



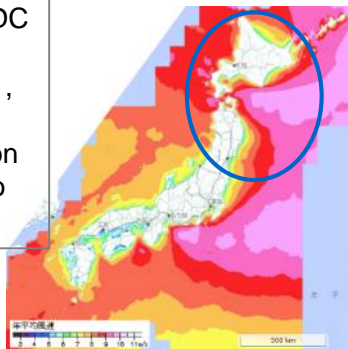
1 (1) Offshore wind power (next-generation renewable energy)

<Main future efforts>

- Setting the introduction targets to encourage domestic and foreign investment.
 - 10GW by 2030
30-45GW by 2040
- Developing power grids and port infrastructure based in a planned manner.
 - The Power Grid Establishment Master-plan is scheduled to be completed by the end of FY2022.
 - Launching a study group in March 2021 to develop a long-distance submarine HVDC power transmission system from offshore wind power generation site to large consumption areas.
 - Completing Akita Port development by the end of FY2020. Continuing construction work at the remaining three ports. Also, compiling measures for the nationwide allocation of base ports and regional promotion by the end of FY2021.
- Forming competitive and resilient supply chains (setting industry goals).
 - Japan Content Target : 60% by 2040
Cost of fixed-bottom offshore wind turbine-generated power: 8 to 9 yen/kWh by 2030-2035
- Improving the business environment by comprehensive review of regulations
 - Consolidating examinations under Electricity Business Act and Port and Harbor Act/Ship Safety Act starting from April 2021. Also, from the same month, streamlining the safety review procedures based on the Electricity Business Act under certain conditions.
 - Clarifying the criteria for permission to leave in place fixed-bottom wind turbines based on Law Relating to the Prevention of Marine Pollution and Maritime Disaster by the first half of FY2021.
 - Compiling measures to relax the criteria and conditions related to the installation of aircraft warning lights on wind power generation facilities based on the Civil Aeronautics Act by the end of FY2021.
- Accelerating the development of elemental technologies in anticipation of demonstrations based on the “technology development roadmap.”
 - Accelerating the development of elemental technologies especially for wind turbines, which are essential for the construction of supply chains, and floating turbines, which are expected to increase in the medium and long term, while considering the use of the Green Innovation Fund, in anticipation of demonstrations in actual seas based on the “technology development roadmap” (formulated in April 2021).

Suitable locations for offshore wind power generation (wind conditions map)

Considering long-distance HVDC power transmission to high demand areas such as Kanto , since suitable locations for offshore wind power generation are concentrated in Hokkaido and Tohoku.



Source: NeoWins (NEDO) Wind conditions map



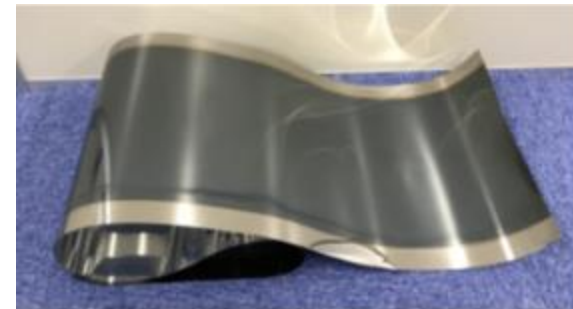
1 (2) Solar power (next-generation renewable energy)

<Main future efforts>

- Placing a priority on the research and development of next-generation solar cells to achieve commercialization by 2030.
 - Accelerating the development of common fundamental technologies related to perovskite solar cells by the cooperation of industry, academia and government by the Green Innovation Fund.
 - Accelerating the introduction of next-generation solar cells to the market by developing products that take into account the needs of end-user companies and demonstrating experimental proofs by using prototypes.
 - * With these political measures, it will be possible, for example, to achieve a power generation cost of 14 yen/kWh in 2030, and to capture some of the future global market worth 5 trillion yen. (After 2010, Japan's highest share was 25%.)
- Securing of locations good for photovoltaics that can coexist with the local community for fostering and rebuilding related industries such as the aggregation business and PPA model.
 - Creating and expanding new business models such like s the PPA model, which enables the introduction of equipment with no initial cost.
 - Promoting the securing of the locations by establishing promotion zones (“positive-zoning”) under the revised Act on Promotion of Global Warming Countermeasures.

Benefits to people’s lives in 2050

- Electricity cost can be lowered by achieving installation on the walls of housing and buildings.
 - Next-generation solar cells can be installed in houses and buildings where it is difficult to install existing photovoltaic modules due to technical restrictions.
 - In this case, assuming that about 30% of the electricity generated is consumed in-house, it would be possible for general household to save about 30% of its electricity consumption (savings of 10,000 yen/year for average household).



Perovskite solar cell thin film
formed on film material
(Sekisui Chemical Co., Ltd.)

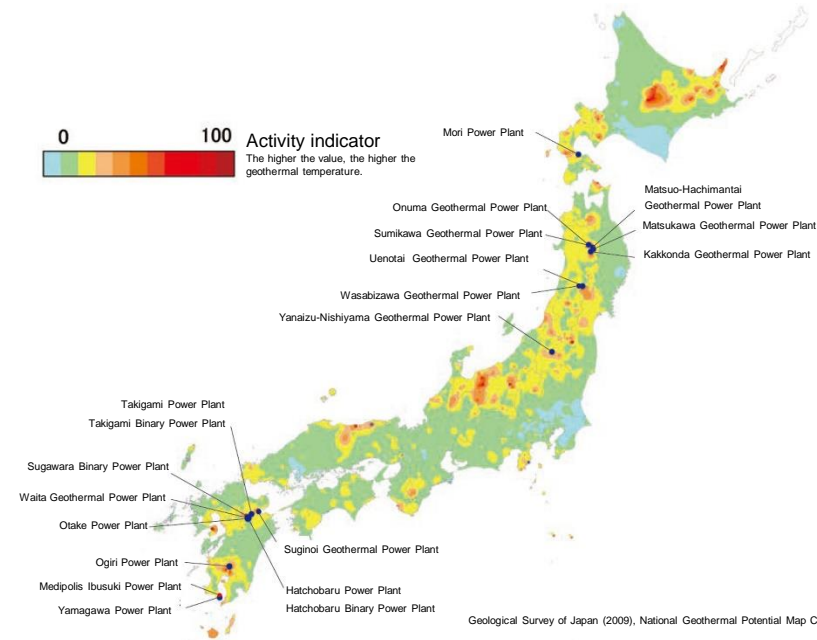


1 (3) Geothermal power (next-generation renewable energy)

<Main future efforts>

- Promoting the development of next-generation geothermal power generation technologies.
 - Promoting the development of elemental technologies such as anti-corrosion measures for above-ground facilities such as wells and turbines in order to realize supercritical geothermal power generation.
 - Aiming to achieve a market scale of over 1 trillion yen in Japan by realizing supercritical geothermal power generation.
- Promoting the supply of risk money and collection of scientific data, etc.
 - Providing risk money through subsidies, equity participation, and debt guarantees by JOGMEC.
 - Accelerating project development through smooth regional coordination by designating promotion zones for geothermal development based on laws and regulations (positive zoning), and collecting and surveying scientific data to resolve concerns of hot spring operators and others in the community and problems that may occur in the natural environment, under the Ministry of the Environment's "Plan for Accelerating Geothermal Development."
- Accelerating development by reviewing the implementation of the Natural Parks Act and Hot Springs Act.
 - Considering the clarification of standards and requirements of the Natural Parks Act for geothermal power generation in natural parks based on the opinions of experts and business groups, and reflecting the results in notifications, etc. ("Regulatory Reform Implementation Plan," June 18, 2021).
 - With regard to regulations on the separation distance and number of wells for slant drilling at great depths under the Hot Spring Act, first, seeking inspections of prefectural regulations and the abolition of those that have no scientific basis, and issuing notifications to publicize the content of prefectural regulations and their scientific basis ("Regulatory Reform Implementation Plan," June 18, 2021).

Image of geothermal potential (major geothermal power plants)



Source: Edited based on materials prepared by JOGMEC