Summary

Entrusted Work Concerning the Development and Disclosure of Basic Zoning Information Concerning Renewable Energies (FY 2017)

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 create basic data for the introduction and spread 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 and the Development of Basic Zoning Information Concerning Renewable Energies in FY 2011 through FY 2016, 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 developing basic zoning information.

In this work, the information and tools developed so far by the MoE regarding renewable energies have been compiled into a prototype WebGIS system and a summary document featuring the work in previous years has been produced from the viewpoint of improving the convenience of such information, etc. for users. Moreover, for the purpose of the more effective utilisation of the results of the work in previous years, comparative analysis of the introduction potential of renewable energies and actual performance of introducing renewable energies was conducted in addition to the preparation of heat demand maps.

1. Development of Prototype Information Service Site Using WebGIS and Verification of its Effectiveness

Assuming the transmission of information using the WebGIS function and information search function of the Environmental Assessment Database operated by the MoE, the necessary requirements were identified along with the development of prototypes of additional functions and rearrangement of the pending tasks for the full-scale operation of such an information service. For the execution of this work, meetings were held along with coordination work concerning the operation and management of these functions with the Environmental Impact Assessment Division, Minister's Secretariat, MoE which is responsible for the operation and management of the Environmental Assessment Database. In addition, the necessary requirements and additional functions to enable the transmission of information were sorted out.

Fig. 1 Top page of the developed web system

2. Examination of Desirable Transmission of Information for Facilitation of the Wider Use of Renewable Energies

The desirable way to transmit information to facilitate the wider use of renewable energies was examined, including the most appropriate information transmission method, while referring to examples in various foreign countries. Linkage with the “information service sites using the WebGIS” to be developed is included in the overall perspective and possible linkage with existing information service sites was examined.

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

Following discussions with the officer in charge at the MoE, the preconditions and estimation results established by the work in previous years were sorted out for easy understanding and were compiled into a single booklet as a reference material easily accessible by users. A summary document compiling the said preconditions and results of studies in previous years was also prepared as an auxiliary document.

4. Refinement of Potential Analysis Tool Pertaining to Small and Medium Hydropower Generation

Work was conducted to improve the convenience of the "Potential Analysis Tool Pertaining to Small and Medium Hydropower Generation" which was prepared under the "Entrusted Work Concerning the Development and Disclosure of Basic Zoning Information Concerning Renewable Energies and Study on Actual Performance Pertaining to the Introduction of Renewable Energy Systems (FY 2016)" by means of diversifying the applicable parameters (cost, pipeline length, etc.) and adding a function to simultaneously display the computation results based on different conditions. Moreover, the adequacy of the tool was verified using multiple data on actual cases of small and medium hydropower generation.

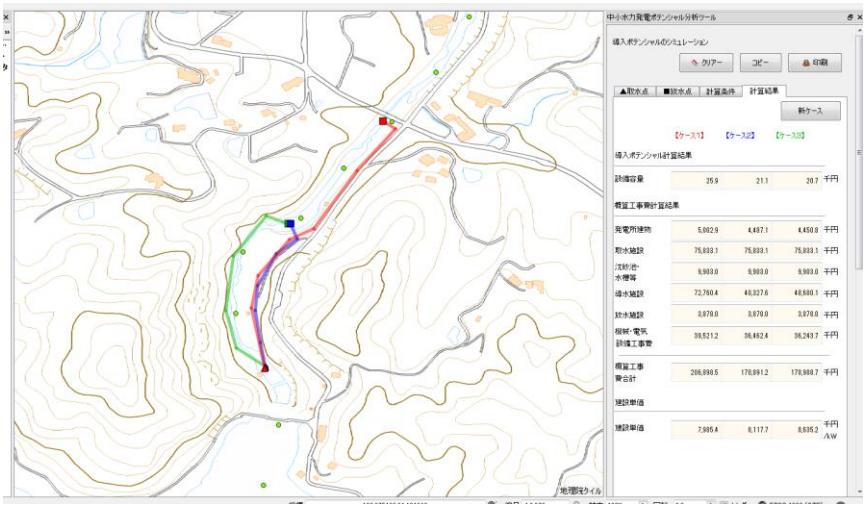

Fig. 2 Example of a newly added function (simultaneous display function for computation results)

5. Basic Examination Work Towards the Preparation of Heat Demand Maps

Basic examination work was conducted to develop and disclose "heat demand maps" which visualise the heat demand of individual geographical areas and buildings. These maps constitute basic data for the work to examine the feasibility of developing a local area heat supply project as a viable business and to refine the estimation of introduction potential of heat generated by renewable energies. To be more precise, the possibility of preparing highly accurate head demand maps was examined by means of a literature survey, examination of a viable method to establish the unit heat demand of public facilities using carbon management data and other work to address such pending issues as "There is no map with elaborate building categories." and "Can not set high-precision demand intensity model or demand model formula.".

6. Study and Analysis Pertaining to Introduction Performance of Renewable Energies

The introduction potential of renewable energies and volume of introduction of renewable energies were compared and a reference material visualizing the utilisation status of the potential of renewable energies in each local area was prepared using mapping data, etc.

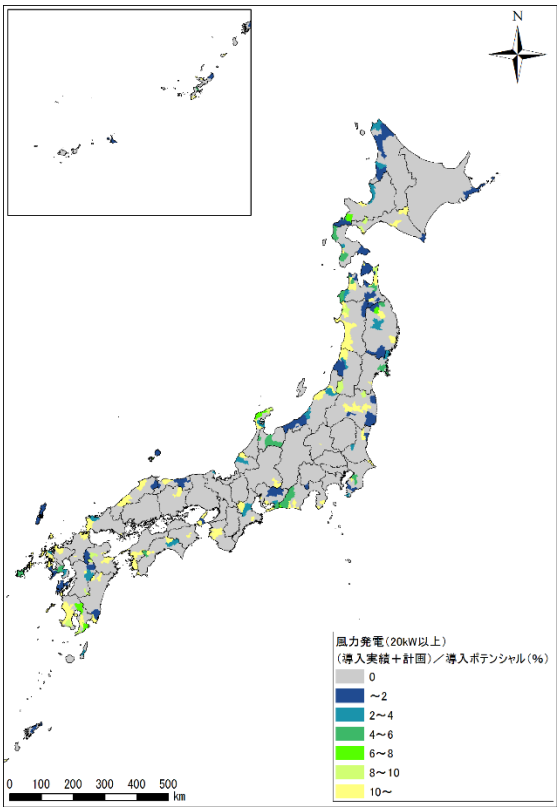

Fig. 3 Introduction potential of wind power generation (minimum of 20 kW) by municipality (completed introduction plus planned introduction)