



COFIRING 9 JAPAN WORKSHOP 25-27 FEB 2020

Biomass co-firing in Japan: current situation and future perspective

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In Japan, there is a rapidly renewable electricity growth since Feed-in-Tariff (FiT) started in 2012. The contribution of renewables in electricity consumption already exceeded 18% in 2018, and there is a study showing that it will reach 50% by 2030. On the other hand, it is true that the current ratio of coal in the energy mix is considerably high with 31% in 2018, while due to rapid renewable expansion, electricity market change may cause capacities factors of conventional thermal plants to drop. Therefore, the current government outlook of coal ratio in 2030, 26% may be amended, with the climate policy.

In these circumstances, biomass cofiring or conversion could be a favorable option to reduce dependency on coal. Nevertheless, there are limited discussions to explore an integrated policy of coal phase-out and biomass cofiring. To contribute to this discourse, this study aims to show the current overview of biomass cofiring market and policy development in Japan.

The Japanese FiT scheme was eligible for biomass cofiring projects until March 2019. With FiT generous tariff, five projects are already mixing biomass fuel to their boilers. In addition to that, more than 20 projects are registered by FiT, however, it is uncertain whether they will start biomass cofiring operations. This is mainly because they may lose FiT approval status when they enter the capacity market which will start in 2020.





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The second reason is that they face uncertainty in biomass fuel prices while no clear policy signal to introduce carbon pricing mechanism on fossil fuels. In addition to cofiring projects, many dedicated biomass projects may lead to fuel price increase. Since Japanese FiT has been also supporting dedicated biomass power plants, 0.8GW of large-scale biomass has started operation by June 2019. As a result, biomass fuel consumption has been increasing; in 2018 the annual consumption of wood pellet was 1.2 million ton, that of Palm Kernel Shell, PKS was 1.7 million ton. Moreover, as there are 5.3GW plants registered by FiT and waiting for on-line, it is predicted that biomass fuel consumption will increase drastically.

In 2019, considering the importance of sustainability, the Japanese government developed sustainability criteria for biomass fuels used for FiT projects. As the amount of sustainably available biomass is limited, bioenergy applications that solar and wind cannot provide decarbonization options, such as industrial heating process and transport, should be prioritized. Energy-intensive materials, such as steel, cement, and plastics could be substituted with biomass products. Therefore, it should be examined carefully when biomass resources are allocated to energy consumption sectors or geographic areas. As there are quite a few countries, including Japan, of which domestic biomass resource is not enough to meet demand, international collaboration is needed so that we can realize not only decarbonization in the energy sector but also sustainable biomass fuel supply.

