

Summary

Entrusted Work Concerning the Development and Disclosure of Basic Zoning Information Concerning Renewable Energies (FY 2019)

The introduction of renewable energies is important not only as a countermeasure for global warming but also from such viewpoints as establishing energy security, developing autonomous and scattered energy systems and creating new industries and jobs. For this reason, in an effort to develop basic data to examine measures to introduce and spread the use of renewable energies in the coming years, the Ministry of the Environment (MoE) conducted the “Study on the Potential for the Introduction of Renewable Energies” in FY 2009 and FY 2010, the “Development of Basic Zoning Information Concerning Renewable Energies” in FY 2011 through FY 2016 and the “Development and Disclosure of Basic Zoning Data Concerning Renewable Energies” in FY 2017 and FY 2018, thereby estimating the abundance as well as introduction potential of renewable energies (PV power, wind power, small and medium-scale hydropower, geothermal heat, solar heat and underground heat) in Japan and their possible introduction amounts by different scenarios and, at the same time, developing basic zoning information.

The work conducted in FY 2019 included the enhancement of functions of a prototype WebGIS system and the revision of the summary document featuring the work in previous years concerning information and tools developed so far by the MoE pertaining to renewable energies from the viewpoint of improving the convenience of such information, etc. for users.

1. Enhancement of Functions of the Information Service Site Using the WebGIS

Based on the results of the verification work conducted in the previous year regarding the need for additional functional features, measures designed to improve the portal site were implemented. To be more precise, these measures included the development of a site to obtain the opinions of users and improvement of the user interface (colours, display function, etc.) Moreover, the development of a link API with EADAS has made it possible to continue the link even if changes are made to EADAS.

2. Review of the Calculation Method and Numerical Information Pertaining to Estimation of the Introduction Potential of Renewable Energies in Previous Years and Renewal of the Database

The potential of each type of renewable energy was re-estimated based on the renewed common social conditions and the plan to revise the calculation method and numerical information pertaining to the estimation of such potential, both of which were examined in the FY 2018 work.

3. Compilation of the Introduction Potential, etc. of Renewable Energies Established in Previous Years and Revision of the Summary Document

Based on the estimation results referred to in 2. above, the reference materials and summary document compiled in the previous year were revised.

Table 1 Re-estimation results of renewable energy potential

Items		Abundance	Introduction Potential	Possible Introduction Amount (Installed Capacity)	Possible Introduction Amount (Power Generation)
		Amount of energy resources which can be utilized by the existing level of technology	Amount of energy resources in consideration of the constraints on extraction and utilization	Amount of energy resources expected to materialize when certain conditions regarding business profitability are set	
PV Power	Residential buildings, etc.; public buildings, etc.	(Outside the scope of the survey)	2,745,950 MW	38,320 – 406,220 MW	47,300 – 504,100 GWh/year
Wind Power	On-shore wind power (mean annual wind velocity: > 5.5 m/s) Offshore wind power (bottom-mounted or floating: > 6.5 m/s)	(Estimated in the previous year)	1,404,780 MW	296,140 – 622,840 MW	967,700 – 2,012,300 GWh/year
Small and Medium-Scale Hydropower	Rivers: capacity \leq 30,000 kW	(Estimated in the previous year)	8,900 MW	3,210 – 4,120 MW	17,400 – 22,600 GWh/year
Geothermal Heat	Steam flush (\geq 150°C)	(Estimated in the previous year)	8,150 MW	4,390 – 6,020 MW	30,800 – 42,200 GWh/year
Total		-	4,167,780 MW	342,060 – 1,039,200 MW	1,063,200 – 2,581,200 GWh/year

4. Refinement of the Survey and Analysis Pertaining to the Renewable Energy Introduction Results

The Entrusted Work by the Ministry of the Environment for the Detailed Survey and Analysis of the Introduction Potential Concerning Geothermal Heat Power Generation in FY 2013 produced a resources density distribution map. As additional data had been accumulated in subsequent years from borehole surveying, heat hole surveying and aerial physical probing, there was a possibility of improving the accuracy of the potential estimation. Such related data was gathered and sorted to examine the possibility of improving the accuracy of estimation. The results of this examination suggest that there is a possibility of improved estimation accuracy by means of 1) active use of measured heat quantity data in the production test and 2) designation of the reservoir depth as the relevant section of the target temperature (for example,

150°C or higher) by means of defining the missing water section, of which the feasible storage depth is clarified, with the addition of temperature distribution data.

5. Basic Study for Refinement of the Mapping of Photovoltaic Power Generation

In addition to the resulting mapping method from the FY 2018 work entitled “Basic Examination Work for Refinement of the Mapping of Photovoltaic Power Generation”, other methods were studied and comparative analysis of all of the methods was conducted from the viewpoint of system development. Moreover, a literature survey and interviews on precedents were conducted with a view to realizing a PV power mapping system and the pending issues and key points to realize such a system were sorted out.

6. Convening of Symposium for the Introduction of Renewable Energies

Potential publicity for the introduction of renewable energies at a symposium simultaneously with the opening of a site providing information on renewable energies was examined.