitsubishi Heavy Industries, Hitachi, The Japan Steel Works and Fuji Heavy Industries (currently Subaru Corporation) have been involved in finishing wind turbines. But in 2012, Fuji Heavy Industries sold its wind turbine unit to Hitachi while in 2020, Mitsubishi Heavy Industries withdrew from wind turbine manufacturing when it established a joint venture with Danish company Vestas. Such developments mean that today, the only remaining Japanese vendor is Komaihaltec Inc., which makes small onshore wind turbines in the range of 300kW.

It is not as if there has never been hope for wind power in Japan. After the Renewable Portfolio Standard (RPS) Law was enacted, new wind power generation was being installed at the rate of about 300,000 kW every year from 2002 up to around 2006. During those years, in addition to capital-rich large companies like Eurus Energy and CEF, local governments with strong wind resources also

developed and implemented wind energy. On the manufacturing side, many companies entered the industry such as IHI in a technology alliance with Nordex, Hitachi based on technology from Enercon, Mitsubishi Heavy Industries and The Japan Steel Works. Industry players likely anticipated the expansion of the Japanese wind power market at that time.

It was in the second half of the 2000s that the speed of expansion began to waver. While the decade of the 2000s saw the addition of 2.34 million kW in generating capacity, this growth fell to 2.02 million kW from 2011 to 2021 and at the end of 2021, generating capacity sat at 4.58 million kW. Given that the commercial potential of onshore wind power in Japan is between 118.29 and 162.59 million kW, it can hardly be claimed that all of the suitable sites have already been developed. Other factors are clearly at play in the slowdown.

Earlier studies suggested that the lack of appeal to market participants of government-set tariffs was a major factor. The first feed-in tariff (FIT) set for the generation of over 20kW of wind power in July 2012 was 22 yen/kWh. For generators then, the cost of production was above that, so the FIT system was not used as much as it was for solar power (generation over 10kW), which had a tariff of 40 yen/kWh in the same year. This is an accurate observation, but to investigate the root causes more deeply as to why the market did not expand as much as expected, and why a wind power industry did not become established, we need to go a step further and look at why the cost of production has not been sufficiently reduced. Without pursuing this question, the only conclusion to be reached would be that the tariff should have been set higher.

Therefore, a look back at the past is vital. In the 1990s, European firms such as Vestas, Enercon and NEG-Micon, and so on, were the main vendors installing the first commercial wind power equipment in Japan. Having built up track records in their own expanding markets during the 1980s, hand in hand with their suppliers, they had the wherewithal to invest their profits in the next generation of large turbines. The process was far from smooth, with technical challenges such as increasing the size of blades as well as problems with projects that caused financial crises. Overcoming these problems and becoming a key industry in their own countries, the vendors established their reputations in the European market. They then set sail toward emerging markets worldwide including Japan and readied themselves for mass production, which brings us to the present day.

Back in Japan, the falling cost of fossil fuels and electricity deregulation from the late 2000s increased the pressure on vendors to bring down costs. For the Europeans, who were constantly exploring attractive growth markets, emerging economies still lacking a market framework like China and India became more profitable than Japan. Japanese vendors were left behind: their technology transfer from European firms had not completed as well as their domestic supply chains were not yet established, they needed to improve their market competitiveness with their own devices. However, as this could not be foreseen, these vendors gave up on the business and their supply chains were never completed, bringing us to the present situation.

While more robust evidence should be given for the above observations, the clear difference between the European wind power vendors and their Japanese counterparts is the fact that they have overcome a large number of difficulties, moved into the global market and established mass production.

Without a doubt, the first step toward making wind power a key industry is uncovering new markets with consistent customers.

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