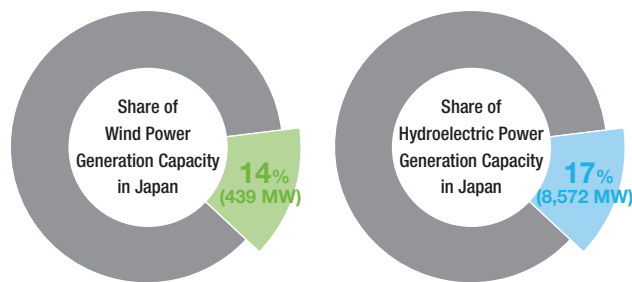


The J-POWER Group utilizes hydroelectric power, wind power, and geothermal power—all sources of renewable energy—across Japan. Nationwide, the Group owns 61 hydroelectric power plants with a total capacity of 8,572 MW and 22 wind power facilities with a total capacity of 439 MW, making it Japan's second-ranked company in terms of both hydropower and wind power generation capacity.

As a leader in renewable energy, the J-POWER Group will continue to help reduce CO<sub>2</sub> emissions while contributing to Japan's energy security using these fully domestically produced, CO<sub>2</sub>-free forms of energy.

Second in Japan in both Hydroelectric and Wind Power Generation Capacity, and a Leader in Renewable Energy



Sources: Compiled from Electric Power Survey Statistics (Agency for Natural Resources and Energy) (Owned capacity basis, as of March 31, 2019)

## Social Issues

- Global warming
- Energy security

## Value That the J-POWER Group Provides

- Contributing to reducing CO<sub>2</sub> emissions by expanding the use of renewable energy
- Contributing to energy security by providing fully domestically produced energy

## Initiatives Aimed at Achieving the Target of 1 GW in New Development

### Hydroelectric Power

The J-POWER Group boasts a track record in the building and operation of hydroelectric power plants that extends back more than half a century. Beginning in the mid-1950s, in a bid to solve postwar power shortages, the Company developed many large-scale conventional hydroelectric power plants. Subsequently, from the 1970s onward, the Company developed large-scale pumped storage hydroelectric power plants, such as that at Shintoyone.

The salient features of hydroelectric power plants are that they are capable of changing output extremely quickly to respond to demand fluctuations and can cover peak demand in daily and seasonal supply-demand balancing in Japan's grid. Furthermore, for resource-poor Japan, hydroelectric power

represents a valuable, fully domestic energy resource and, as a CO<sub>2</sub>-free power source, plays a central role in renewable energy.

In addition to continuing the efficient maintenance and management of existing hydroelectric power generation facilities, the Company is carrying out comprehensive renewals (repowering) of its main power generating machinery to increase capacity and the power generated through optimal designs utilizing the latest technologies. The Company is also undertaking the development of small- to medium-scale hydroelectric power plants that utilize untapped hydroelectric resources in order to effectively utilize this precious resource to the maximum extent possible.

Completed	Generation Capacity	Remarks
Akiba No. 1 Repowering (Shizuoka Prefecture)	45 MW ▶ 47 MW	Construction completed in May 2018
Under Construction (2 Projects)	Generation Capacity	Remarks
Shinkatsurazawa/Kumaoi (Hokkaido Prefecture)	22 MW	Scheduled to start operations in June 2022
Ashoro Repowering (Hokkaido Prefecture)	40 MW ▶ 42 MW	Scheduled for completion in FY2022



Akiba No. 1 Repowering (Shizuoka Prefecture)

### Geothermal Power

The J-POWER Group has a track record of operating geothermal power plants that goes back more than 40 years. Leveraging the comprehensive know-how developed through this business, encompassing geothermal resource surveying and management as well as power plant planning, construction, and operations, we are carrying out stable plant operations from a long-term perspective while actively advancing new development.

The Wasabizawa Geothermal Power Plant (capacity 46 MW) in Yuzawa City, Akita Prefecture, a joint venture with Mitsubishi Materials Corporation and MITSUBISHI GAS CHEMICAL COMPANY, INC., began operations in May 2019. In addition, we are working with these partners in preparation for con-

struction from August 2019 of the Appi Geothermal Power Plant (capacity 14.9 MW) in Hachimantai City, Iwate Prefecture (operations are scheduled to begin around spring 2024).

Furthermore, in non-joint-venture projects, we began construction to replace the Onikobe Geothermal Power Plant (capacity 14.9 MW) in April 2019. Located in Osaki City, Miyagi Prefecture, the existing plant had been in continuous operation for more than 40 years.

We continue to proactively survey the geothermal resources at new candidate sites with the aim of creating new projects down the line.

Completed	Generation Capacity (Owned capacity)	Remarks
Wasabizawa (Akita Prefecture) <sup>1</sup>	46 MW (23 MW)	Began operations in May 2019
Under Construction or in Preparation for Construction	Generation Capacity (Owned capacity)	Remarks
Onikobe Replacement (Miyagi Prefecture)	14.9 MW	Scheduled to start operations in FY2023
Appi <sup>2</sup> (Iwate Prefecture)	14.9 MW (2 MW)	Scheduled to start operations in FY2024
Resource Surveys in Progress	Generation Capacity (Owned capacity)	Remarks
Geothermal resource surveys at Takahinatayama site (Miyagi Prefecture)	—	—



Wasabizawa Geothermal Power Plant (Akita Prefecture)

1. J-POWER's stake in the project is 50% 2. J-POWER's stake in the project is 15%

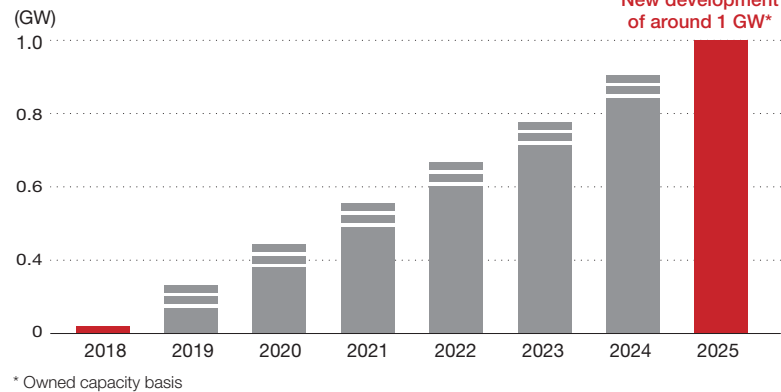
## Renewable Energy Expansion Target in the Medium-Term Management Plan

The J-POWER Group established the Renewable Energy Business Strategy Department in April 2019 and is reinforcing new project development and the technological development that supports such projects. Through these efforts, we are

steadily advancing toward the achievement of the Medium-Term Management Plan's target for fiscal 2025 of approximately 1 GW in new development (0.3 TWh/year increase in hydro-electric and 2.5 TWh/year increase in wind and others).\*

\* Compared to 2017 results

### Renewable Energy Expansion Target



## Wind Power

The J-POWER Group is a pioneer in the wind power generation business, having commenced operations at its first wind farm in 2000 and steadily expanded this business since then. Drawing on its many years of experience, expertise, and technologies in the building, operation, and maintenance of power plants and transmission lines, the Company has created a system that covers the full gamut of the wind power business, from surveys of wind conditions to wind farm design, construction, and operation and maintenance (O&M). Leveraging its diverse experience, the Company is making its O&M systems more efficient while working to improve utilization rates and enhance profitability. The feed-in tariff system took effect in 2012, and the Company has acquired facility accreditation under the system for both new and existing wind power facilities.

In terms of onshore wind power, we are steadily advancing new development and replacement projects. Currently, four projects are under construc-

tion, and 10 projects are in the construction preparation or assessment stages of development. The Company will continuously seek locations that possess wind conditions suitable for new facilities and steadily develop new projects in the years to come.

With regard to offshore wind power, a consortium that includes the Company has been selected as preferred bidder following a public tender for the installer and operator of the Hibikinada Offshore Wind Farm off the coast of Kitakyushu in Fukuoka Prefecture. In the years to come, we will be conducting surveys on the wind conditions and marine areas toward the commercialization of offshore wind power generation in Hibikinada. Furthermore, in August 2018, J-POWER acquired a 25% stake in the Triton Knoll offshore wind project in the United Kingdom. We are also focusing efforts on the commercialization of offshore wind power in Japan through such efforts as conducting sea area surveys aimed at open-water development.

Completed	Remarks
Participation in the Triton Knoll offshore wind power project in the United Kingdom	Interest acquired in August 2018
Signed memorandum of understanding on collaboration with ENGIE of France on floating offshore wind power generation business	Signed in September 2018

Under Construction (5 projects)	Generation Capacity (Owned capacity)	Remarks
Setana-Osato <sup>1</sup> (Hokkaido Prefecture)	50 MW (45 MW)	Start of operations planned for FY2019
Nikaho No. 2 (Akita Prefecture)	41 MW	Start of operations planned for FY2019
Kuzumaki No. 2 (Iwate Prefecture)	45 MW	Scheduled to start operations in FY2020
Kaminokuni No. 2 (Hokkaido Prefecture)	42 MW	Scheduled to start operations in FY2021
Triton Knoll Offshore Wind Farm <sup>2</sup> (U.K.)	860 MW (215 MW)	Scheduled to start operations in 2021

1. J-POWER's stake in the project is 90% 2. J-POWER's stake in the project is 25%



Artist's rendering of Hibikinada Offshore Wind Farm (Fukuoka Prefecture)

In Preparation for Construction or Under Assessment (8 new development projects, 3 replacement projects)	Generation Capacity (Owned capacity)	In Preparation for Construction or Under Assessment (8 new development projects, 3 replacement projects)	Generation Capacity (Owned capacity)
Minami Ehime No. 2 (Ehime Prefecture)	Max. 41 MW	Youra (Oita Prefecture)	Max. 65 MW
Kaminokuni No. 2 <sup>3</sup> (Hokkaido Prefecture)	Max. 78 MW	Kunimiyama (Kochi Prefecture)	51 MW
Hibikinada Offshore <sup>4</sup> (Fukuoka Prefecture)	Max. 220 MW (88 MW)	New Tomamae (Replacement) (Hokkaido Prefecture)	31 MW
Seiyo Yusuohara (Ehime and Kochi Prefectures)	Max. 163 MW	New Sarakitomanai (Replacement) (Hokkaido Prefecture)	15 MW
Kita-Kagoshima (Kagoshima Prefecture)	Max. 215 MW	New Shimamaki (Replacement) (Hokkaido Prefecture)	4 MW
Wajima (Ishikawa Prefecture)	Max. 90 MW		

3. In addition to the Kaminokuni No. 2 project (42 MW) currently under construction, additional facilities are under consideration.  
4. J-POWER's stake in the project is 40%.