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China is in “a different league” in terms of its wind power installed capacity, and the downward trend in costs is also remarkable

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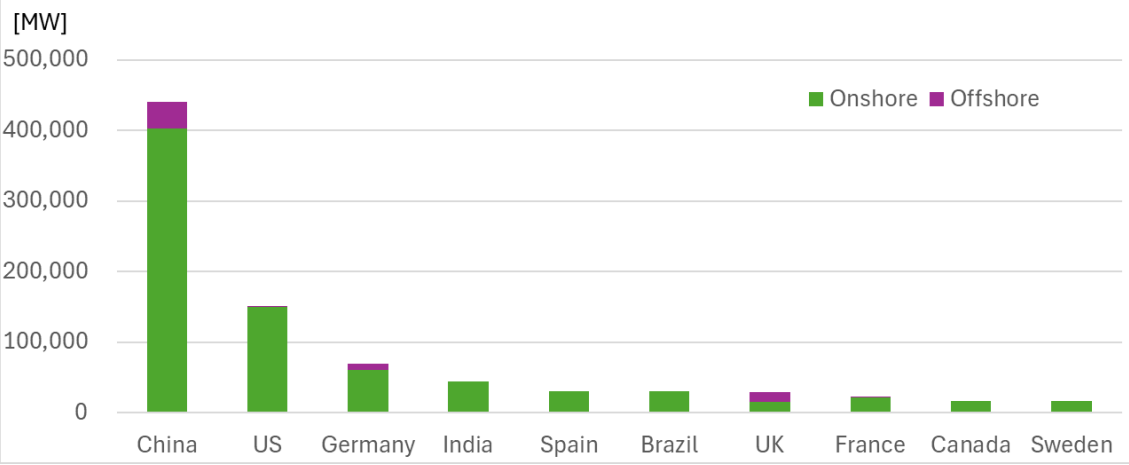
The Global Wind Report 2024 (hereinafter the GWR-2024), a document from the Global Wind Energy Council (GWEC) that sums up the state of the world’s wind power development, was released on April 16, 2024[i]. In the GWR-2024, GWEC CEO Ben Backwell comments that “In 2023 the wind industry recorded a record 117 GW of new installed capacity worldwide. Given the ambitious target that was presented at COP28 of tripling renewable energy compared to the current level by 2030, when it comes to wind power also, we will need to accelerate the pace of new installed capacity approximately threefold to 320 GW by 2030.”

The graph below presents the Top 10 countries for wind power capacity[ii] as of the end of 2023 according to the GWR-2024. The total installed capacity represents the total of onshore and offshore wind power, and onshore and offshore are distinguished on the graph according to color.



Graph Wind power capacity by country (1st through to 10th, end of 2023)

Source) GWEC (2024)

What stands out to such an extent that it almost needs no explanation is China’s scale, which puts it in such “a different league” that it seems as if a log scale needs to be applied

to the graph's vertical axis. At the end of 2023, China's installed capacity in terms of total onshore and offshore wind power was 441 GW, accounting for 43% of the global total (1,021 GW) and equivalent to around three times that of the U.S., which at 150 GW ranked No. 2 in the world. Even world No. 3 Germany, a leading wind power nation and home to international wind power equipment makers, had less than one-sixth of China's installed capacity at the end of 2023, at around 70 GW. China is also without peer in terms of the installed capacity that it put in place over the most recent one-year period (2023), at around 76 GW, or around 65% of the global total. Incidentally, Japan ranks No. 16 in the world for its onshore and offshore wind power combined, with installed capacity of around 52 GW.

Given this overwhelming scale of China's wind power, what is the real strength of the country's wind power industry? According to the latest information [iii] from the International Renewable Energy Agency (IRENA) regarding Levelized Cost of Electricity (LCOE), which is an easy-to-understand indicator for measuring technological maturity, wind power's LCOE has been falling markedly in recent years, and in China in 2022 it was 2.7¢/kWh (weighted average). In "Other Asia," which includes Japan, it was 5.5¢/kWh, in Europe it was 4.5¢/kWh and in North America it was 2.9¢/kWh, all of which are also sufficiently low compared to a decade ago, but we can see from these figures that in China, wind power has already achieved sufficient cost competitiveness and is spreading across extensive suitable sites. Incidentally, according to the same information, by country the lowest LCOE for wind power in 2022 was Brazil, at 2.4¢/kWh, but for the most part this probably reflects a difference in facility utilization rates. In 2022 China boasted a facility utilization rate of 35% on a new installation basis, which is by no means low, but Brazil's was 50%. Such figures can only be described as enviable to Japan, where the rate is around 25% at best.

Thanks in part to improvements in survey accuracy and technological innovation, there are moves to introduce wind power even in regions that had been viewed as challenging from a business feasibility perspective up to now. On May 21 the Saudi-Japan Vision 2030 Business Forum was held in Tokyo, and Saudi Power Procurement Company (SPPC) and Marubeni Corporation concluded a power purchase agreement in relation to two wind power projects (1,100 MW total) in Saudi Arabia. According to Saudi Arabia's Minister of Energy Prince Abdulaziz, one of those projects, the AlGhat project, has achieved a new world record low LCOE for wind power, at 1.56558 ¢/kWh[iv].

It is common knowledge that LCOE estimates can change in any number of ways as a result of various conditions such as total project costs, maintenance costs, facility utilization rates, and discount rates. Accordingly, it may be that at this very moment an

LCOE of around the same level is being achieved in China, Brazil, India or elsewhere, meaning not much significance is attached to "a new world record." Nevertheless, given that the wind power business is beginning to show prospects even in Saudi Arabia, which ranked No. 31 in the world at the end of 2023 with a total installed capacity of 422 MW, this could be described as significant information.

Even in Japan, interest in offshore wind power has been increasing sharply in recent years, but without building up a succession of experience in the form of equipment design, manufacturing, and operation, the "social implementation of floating offshore wind power generation" will likely prove difficult. As is shown in the GWR-2024, even when it comes to offshore wind power installed capacity, not surprisingly China is in "a different league" as world No. 1. It will be worth keeping an eye on how far Chinese companies expand their presence not only in the offshore wind power market, but also in the replacement market for onshore wind power that will emerge in the future.

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[i] Global Wind Energy Council, "Global Wind Report 2024", 2024-4-16.
[ii] Ibid., p.149.
[iii] International Renewables Energy Agency, "Renewable Power Generation Costs in 2022", 2023-8-29.
[iv] Ministry of Energy, Saudi Arabia, "Saudi Power Procurement Company Announces New World Record For Low Cost of Electricity from Wind Power", 2024-5-21.