

FY2017 Annual Report on Energy (Energy White Paper 2018)

Outline

As the year 2018 marks the 150th year since the Meiji Restoration, the Energy White Paper 2018 describes the history of Japan's energy relations over the period.

Using data and explanatory texts, the White Paper also explains in detail studies toward the realization of the 2030 energy mix, the background of studies conducted with an eye toward 2050, at the Round Table for Studying Energy Situations, and changes in energy situation because fiscal 2017 was set for reviewing the Basic Energy Plan.

In particular, the White Paper analyzes and explains the current state of Japan's energy security, measures taken by major countries against global warming, and the current state and future possibilities of energy technology toward 2050.

1. Japan's History concerning Energy since the Meiji Restoration

- Review of energy supply from the age of "fuelwood" to the ages of "coal and hydro power," "oil" and "post-oil", and then explanation of the latest state of Fukushima's reconstruction.
- History of flexible energy transition in which technologies, innovations and other means introduced overcame difficulties caused by major changes in energy situation in each age.

2. Changes in energy Situation since Formulation of the previous Strategic Energy Plan.

- Using data and other means, the White Paper explains major changes in the energy situation surrounding Japan (examples: international situation, crude oil price trends, progress in energy mix, advances in introduction of renewable energy sources and measures against global warming) in the passage of four years since the previous revision of the Strategic Energy Plan.
- In particular, as measures against global warming, the U.S. and European countries have made headway in the introduction of solar power, wind power and other renewable energy sources. Using data, the White Paper explains the current state of affairs in countries such as:
 - (1) Germany where the emissions of carbon dioxide have not decreased due to a decline in nuclear power generation and a leveling-off of coal despite an increase in renewable energy sources.
 - (2) France and Sweden that have achieved cuts in the emissions of carbon dioxide mainly through

stable zero emission power sources (nuclear power and hydro power)

(3) The U.K. where the emissions of carbon dioxide have been reduced through all-around approaches consisting of an increase in renewable energy sources, nuclear power generation, utilization of gas and energy conservation.

- On energy security, the White Paper explains based on data
 - (1) Energy security has worsened in Japan (due largely to the inactivation of nuclear power plants) and China (due largely to increased energy consumption) among major countries (Japan, the U.S., the U.K., Germany, France, China and Republic of Korea) in the 2000s and the 2010s.
 - (2) In light of the comparison of data (2010, 2011 and 2015) before and after the Great East Japan Earthquake, Japan's energy security has not improved yet (Resources self-sufficiency remains low due to the inactivation of nuclear power plants despite advances in the introduction of renewable energy sources).

3. Technological competition and possibilities of Japanese companies toward "decarbonization"

- As energy transition toward "decarbonation" is advancing in the world, Japan also needs to make efforts for "energy conversion and decarbonation."
- As shown in the discussion at the Round Table for Studying Energy Situations, Japan has a high share in decarbonation technology (hydrogen, storage batteries, geothermal power and other sources), while its share is low in low-carbon technology (solar power, wind power and other energy sources).
- Using data and other means, the White Paper explains the possibility that Japan under the circumstances will lead the world's efforts for "energy transition and decarbonation."