Tokyo europe renewable energy

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The percentage of total electricity generated in Japan (including on-site consumption) by power source in 2023 was estimated from the Electricity Survey Statistics[1] and nationwide electricity supply and demand data[2] . As a result, the share of renewables in Japan’s total electricity generation in 2023 was 25.7% (Table 1, Figure 1).

Thermal power generation is on a declining trend, accounting for 66.6% of electricity generated in 2023, down from 72.4% the year before and down about 17 percentage points from 2016, but still at a high level. For coal-fired power, the share decreased from 30.2% in 2016 to 26.5% in 2021 but increased to 28.3% in 2023; for LNG, there is a consistent downward trend from 38.9% in 2016 to 29.0% in 2023. Nuclear power, on the other hand, increased from zero in 2014 to 6.5% of electricity generated in 2019, then decreased to 4.8% in 2022, but increased to 7.7% in 2023.

Since the 1990s, the European Union (EU) has been leading the world in the introduction of renewable energy in the electricity sector, with the share of electricity generated in the EU as a whole exceeding 30% in 2017 and reaching 44.3% in 2023, more than 40% in 27 EU countries, far exceeding the 32.8% share of electricity generated from fossil fuels. This is much higher than the 32.8% share of electricity generated from fossil fuels. This is nearly twice the share of renewable electricity in Japan. The share of variable renewable energy (VRE), such as solar and wind power, also reached 26.6% in Europe as a whole, more than twice the share in Japan (about 12%).

A comparison of the share of renewables in annual electricity generation in European countries and Japan from the 1990s to 2023 shows that European countries have steadily increased the share of renewables since the 1990s toward the year 2020 (Figure 6). In Denmark, the share was already 17% in 2000, but it exceeded 30% in 2010, reached 87% in 2023, and is aiming to exceed 100% renewables electricity by 2030.[4] In Denmark, 20 years of experience since 2000 in the power system has resulted in integrated solutions to provide more than 50% of electricity from variable renewables VRE from wind and solar in the power system and power market.

The data is based on monthly electricity supply-demand data published by 10 general transmission and distribution companies for each area in Japan, and is compiled for the year 2023, focusing on the ratio of renewable energy to grid electricity demand. ISEP"s Energy Chart provides an interactive and easy-to-understand analysis of electricity supply and demand data in Japan using a variety of graphs from publicly available data. [5]

The share of renewables in Japan"s total annual electricity cunsumption averaged 22.3% in 2023, up from an annual average of 20.5% in 2022 (Figure 7). The share of solar PV was 10.7%, and together with the 1.2% share of wind power, the share of variable renewables VRE was 11.9%. Solar PV increased from 9.6% in

2022, a larger share than hydropower at 7.8%. Biomass power generation increased to 2.3% from 1.9% the previous year. Meanwhile, the share of nuclear power in 2023 was 9.0%, up from 5.9% the previous year.

The monthly average of the share of renewables in Japan"s total electricity consumption was highest in May 2023, at 32.5%, up from 30.3% the previous year. The share of VRE (variable renewables) also reached a maximum of 16.5% at this time, up from 15.4% in April of the previous year. The daily average reached 41.2% on May 2, 2023, and the maximum VRE share was 24.2% on the same day. The one-hour value for the share of renewables peaked at 77.4% on May 3 at 10:00 a.m., with solar PV at 59.9% and wind power at 1.2%, for a one-year peak VRE of 61.2%. Incidentally, the peak value for wind power was 4.7% before dawn on November 11, 2023.

[1] Electricity Survey Statistics

[2] The estimates use the previous year"s values for the estimated on-site consumption of private power generation and residential PV after October 2023, but the impact is expected to be small.

[3] Ember(2024) "Global Electricity Review 2024", https://ember-climate /insights/research/global-electricity-review-2024/

[4] Danish Energy Agency, "The development of flexibility and its role in the Danish electricity system," https://

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