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Outlook and Challenges of Renewable Energy Markets in Japan and the World in 2020

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Global renewable energy markets continue to expand in 2019-2020.

1. The total installed capacity for renewable power generation including hydro was 2,470 GW in which 1,300 GW from hydro and 1,170 GW from non-hydro renewables at the end of 2018. The figure is expected to increase annually by around 8% in 2019-2020 to reach 2,900 GW in which 1,300 GW from hydro, 1,600 GW from non-hydro renewables at the end of 2020. The total electricity output from renewables in 2018 was 6,670 TWh in which 4,190 TWh from hydro and 2,480 TWh from non-hydro renewables. The share of renewables in the full generation mix was 25.2% in which 15.8% from hydro and 9.4% from non-hydro renewables.

2. The installed capacity for renewable power generation grew by 175 GW in 2018, generally on a par with the largest recorded annual growth of 177 GW in 2017. Although the growth in China dropped by about 6% from the previous year due to changes in the country's renewable energy policy such as the scaling down of FIT for solar PV, high growth was maintained thanks to growth in the rest of the world.

3. Although growth is likely to remain slow in China in 2019-2020, the installed capacity for renewable power generation is expected to grow by around 40 GW per year, with China remaining the world leader in the deployment of renewables. Since growth in the installed capacity for renewables is accelerating in the rest of the world outside China, global growth per year is likely to approach the unprecedented amount of 200 GW in 2019-2020. Aside from China, the growth is strong in regions such as Europe, the United States, India and the Middle East. In each region, the growth is driven by solar PV.

The factors contributing to growth are the falling cost, the raising of renewables deployment targets, and the purchasing of renewable power by corporations.

4. There are three factors that contribute to the growth of the installed capacity for renewable power generation: the falling cost of renewable power generation, the strengthening of governmental target for renewables, and the expanded purchasing of renewable power by corporations. The falling cost of generation is particularly prominent with solar PV. According to a study by IRENA, the global weighted average cost (LCOE) of solar PV could drop to around USD 0.048/kWh in 2020 which is 44% down from the level of 2018. This lowering of cost is the main driver of the growth of installed capacity for solar PV.

5. As to government policies, in May 2019 the EU finalized its renewable target to be achieved by 2030 which states at least 32% of final energy consumption will come from renewables. This is expected to result in the accelerated deployment of renewables in EU countries. Likewise, in the United States, a number of major state governments have raised their RPS targets, which, combined with the last-minute deployment before the termination of tax relief for renewables, will accelerate the capacity growth in 2019-2020. On the other hand, corporations that are willing to invest in ESG are expanding their purchases of renewable power. Particularly, in the United States, the power that such companies have contracted to purchase from wind turbine or solar PV plants amounted to nearly 10 GW in 2018. This is already contributing to the growth of installed capacity for renewable power generation.

6. In the growing solar PV sector, the share of distributed systems which are mainly employed for self-consumption by final consumers has been increasing. The growth of capacity from such distributed systems is expected to contribute to 40 to 50% of the total growth of the installed capacity for solar PV achieved in 2019-2020. As governments redesign the Feed-in tariff schemes which lowers the FIT price or otherwise scaling-down or discontinuing the scheme, a shift is underway from “selling power to the grid” to “self-consumption”.

Japanese renewable energy markets and government policies

7. Although growth in the total installed capacity for renewable power generation had been slow in recent years, the growth in FY2018 increased to 7 GW thanks to the setting of a deadline for starting operation for solar PV projects that have not yet started generating power after being certified under the FIT scheme. It is expected to

continue growing at a similar rate, around 7 GW per year, in FY2019-2020. As a result, the total of the renewable capacity, excluding more than 30 MW of hydro, is expected to reach 83 GW at the end of FY2020 which would produce 158 TWh of electricity in FY 2020. Combined this with outputs from more than 30 MW of hydro, the contribution of renewables to power generation in 2020 is expected to total 19.0% in which 7.9% from hydro and 11.1% from non-hydro renewables.

8. The capacity for solar PV is likely to reach 63 GW by the end of FY2020, and to exceed 64 GW in FY2021 which is the national target for 2030. Since the power from wind and biomass-fired generation are both expected to increase by around 0.4 GW per year in the coming years, the total power generated by renewables may reach the 2030 target level which is 22-24% share of the total generated power as early as the mid-2020s.

9. There are three major policy challenges: lowering cost of renewable power generation; reconfiguring the power grids to be able to accept the expanded use of renewables and determining an approach to share of the costs; and developing a scheme for shouldering the cost of disposing of disused solar PV panels which is approximately USD 90 /kW.

10. As to the lowering of cost, it is necessary to consider that the burden on consumers will reach 60 trillion yen if all of the 89 GW of FIT certified capacity enters operation. Therefore, through a major revision of the FIT law scheduled in 2020, the government aims, along with a scaling-down of FIT, to replace the FIT by the FIP (Feed-in Premium), expecting renewable power generators to directly engage in selling power in the wholesale electricity market.

11. As to the reconfiguration of power grids, steady progress is sought in implementing the Japanese version of “Connect & Manage”. In addition, efforts are being made toward the well-planned “push type” formation of power grids that take into consideration the regional distribution of renewable resources, and toward the approach to the nationwide sharing of the cost of building inter-regional connection lines.

12. As to the sharing of cost for disposing of disused solar PV panels, the government is planning to introduce a scheme under which all operators of commercial solar PV plants more than 10 kW including already operating ones to deposit with an external fund the future cost of disassembling and removing the power generation equipment,

and to properly dispose of the waste such as solar PV panels so that solar PV facilities may be decommissioned properly after ceasing service.

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