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Outlook and Challenges for Renewable Energy Market

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Global renewable energy power generation, and its share of all energy, will continue rising in 2021

1. The drop in economic activity caused by COVID-19 pandemic saw 2020 global power decline over 2019. Although thermal power generation from sources such as coal has declined significantly throughout the year, renewable energy power generation is expected to grow at a pace of approximately 5% year-over-year. As a result, renewable energy as a proportion of global energy power generation, which was 26% in 2019 (including 16% hydropower), is expected to grow to about 28.0-28.5% in 2020 and 29% in 2021.
2. As power generation declines overall, the increase in renewable energy is for the reasons that include the start of operations in 2020 at renewable energy power generation plants that have continued to grow in capacity due to previous investment, many countries' adoption of incentives to spur greater renewable energy usage, including priority dispatch policies and mandates for purchasing power under FIT schemes, and the fact that marginal generation costs for renewable energy (other than biomass) are close to zero, making it competitive for the wholesale electricity markets in the U.S. and Europe, which buy and sell based on the merit order. Growth in renewable energy power generation capacity continues in 2020, putting increasing downward pressure on coal-fired thermal power in especially the U.S. and Europe. This is likely to see renewable energy as a proportion of total power generation continue to grow beyond 2021, when economies stage a recovery from COVID-19 pandemic.

Renewable energy power generation facility capacity will continue to increase in 2021

3. Supply chain disruptions and construction delays due to COVID-19 have

caused the rise in renewable energy power generation facility capacity to stall in the first half of 2020, and there were some who forecast slowdowns throughout the year for facility capacity. Nevertheless, renewable energy facility construction increased significantly in particularly China, the U.S., and Europe beginning in the second half of 2020. Consequently, the 2020 annual renewable energy increase is expected to match or exceed the 2019 level (190 GW), the highest level recorded. The annual rate of increase will also remain at the high level of 8%/year that continued up through 2019.

4. 2020 will set a new record for annual renewable energy growth, which will then be outpaced in 2021. Due to renewable energy support programs, the U.S. and China are racing to build renewable energy facilities. Projects in the countries that had seen delays in 2020 will begin operations, which could see annual renewable energy growth over 200 GW and a new record. Over 80% of this increase will come from solar PV and wind, a market structure that will persist.
5. Global cumulative renewable energy power generation facility capacity (including hydropower) will reach about 3,100 GW (comprising 1,350 GW hydro and 1,750 GW non-hydro) by the end of 2021. Global power generation in 2019 was 7,030 TWh for renewables overall (comprising 4,220 TWh hydro and 2,810 TWh non-hydro), which accounted for 26% of the total (comprising 15.6% hydro, 2.7% solar PV, 5.3% wind, and 2.4% biomass/geothermal).

Renewables market trends in Japan

6. Generation facility capacity for all renewable energy, excluding large hydrogen power facilities generating above 30 MW will grow at a rate of 6 GW/year for FY 2020-2021 as a result of a slowdown in residential and commercial solar PV deployment resulting from COVID-19 pandemic. The rate of growth will hold at about 8%/year for FY 2020-2021, a slower decrease than the IEEJ forecast in July 2020.
7. Total generation capacity will reach 87 GW by the end of FY 2021, bringing FY 2021 renewable energy power generation as defined above to 166 TWh. If large hydropower plants above 30 MW are included, renewable energy as a proportion of all energy power generation will reach 20.4% (8.0% hydro, 12.4% non-hydro) for FY 2021. The average annual increase of renewable energy power generation was 9% from FY 2008 to FY 2019, and will be 7% from FY 2020 to FY 2021. As renewable energy power generation capacity is also expected to continue rising beyond FY 2021,

the current energy mix plan in 2030 (renewable energy becoming 22-24% of total generation) could actually be reached in the first half of 2020.

8. Solar PV generation is highly likely to hit 65 GW by the end of FY 2021, exceeding the 2030 energy mix plan of 64 GW. Wind and biomass will both continue increasing by 0.4-0.5 GW/year. As numerous projects approved for FIT are set to begin operations, onshore wind generation capacity will rise significantly after 2021 and large-scale bidding for offshore wind producers will begin, providing signs that markets will shift away from an "overconcentration" on solar PV. If the 93 GW of capacity that has received FIT approval as of June 30, 2020 goes into operation, consumers will have paid JPY 60 trillion to date; this is equivalent to about a JPY 3.40/kWh rise in electricity prices which is slightly higher than the current FIT surcharge of JPY 2.98/kWh for FY2020.

Policies for renewables other than electricity will be needed to achieve the 2050 carbon-neutral goal

9. Japan's renewable energy policy to date has focused only on electricity. However, achieving Japan's 2050 carbon-neutral target will require eliminating the majority of the country's current energy-originated CO_2 emissions. Policy interest is rising not only for electricity, which satisfies a mere 28% of final energy demand, but also for fossil fuels, which satisfy the remaining 72%, with a particular focus on heat utilization in industry sector and decarbonization in transportation sector. Along with the decarbonization of fossil fuels, further renewable energy usage is also expected to draw attention in these sectors.

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