The Fukushima Plan for a New Energy Society

September 7, 2016

Council for Realizing the Fukushima Plan for a New Energy Society

Introduction

- As a major component of reconstruction and recovery efforts, Fukushima Prefecture is attempting to make itself a pioneering region in terms of renewable energy, and thus is promoting its expansion, the clustering of related industries, and R&D in the field.
- In the "Fukushima Prefecture Vision for Promoting Renewable Energy (Revised Version)" of March 2012, the goal was set of supplying 100% of primary energy demand in Fukushima Prefecture from renewable energy by around 2040. In addition, Fukushima Prefecture is positioning renewable energy as a key element for driving creation of regional industrial infrastructure along the Fukushima Hamadori region and is promoting the Innovation Coast Framework to this end.
- To accelerate these efforts, and further strengthen support for energy industry recovery in Fukushima, it will be crucial to move forward with initiatives where the nation, prefecture, private industry, and other stakeholders work as a team.
- Therefore, the Fukushima Plan for a New Energy Society was drawn up with the aim of achieving maximum expansion in renewable energy, and creating in Fukushima a model for realizing the new energy society of the future, where hydrogen is produced from renewable energy, stored, transported and used.
- The three main components of the plan are: Expanded introduction of renewable energy; Model construction for realizing a hydrogen-based society; and building smart communities. To realize these objectives, three phases have been established with rough target dates of 2020, 2030, and 2040. Initiatives will be steadily promoted while clarifying, as far as possible, the vision to be aimed for in each phase.
- In realizing the plan, the following specific efforts will be promoted, primarily by members of the Council for Realizing the Plan, and a model of a new energy society will be created in Fukushima by: actively developing within the prefecture the adoption of renewable energy generation equipment, new energy related factories, experimental facilities, and laboratories to serve as infrastructure to realizing the Fukushima Plan for a New Energy Society; expanding adoption of renewable energy in Fukushima; and striving for clustering of new energy industries.

I. General remarks

1. Centralized implementation of budget/projects by national government [involved government offices, ministries, and agencies]

The involved government offices, ministries, and agencies will promote development of facilities relating to new energy, and create a model of a new energy society using Fukushima as the setting for demonstration projects and other initiatives. The necessary financial measures for that purpose shall be taken, and in the budget relating to new energy, measures shall be adopted to prioritize implementation of projects within Fukushima Prefecture, such as giving preference in project screening.

2. Promote and provide information about the Fukushima Plan for a New Energy Society and related efforts, technologies, and ideas undertaken in Fukushima both in and out of Japan [Ministry of Foreign Affairs (MOFA); Ministry of Economy, Trade and Industry (METI); relevant offices, ministries, and agencies; Fukushima Prefecture]

Promote and provide information about the model-concept of a new energy society as well as new technologies developed through the Fukushima Plan for a New Energy Society in and out of Japan in order to further accelerate efforts and increase growth and cohesiveness of related industries there. For this purpose, MOFA will consider presenting the efforts undertaken in Fukushima Prefecture to the international community in cooperation with relevant offices, ministries, agencies, and Fukushima Prefecture, taking advantage of collaboration with international frameworks, including the International Renewable Energy Agency (IRENA).

In addition, in August 2016, MOFA organized a study tour to the related facilities in Fukushima Prefecture for members of the diplomatic corps in Tokyo with a view to introducing these advanced efforts to the world. MOFA will continue to organize and implement such activities.

METI will carry out hosting and attraction activities in Fukushima Prefecture for the International Partnership for Hydrogen and Fuel Cells in the Economy (IPHE) and other new energy related international conferences and symposiums.

Also, the opportunity of hosting the Tokyo 2020 Olympic and Paralympic Games, where the eyes of the world will be turned to Japan, will be maximally utilized by the nation as a whole, and under the rubric of "Recovery Olympics," the involved parties will promote efforts linked with the disaster-affected area to serve as support for recovery from the Great East Japan Earthquake, and will disseminate regional recovery efforts to the world.

II. Renewable energy

3. Reinforcement of power transmission lines to expand introduction of renewable energy [Japan Wind Power Association, Japan Photovoltaic Energy Association (JPEA), Tokyo Electric Power, Tohoku Electric Power, METI, Ministry of Agriculture, Forestry and Fisheries (MAFF), Ministry of Land, Infrastructure and Transport (MLIT), Fukushima Prefecture]
   - Wind/Solar power producers, Tokyo Electric Power, and Tohoku Electric Power will establish new business entities and develop efficient transmission lines to expand introduction of renewable energy in the Abukuma Mountains and on the coast of Fukushima Prefecture.
   - The above private companies, along with METI, MAFF, MLIT, and Fukushima Prefecture will provide a forum for examining routes for installing transmission lines, land use, cost allocation, construction planning, and other topics, and examine more efficient and speedy transmission line installation. Beginning in fiscal year 2016 (FY2016), METI and Fukushima Prefecture will carry out a survey to ascertain business potential and a feasibility study on the installation of transmission lines.
   - Fukushima Prefecture and METI will strive to contribute to recovery through renewable energy production projects realized through the installation of new transmission lines by organizations such as the Fukushima Prefecture Renewable Energy Recovery Promotion Association.

4. Speeding up and simplifying procedures for licensing, etc. [METI, Ministry of the Environment (MOE), MAFF, relevant offices, ministries, and agencies, Fukushima Prefecture]
   - To achieve coordination with local entities, prepare necessary infrastructure, and ensure balance with preservation of the natural environment when examining the introduction of wind and other forms of renewable power, METI and relevant offices, ministries, and agencies will develop a system for carrying out multi-faceted reviews, including by holding conferences, carrying out environmental impact studies, and using grid countermeasures and green corridors.
   - The relevant offices, ministries, and agencies will strive to establish and consistently implement standard processing times in order to speed up related licensing procedures.
   - Regarding wind power planning moving forward, MOE, METI and Fukushima

Prefecture will promote high-quality and efficient environmental assessment, including through such approaches as encouraging producers to use database resources and other tools prepared by the "Model Project on Preparation of Basic Information for Environmental Assessment relating to Wind Power, etc."

・MAFF, MOE, METI and Fukushima Prefecture will promote efforts to build consensus in the local community by, for example, holding explanatory meetings to promote use of the Act on the Promotion of Renewable Energy Electric Power Generation Harmonized with Sound Development of Agriculture, Forestry and Fisheries.

5. Strengthening of response to and support for maximal introduction of renewable energy [Tohoku Electric Power, METI, Ministry of Internal Affairs and Communications (MIC), Ministry of Education, Culture, Sports, Science and Technology (MEXT), MAFF, MLIT, MOE, Fukushima Prefecture]

・Tohoku Electric Power, METI, and Fukushima Prefecture will proceed with cancelation of connection contracts based on revoking facility certifications in order to improve power grid constraints.

・Tohoku Electric Power will strive to improve indication methods in order to provide easy-to-understand information on the grid usage situation.

・METI will continue to promote support for installation costs of power generation equipment and other facilities in order to expand introduction of renewable energy that contributes to the recovery of Fukushima.

・METI, MIC, MEXT, MAFF, MLIT and MOE will promote the introduction of, and support formulation of introduction plans for, renewable energy generation equipment, storage batteries and other equipment for public facilities (e.g. infrastructure facilities, educational facilities, town halls, and local branches of the national government).

・To integrally promote expanded introduction of renewable energy and revitalization of local industry, etc., METI, MIC, MAFF and MOE will support implementation of potential surveys to achieve sustained use of woody biomass and similar resources employing lumber produced in the prefecture, and feasibility studies to achieve greater efficiency and smaller size.

・To expand introduction of renewable energy, METI will carry out efforts to promote understanding of renewable energy projects in Fukushima Prefecture.

6. Promotion of renewable energy R&D and demonstration projects [Fukushima

Offshore Wind Consortium, National Institute of Advanced Industrial Science and Technology (AIST), JPEA, METI, MEXT, MOE, Fukushima Prefecture]

- AIST, METI, and MEXT will promote cutting-edge research on renewable energy with the aim of clustering the renewable energy industry in Fukushima Prefecture.
- AIST, METI, and MOE will support technology evaluation, technology development, and demonstration to move toward practical use of technology in Fukushima Prefecture.
- AIST, METI, and JPEA will promote the use of the Smart Systems Laboratory at the Fukushima Renewable Energy Institute as a testing/evaluation facility for large power conditioners for solar power, aiming at international standardization.
- The Fukushima Offshore Wind Consortium, METI, and Fukushima Prefecture will promote the Fukushima Floating Offshore Wind Power Demonstration Project, and move forward with commercialization studies. They will also examine revitalization of local industry through commercialization.
- METI, AIST, Fukushima Prefecture, and JPEA will carry out development of human resources to help local firms participate in renewable energy related industries, such as O&M (Operation and Maintenance) of renewable energy generation equipment.

III. Hydrogen society

7. Development of large-scale systems employing renewable energy for producing, transporting, storing, and using hydrogen [METI, MOE, relevant offices, ministries, and agencies, private business operators, AIST, Fukushima Prefecture]

- METI, in collaboration with private business operators, will conduct demonstrations in Fukushima Prefecture pertaining to the construction of systems for effective utilization of hydrogen by optimally combining large-scale hydrogen production using renewable energy (10,000 kW class) with transport and storage technology.
- At that time, demonstrations will also be carried out regarding schemes to reduce the grid load and use hydrogen as a local grid countermeasure, by reserving some of the electricity from naturally fluctuating power sources for hydrogen production.
- Regarding the above, METI will work with Fukushima Prefecture to initiate review meetings regarding the specific scheme for demonstration during FY2016, and operation will begin by 2020.

・METI, AIST, Fukushima Prefecture, and private business operators will examine sustainable business schemes with the potential for expansion, while keeping an eye on the future after demonstration (2020). In addition, relevant offices, ministries, and agencies will give consideration to participant companies in the prefecture for the demonstration, so as to contribute to medium- and long-term cultivation of industry in Fukushima Prefecture.
・With the support of relevant offices, ministries, and agencies, AIST and Fukushima Prefecture will promote research and demonstration relating to organic hydrides using MCH (methylcyclohexane) for establishing hydrogen storage and transport technology.
・Power companies will actively move forward with review regarding the use of hydrogen-related technology for expanding introduction of renewable energy.
・MOE will examine how findings obtained through demonstration projects relating to low-carbon hydrogen supply chains employing hydrogen derived from renewable energy can be used to realize a hydrogen society in Fukushima Prefecture.
・METI, in collaboration with MOE, will coordinate during this fiscal year regarding general issues for using hydrogen produced using renewable energy.

8. Utilization in Tokyo while holding the Tokyo 2020 Olympic and Paralympic Games [METI, MOE, Tokyo Metropolitan Government, Fukushima Prefecture, private business operators]
・METI, MOE, Tokyo Metropolitan Government, Fukushima Prefecture, and private business operators will carry out a demonstration of transporting hydrogen to Tokyo obtained through production derived from renewable energy in Fukushima Prefecture(as described in 7 above), and will examine use in hydrogen stations and other facilities during the period of the Tokyo 2020 Olympic and Paralympic Games.
・The relevant ministries, agencies, and other departments indicated above will carry out a multi-faceted study of use subsequent to 2020.

9. Expansion of hydrogen use [METI, MOE, MLIT, Fukushima Prefecture, Tokyo Metropolitan Government, AIST, power companies]
・Starting from FY2017, METI will include Fukushima Prefecture in regions subject to development of commercial hydrogen stations, and METI, MOE, and Fukushima Prefecture will promote development of hydrogen stations in

Fukushima Prefecture. The introduction of FCV, FC buses and FC forklifts will also be promoted. Furthermore, MLIT will provide advice and support for introduction in the promotion of adoption of FC buses in Fukushima Prefecture.

- Tokyo Metropolitan Government, Tokyo Environmental Public Service Corporation, Fukushima Prefecture, and AIST will promote joint R&D, technical cooperation, personnel exchange, and other activities aiming at the use of CO2-free hydrogen, in accordance with the basic agreement relating to CO2-free hydrogen.
- METI will develop the human resources needed for operation and maintenance of hydrogen stations, such as handling techniques for high-pressure hydrogen and liquefied hydrogen.
- METI and the power companies will initiate review meetings during FY2016 with the aim of carrying out demonstrations of mixed combustion with hydrogen in the IGCC (Integrated Gasification Combined Cycle) and similar systems by the early 2020s.
- In addition, METI will aim to establish high-efficiency generating technology, employing an integral combination of elements such as natural gas and SOFC (Solid Oxide Fuel Cells) for the future, subsequent to 2020.

IV. Smart communities

10. Promoting demonstrations to move toward building smart communities [METI, MOE, MLIT, MIC, Fukushima Prefecture, private business operators]
    - METI and Fukushima Prefecture, in collaboration with private business operators, will accelerate projects with the goal of building smart communities in four municipalities (the towns of Shinchi, Namie, and Naraha, and the city of Soma).
    - Regarding matters outside the above four municipalities, METI, MOE, MLIT, MIC, and Fukushima Prefecture will provide support based on recovery community development (e.g. preparation of a compilation of previous examples contributing to smart community development in linkage with recovery, holding matching events to bring together local governments in the prefecture with smart community related businesses, and support for commercialization feasibility studies with the aim of building local-production/local-consumption energy systems in the prefecture) with the goal of building sustainable smart communities even in localities with small populations. At that time, a review will also be carried out on developing a model of a smart community using hydrogen derived from

renewable energy.

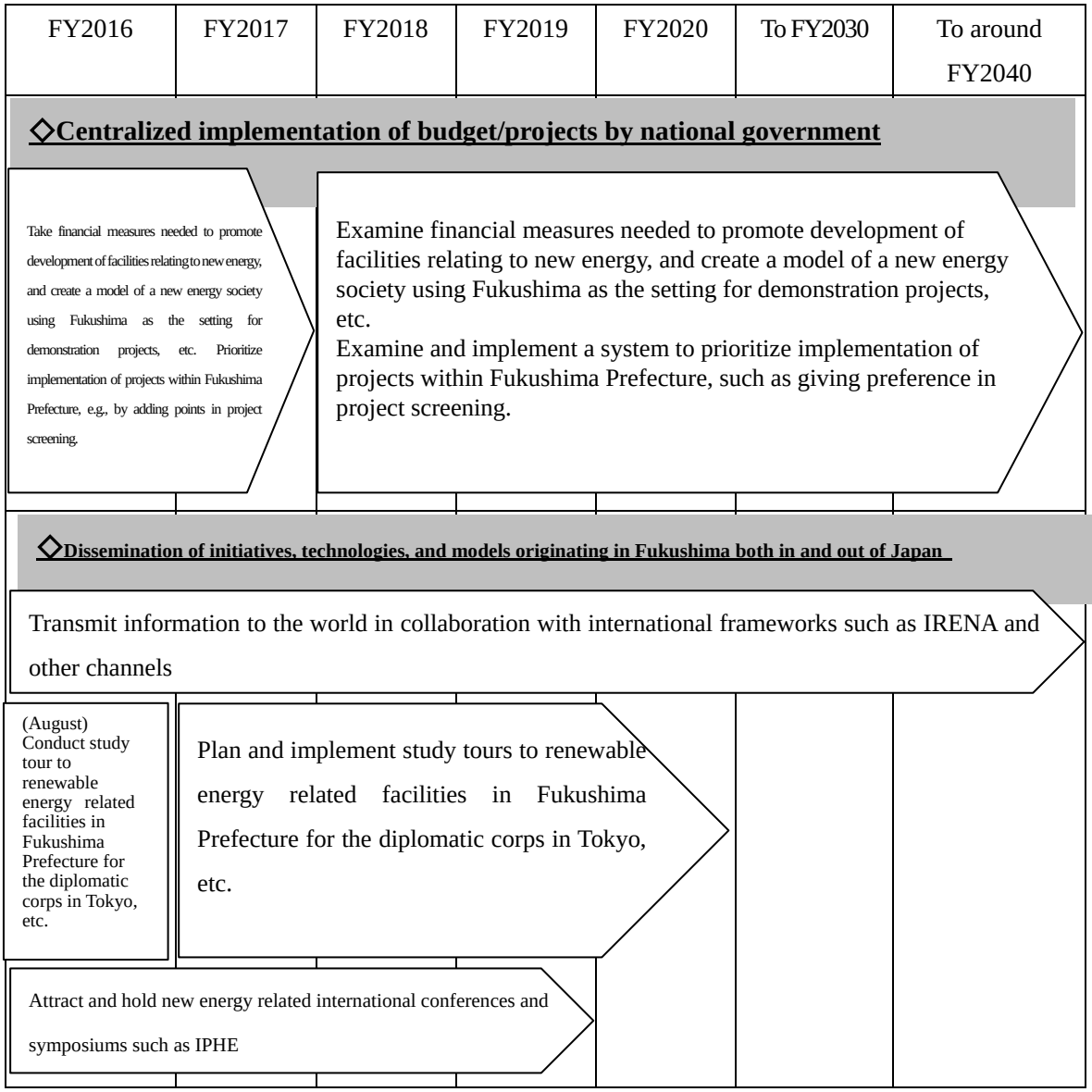
・Power companies and other private business operators will actively examine negawatts produced through storage batteries, power saving, and other measures in Fukushima Prefecture, including use as adjustment capability, and METI and Fukushima Prefecture will press for the creation of new power businesses in the region.

Toward realization of the Fukushima Plan for a New Energy Society

- Regarding the initiatives incorporated into this plan, follow-up and review shall be carried out by the Council for Realizing the Fukushima Plan for a New Energy Society.
- In addition, the situation regarding initiatives relating to the Fukushima Plan for a New Energy Society shall be reported in cabinet meetings relating to renewable energy, etc.

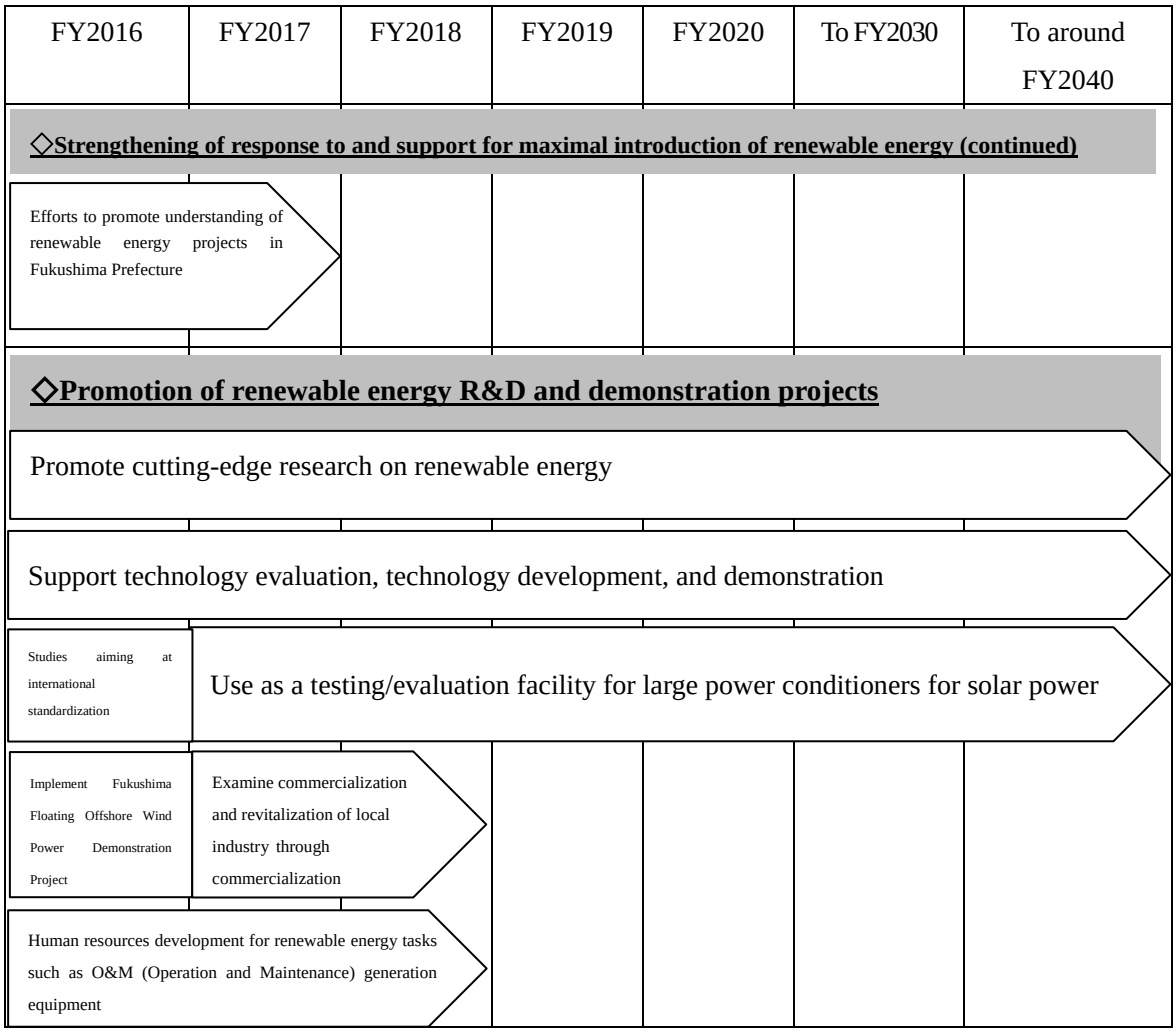
Progress schedule for the Fukushima Plan for a New Energy Society

I. General remarks

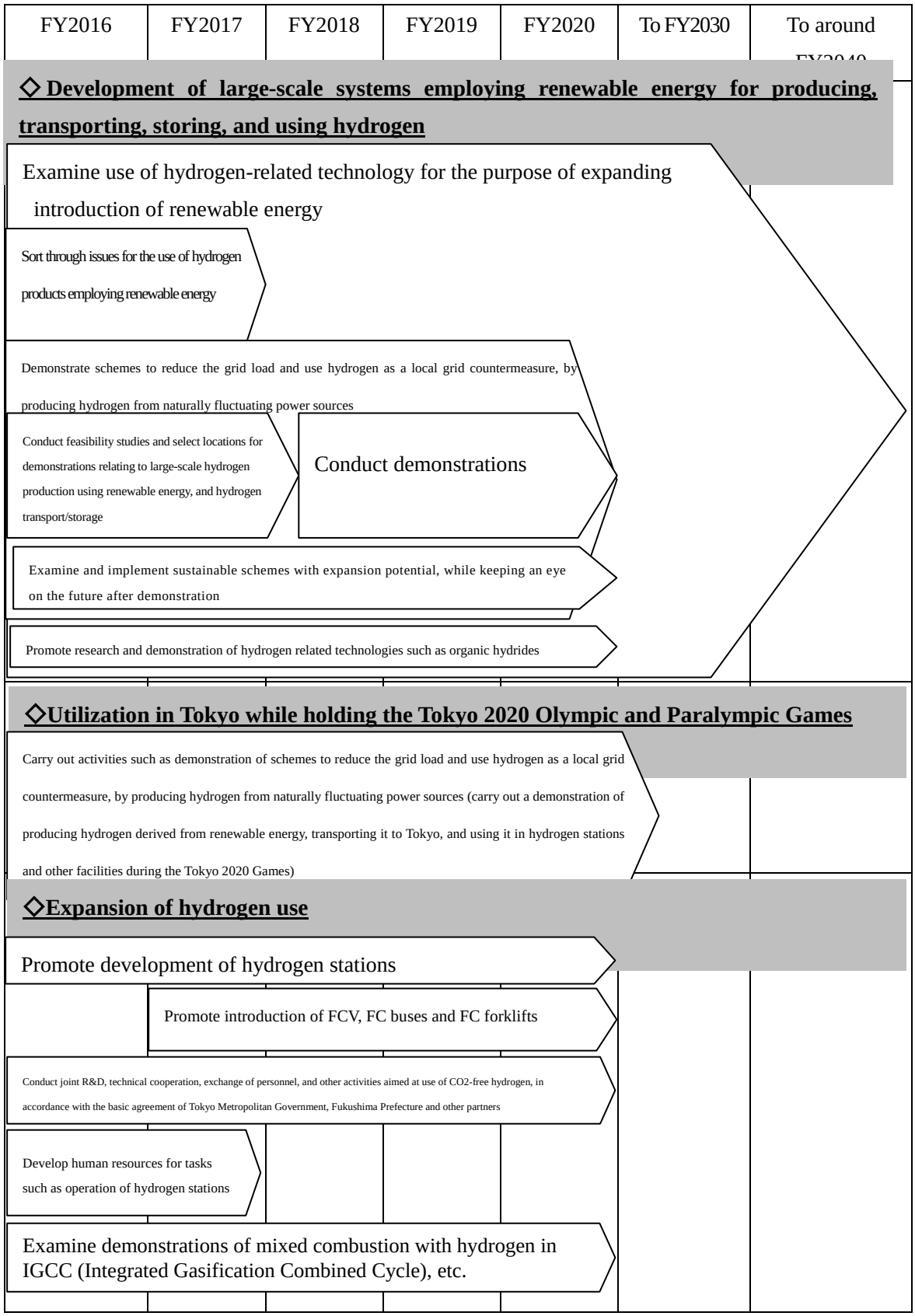


II. Renewable energy

FY2016	FY2017	FY2018	FY2019	FY2020	To FY2030	To around FY2040
◇Reinforcement of power transmission lines to expand introduction of renewable energy						
Business potential survey and feasibility study	Install transmission lines and development of wind power stations					
◇Speeding up and simplifying procedures for licensing, etc.						
Develop a system for carrying out multi-faceted review, based on setting up and using local conferences, to consider environmental impacts as well as use of grid countermeasures & green corridors, in order to achieve coordination with the local area, prepare the environment for introduction, and achieve balance with preservation of the natural environment.						
Promote high-quality, efficient environmental assessment by encouraging businesses to use databases, etc.						
Promote efforts to build consensus in the local community, by for e.g., holding explanatory meetings to promote use of the Act on the Promotion of Renewable Energy in Rural Areas						
◇Strengthening of response to and support for maximal introduction of renewable energy						
Cancel connection contracts based on revoking facility certification						
Improve indication methods in order to provide easy-to-understand information on the grid usage situation						
Promote support for installation costs of power generation equipment and other facilities in order to expand introduction of renewable energy						
Promote introduction of, and support formulation of introduction plans for, renewable energy generation equipment, storage batteries and other equipment for public facilities (e.g., infrastructure facilities, educational facilities, town halls, and local branches of the national government)						
Support implementation of potential surveys to achieve sustained use of woody biomass and similar resources employing lumber produced in the prefecture, and feasibility studies to achieve greater efficiency and smaller size						


FY2016
FY2017
FY2018
FY2019
FY2020
To FY2030
To around FY2040
◇Strengthening of response to and support for maximal introduction of renewable energy (continued)
Efforts to promote understanding of renewable energy projects in Fukushima Prefecture
◇Promotion of renewable energy R&D and demonstration projects
Promote cutting-edge research on renewable energy
Support technology evaluation, technology development, and demonstration
Studies aiming at international standardization
Use as a testing/evaluation facility for large power conditioners for solar power
Implement Fukushima Floating Offshore Wind Power Demonstration Project
Examine commercialization and revitalization of local industry through commercialization
Human resources development for renewable energy tasks such as O&M (Operation and Maintenance) generation equipment

III. Hydrogen society



IV. Smart communities