CANADIAN WOOD PELLET'S ROLE

JAPAN'S ENERGY SECURITY

CARBON NEUTRAL BY 2050

Japan has set ambitious targets to reach carbon neutrality by 2050, including reducing its GHG emissions by 46 percent by 2030 from 2013 levels. The Government also aims to have 36 to 38 percent of its power supply come from renewables by 2030.

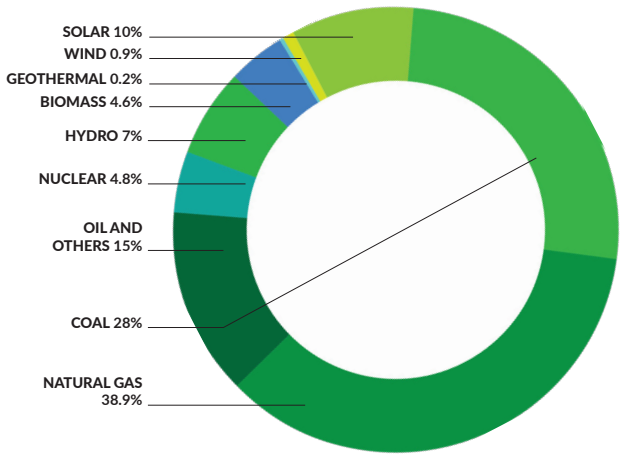
> Achieving the aim of carbon-neutrality by 2050 will require Japan to substantially accelerate the deployment of low-carbon technologies, address regulatory and institutional barriers, and further enhance competition in its energy markets.

THE TRANSITION TO RENEWABLE ENERGY

Today, nearly three quarters of the world's renewable energy is from biomass. Bioenergy accounts for about 10 percent of total final energy consumption and two percent of global electricity generation. In the United States and the European Union, bioenergy accounts for 60 percent of all renewable energy. In fact, over the past 20 years, bioenergy is responsible for the most greenhouse gas (GHG) reductions, much in the form of bioheat.[1]

Currently Japan is dependent on imported fossil fuels for 72.4 percent of its electricity needs, while renewable biomass comprises only 4.6 percent. One of the largest sources of biomass in Japan is Canadian wood pellets. These pellets are comprised entirely of the waste by-products of the lumber industry in the form of sawdust and forestry debris.

POWER GENERATION SOURCE IN JAPAN (AS PRELIMINARY DATA FOR 2022)



Source: Compiled by ISEP from Electricity Survey Statistics

WOOD PELLET ASSOCIATION OF CANADA

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THE THREE "E PLUS S"

Japan's energy policy is guided by four main principles: energy security, economic efficiency, environmental sustainability, and safety (the "three E plus S"). Here's how Canadian wood pellets support these principles:

HOW CANADIAN WOOD PELLETS SUPPORTS THE THREE "E + S"

ENERGY SECURITY	ECONOMIC EFFICIENCY	ENVIRONMENTAL SUSTAINABILITY	SAFETY
• Energy security and independence. • System and grid stability. • Baseload power. • Dispatchable power. • Complementary to solar or wind farms. • Black start capability. • Feedstock for ammonia and hydrogen power.	• Cost competitive with alternative fuels. • Avoids need for environmental remediation associated with fossil fuels and nuclear accidents.	• 80-90 percent reduction in GHG[2] compared to coal. • Strong regulatory framework backed by independent verification and enforcement. • 100 percent certified to PEFC or FSC. • 100 percent sourced from sawmill and harvest waste or low-quality fibre.	• Avoids risks associated with nuclear such as radiation and cancer. • Avoids risks of fossil fuel spills

THE PATH TO CARBON NEGATIVE: CARBON CAPTURE & STORAGE

Bioenergy has the potential to be carbon neutral or even carbon negative through implementation of Bioenergy with Carbon Capture and Storage (BECCS). BECCS is the process of capturing and permanently storing carbon dioxide (CO_2) that is generated during the production of electricity from sustainable biomass. It is one of the most scalable carbon removal technology available today.

- Japan is home to a number of leading technology providers that can support this, such as Mitsubishi Heavy Industry who pioneered KS-21, a solvent which captures 99.8 percent of flue-gas carbon dioxide.[3]
- In addition, compared to gaseous hydrogen and ammonia, which are expected to be used for power generation, solid wood pellets are easier to handle including transportation and storage, and are comparatively safe.

OPPORTUNITIES TO INCREASE BIOMASS IN JAPAN

Japan has important opportunities to further deploy bioenergy, particularly through the replacement of coal by solid biomass in existing assets, the increase of transport biofuels (which are still less than 1 percent of all transport biofuels) and the increase of biogas.

Japan has implemented policies that support net zero goals and enhance energy security, both of which bioenergy can play a significant role in delivering. Increasing the use of bioenergy from biomass is key to achieving Japan's climate targets; the Wood Pellet Association of Canada (WPAC) and its members stand ready to support this important work.

The Wood Pellet Association of Canada and its members are committed to supplying the world with responsible and renewable clean energy. Learn more at www.pellet.org/pellets-our-planet/our-commitment

1 https://www.irena.org/Energy-Transition/Technology/Bioenergy-and-biofuels
2 https://www.ipcc.ch/site/assets/uploads/2018/03/Chapter-2-Bioenergy-1.pdf
3 https://www.mhi.com/news/211019.html