



# Japan's offshore wind power policy: overview and recent developments

*December 2023*



# Japan's flagship energy targets



## Sixth Basic Energy Plan (BEP)

- A crucial policy document for Japan's energy policy is the Basic Energy Plan. It sets targets for power generation, an overall plan for Japan's "energy mix", and a framework for Japan's energy policy.
- The Sixth Basic Energy Plan, which was finalised in 2021, laid out Japan's power generation targets through 2030 and is significant as it was **the first BEP drafted with a view to achieving carbon neutrality by 2050 following former Prime Minister Suga's net-zero declaration under his Green Growth Strategy.**
- As can be seen in the table to the right, the **target for renewable energy in the energy mix was increased from 22-24% to 36-38% by 2030.**
- For wind power, the sixth BEP outlined notably more ambitious targets relative to its previous iteration, **increasing Japan's wind power generation target from 1.7% to 6% of the energy mix by 2030.**
- **The BEP is due for review again in late 2024.**

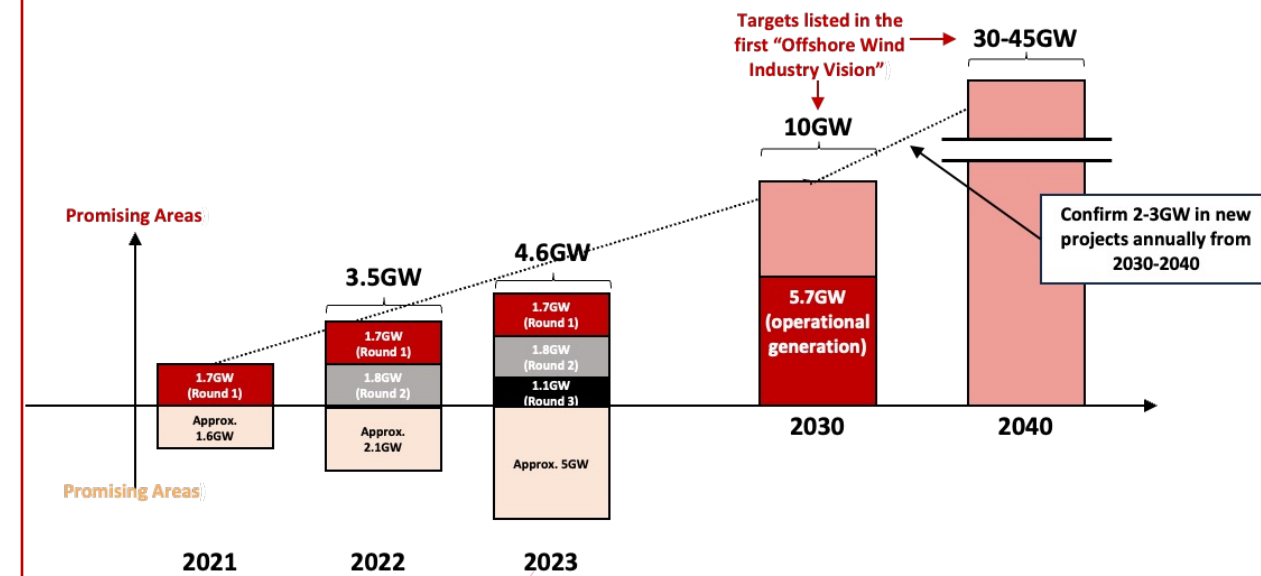
|                                | Actual 2019 figure | Previous 2030 targets (Fifth BEP, 2018) | New 2030 targets (Sixth BEP) | Difference between 2019 actual figures and new 2030 targets i.e. changes that need to be made by 2030 |
|--------------------------------|--------------------|---|------------------------------|---|
| <b>Renewables (total)</b>      | <b>18%</b>         | <b>22–24%</b>                           | <b>36–38%</b>                | <b>Up 20%</b>   |
| Hydro                          | 7.7%               | 8.8–9.2%                                | 10%                          | Up 2.3%   |
| Solar                          | 6.7%               | 7%                                      | 15%                          | Up 8.3%   |
| Biomass                        | 2.6%               | 3.7–4.7%                                | 5%                           | Up 2.4%   |
| Wind                           | 0.7%               | 1.7%                                    | 6%                           | Up 5.3%   |
| Geothermal                     | 0.3%               | 1–1.1%                                  | 1%                           | Up 0.7%   |
| Hydrogen/ ammonia              | 0%                 | 0%                                      | 1%                           | Up 1%   |
| Nuclear                        | 6%                 | 20–22%                                  | 20–22%                       | Up 16%  |
| <b>Non-fossil fuel (total)</b> | <b>24%</b>         | <b>46%</b>                              | <b>60%</b>                   | <b>Up 36%</b>   |
| LNG                            | 37%                | 27%                                     | 20%                          | Down 17%  |
| Coal                           | 32%                | 26%                                     | 19%                          | Down 13%  |
| Oil                            | 7%                 | 3%                                      | 2%                           | Down 5%   |
| <b>Fossil fuel (total)</b>     | <b>76%</b>         | <b>56%</b>                              | <b>41%</b>                   | <b>Down 35%</b>   |

## Japan has significant potential for offshore wind power (OWP) but is struggling to build momentum

- The Japanese government has often referred to OWP as Japan's "trump card" for reaching the country's decarbonisation targets. However, due to challenges associated with securing consensus amongst local stakeholders and with developing a government-led auction system, fixed-bottom OWP development in maritime waters has been sluggish.
- Floating OWP development in Japan's Exclusive Economic Zone (EEZ) shows promise, and the government is currently working to capitalise on this potential.

- According to the Japan Wind Power Association (JWPA), at the end of 2022, Japan had approximately 4,802 MW of cumulative installed capacity of wind power. Of this, **offshore wind capacity accounted for 135 MW**, onshore wind capacity for 4,667 MW.<sup>1</sup>
- Japan is seeking to designate around 1 GW of OWP capacity annually for 10 years, with the goal of achieving **10 GW under development by 2030, and 30-45 GW by 2040 of fixed and floating by 2040**. These targets were mentioned in the Green Growth Strategy (2020) and were reiterated in the 6<sup>th</sup> Basic Energy Plan (2021).
- Importantly, the **10 GW for 2030 target is for approved projects under development rather than operational capacity. The government has targeted 5.7 GW of OWP operational capacity by 2030.**
- In terms of industrial targets, the government aims to build a strong supply chain for OWP and to reduce the cost of fixed-bottom OWP power by 2030-2035. These goals are outlined in the Offshore Wind Industry Vision (2020). The government aims to update this document before the release of the next BEP (likely sometime within the next year).

**Overview of confirmed OWP projects in line with policy targets**



<sup>1</sup> Source: JWPA, preliminary numbers on the cumulative installed capacity of wind power, February 2023:

<https://jwpa.jp/en/information/6810/#:~:text=Cumulative%20installed%20capacity%20of%20wind,Association%20Japan%20Wind%20Power%20Association>

Note: The values are calculated by the JWPA and may be revised at a later date if a more up to date official data becomes available.

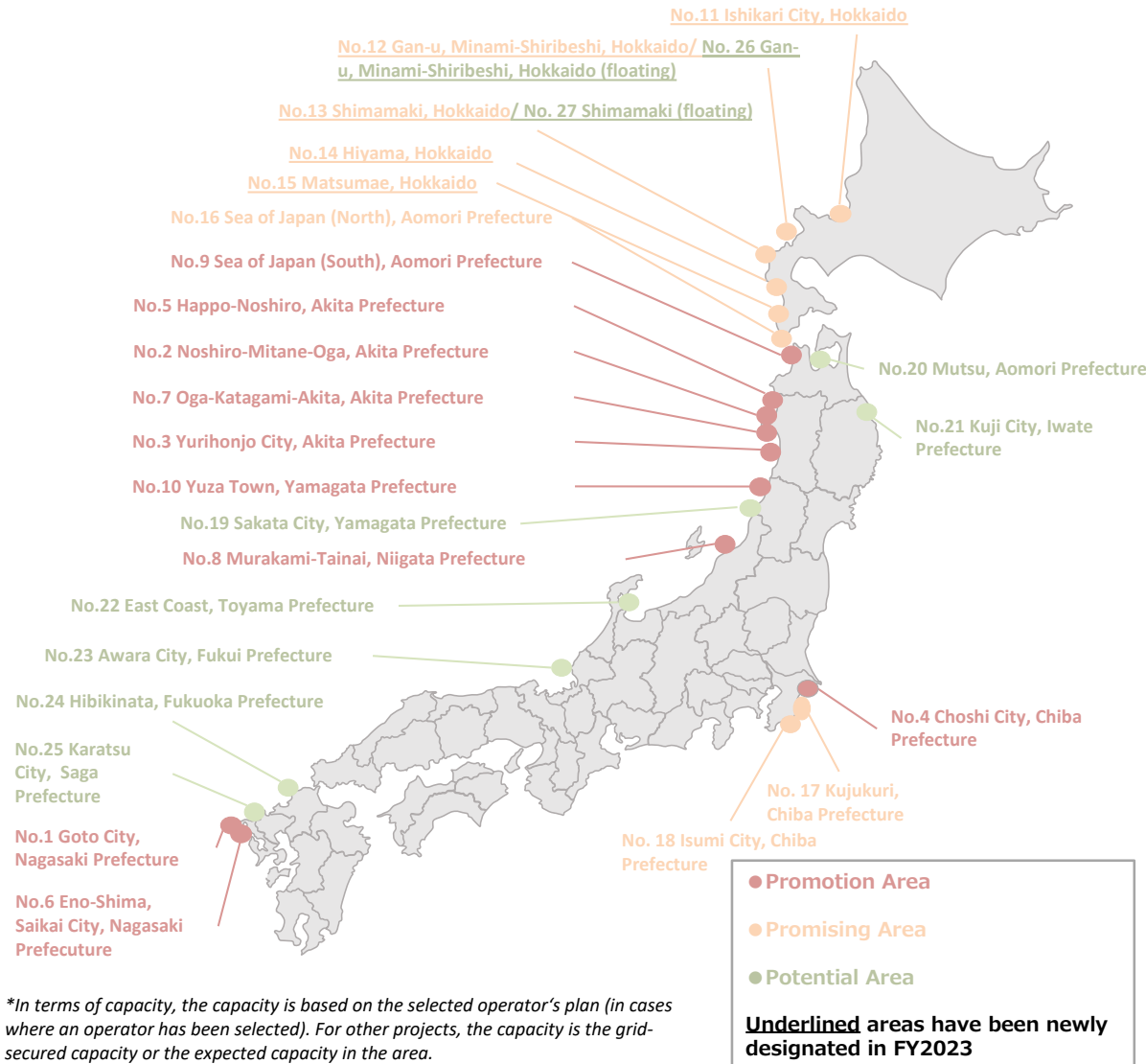
# OWP development planning in Japan



## A multi-stage process governs OWP development in Japan

- The *Offshore Wind Promotion Act* and associated policies create a process for designated site-specific OWP promotion areas, along with auction rules used to allocate the right to develop OWP within the designated promotion areas.
- The Act outlines a **three-stage process**:
  - In **Stage One**, the central government screens “Potential Areas” based on information submitted by the prefectural governments, which takes about three months.
  - In **Stage Two**, once “Potential Areas” are identified, they are designated as “Promising Areas” and are then assessed by a third-party committee.
  - Following this, in **Stage Three**, the government announces which “Promising Areas” have passed the screening stage and these areas are formally designated as “Promotion Areas”. These “Promotion Areas” then can enter auction.
- So far, ten locations have been **officially designated as “Promotion Areas”**: four of these were eligible for bidding in Round 1, four were under evaluation for Round 2, and the remaining two will be under evaluation for Round 3.
- The consortium led by Mitsubishi Corporation swept the board in December 2021, winning all Round 1 areas (with the exception of Goto City, Nagasaki, which was won by a consortium led by Toda Corporation in a separate auction).
- Bidding for **Round 2 has concluded**, and the winning bids are likely to be announced by the end of this year.
- In November 2023, the government released drafts of the bidding guidelines **for the two areas included in Round 3** and is currently conducting a **public consultation on the content of these drafts**. The government will review these public comments in late December and is expected to **open bidding for Round 3 auction areas by the end of 2023**.

# OWP development planning in Japan



**Designation status for Promotion, Promising & Potential Areas  
(As of 1 November 2023)**

|  | Area Name                                    | kW*   |  |
|--|--|---|--|
| Promotion Area<br>(Operator already selected)              | 1 Goto City, Nagasaki(Floating)              | 17,000  |  |
|  | 2 Noshiro-Mitane-Oga, Akita                  | 478,800   |  |
|  | 3 Yurihonjo City, Akita                      | 819,000   |  |
|  | 4 Choshi City, Chiba                         | 390,600   |  |
| Promotion Area<br>(Currently under the evaluation process) | 5 Happo-Noshiro, Akita                       | 360,000   |  |
|  | 6 Eno-Shima, Saikai City, Nagasaki           | 420,000   |  |
|  | 7 Oga-Katagami-Akita, Akita                  | 340,000   |  |
|  | 8 Murakami-Tainai, Niigata                   | 350,000 & 700,000                                 |  |
|  | 9 Japan Sea Aomori South                     | 600,000   |  |
|  | 10 Yuza Town, Yamagata                       | 450,000   |  |
|  | <u>11 Ishikari, Hokkaido</u>                 | <u>910,000 to 1,140,000</u>                       |  |
|  | <u>12 Gan-u, Minami-Shiribeshi, Hokkaido</u> | <u>560,000 to 710,000</u>                         |  |
|  | <u>13 Shimamaki, Hokkaido</u>                | <u>440,000 to 560,000</u>                         |  |
|  | <u>14 Hiyama, Hokkaido</u>                   | <u>910,000 to 1,140,000</u>                       |  |
| <u>15 Matsumae, Hokkaido</u>                               | <u>250,000 to 320,000</u>                    |   |  |
| Promising Area   | 16 Japan Sea Aomori North                    | 300,000   |  |
|  | 17 Kujukuri, Chiba                           | 400,000   |  |
|  | 18 Isumi City, Chiba                         | 410,000   |  |
|  | <u>19 Sakata City, Yamagata</u>              | <u>500,000</u>                                    |  |
|  | Potential Area                               | 20 Mutsu, Aomori                                  |  |
|  |  | 21 Kuji City, Iwate (floating)                    |  |
|  |  | 22 East Coast, Toyama (floating & bottom-mounted) |  |
| 23 Awara City, Fukui                                       |  |   |  |
| 24 Hibikinata, Fukuoka                                     |  |   |  |
| 25 Karatsu City, Saga                                      |  |   |  |
| <u>26 Gan-u and Minami-Shiribeshi (floating)</u>           |  |   |  |
| <u>27 Shimamaki (floating)</u>                             |  |   |  |

# Criteria for new OWP auction rounds



## Government has moved to emphasise low prices, but also speed and feasibility of OWP projects

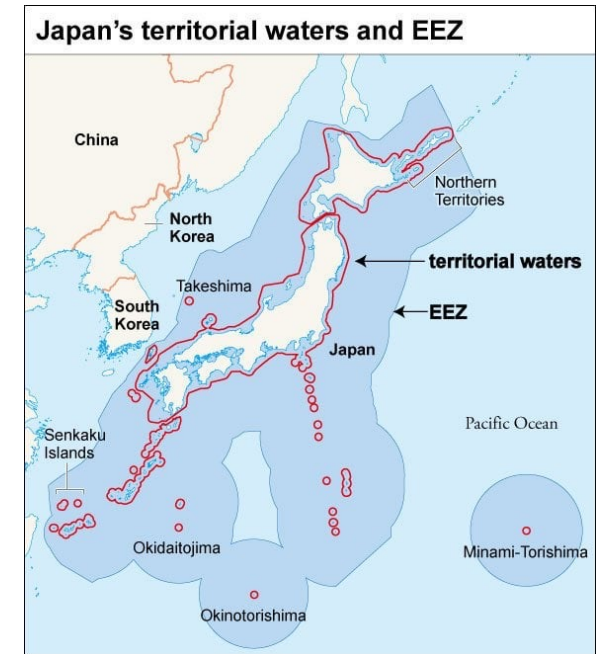
- The Japanese government revised the General Principles, which govern OWP auctions, throughout summer 2022, and in October 2022 released the outcome of their deliberations.
- Reducing the bid price remains a key priority, but **the overwhelming win by Mitsubishi in Round 1 also made it clear to the government that changes were needed to appropriately value the “non-price” factors** (including promptness of operational start, feasibility of the business plan and its execution, and security of the value chain).
- From Round 2 **both the bid price factor and non-price factors are valued equally in terms of available points**, which the government hopes will ensure low prices and feasible, timely projects.
- Major challenges remain. Some OWP developers are wary of investing in the auction process, as the rules could continue to change. Furthermore, project sizes in the upcoming rounds are small (all Round 2 and Round 3 areas are under 1 GW each in size).
- In addition to the issues mentioned above, **challenges surrounding overlapping base port utilisation (in which multiple bidders request to use the same base port) and slow pre-development impact assessments are commonly cited as problems for the future of OWP in Japan.** These will require prompt and decisive regulatory action from the Ministry of Economy, Trade and Industry (METI) and the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) to resolve.
- If Japan can take advantage of its large EEZ for OWP development, this could be a significant opportunity for developers. However, there are geographical and legal hurdles to this.

# Moving beyond Japan's maritime borders



## Great potential for OWP development in Japan's exclusive economic zone

- Japan has the world's sixth largest EEZ and territorial waters, affording significant potential for OWP development beyond Japan's maritime borders. The Japanese government is currently considering policies to harness this potential.
- Last year, **the Cabinet Office established the first government committee focused on examining hurdles related to the introduction of floating OWP in Japan**. The Expert Group focused on considering the potential for developing offshore wind in EEZs in relation to international law, specifically the United Nations Convention on the Law of the Sea (UNCLOS).
- The Cabinet Office's Expert Group concluded its deliberations in early 2023 and found that **development in Japan's EEZ can be carried out in alignment with Japan's obligations under UNCLOS**. Still, there are numerous considerations that need to be taken into account beyond Japan's alignment with international legal obligations.
- Firstly, Japan must consider how best to develop domestic legal structures to accommodate the introduction of floating OWP in its EEZ. At present, **the Offshore Wind Promotion Act only enables the designation of sites for OWP development within Japan's domestic waters**. The Act would, at the very least, need to be amended to enable site designation beyond Japan's maritime borders.
- It is also still unclear whether the Japanese government will make use of the existing auction system for development in its EEZ, or whether it will introduce a new system entirely.
- Several key government committees have discussed the importance of considering OWP development in the EEZ in relation to the development of other policy mechanisms related to OWP, such as **environmental impact assessments (EIA) and the development of base ports**. These conversations are still in their early stages, and we can expect the government to continue concretising such relevant policy mechanisms in the coming months.
- During the next regular Diet session, which will start from January 2024, **the government may introduce legislation in the form of a new law or as an amendment to the existing Offshore Wind Promotion Act**.



# Discussions moving forward related to OWP in Japan's EEZ

- At a recent OWP-related committee meeting held in November 2023, the Japanese government discussed how to develop a process for designation and bidding related to **floating OWP development in Japan's EEZ**, particularly one that leads to the below outcomes:
  - Developing large-scale projects (in the scale of GWs) in multiple sea areas and shortening lead times
  - Reducing public burden
  - Increasing predictability for project operators

## Main topics of discussion related to the development site designation process

Stakeholder  
coordination  
& area  
designation

- Connection to zone designation
  1. How should the government determine candidate areas? Also, before designating the area, how much on-site research should be done regarding the geological and wind conditions?
  2. How to identify and coordinate interested parties?

Project  
operator  
selection  
criteria

- Process for deciding on a project operator
  1. Since the EEZ is not subject to the existing legal framework, does the selection process need to be different from the system in territorial waters?
  2. What should be the timing for selecting project operators and pricing (in terms of governmental support)?
  3. What should be the criteria for selecting a project operator?

Other items  
for  
consideration

- Are there are advantages or disadvantages to charging an additional fee for use of sea areas?, etc.



## Centralised Zonal Planning

- The Japanese government is looking to introduce a government-led “Centralised Zonal Planning Scheme” to stimulate the introduction of OWP.
- This Scheme consists of six primary elements: 1) designation of the project implementation area and public call for power generators; 2) regional coordination for project formation; 3) site surveys; 4) grid coordination; 5) EIAs; and 6) fishery surveys.
- Government leadership on some areas remains limited.

## Environmental Impact Assessment (EIA)

- Throughout summer 2023, the Japanese government has been meeting to discuss an overhaul of the EIA system for OWP. The concluding meeting was held on 31 July.
- On 31 August, MOE published their official Final Report summarising the Study Group’s discussions and conclusions.
- The government is currently holding a public consultation on the proposed new system for EIAs in relation to OWP, which will conclude in early December.

## Other relevant updates

- Currently, five locations have been designated as “base ports”, ports and harbours to be loaned for a set period of time for the initial construction of OWP facilities. Niigata Port was designated as the fifth base port earlier this year, and several other municipalities are requesting designation from the central government.
- Under current Prime Minister Kishida’s flagship Green Transformation (GX) Plan, the government is rolling out several new policy mechanisms to stimulate public and private investment for necessary policies for the expansion of renewables, such as grid line upgrades and research and development projects.
- The “Generator-Side Charge”, a cost-recovery mechanism to be charged to generators as part of Japan’s national wheeling fees, will come into full effect from April 2024.

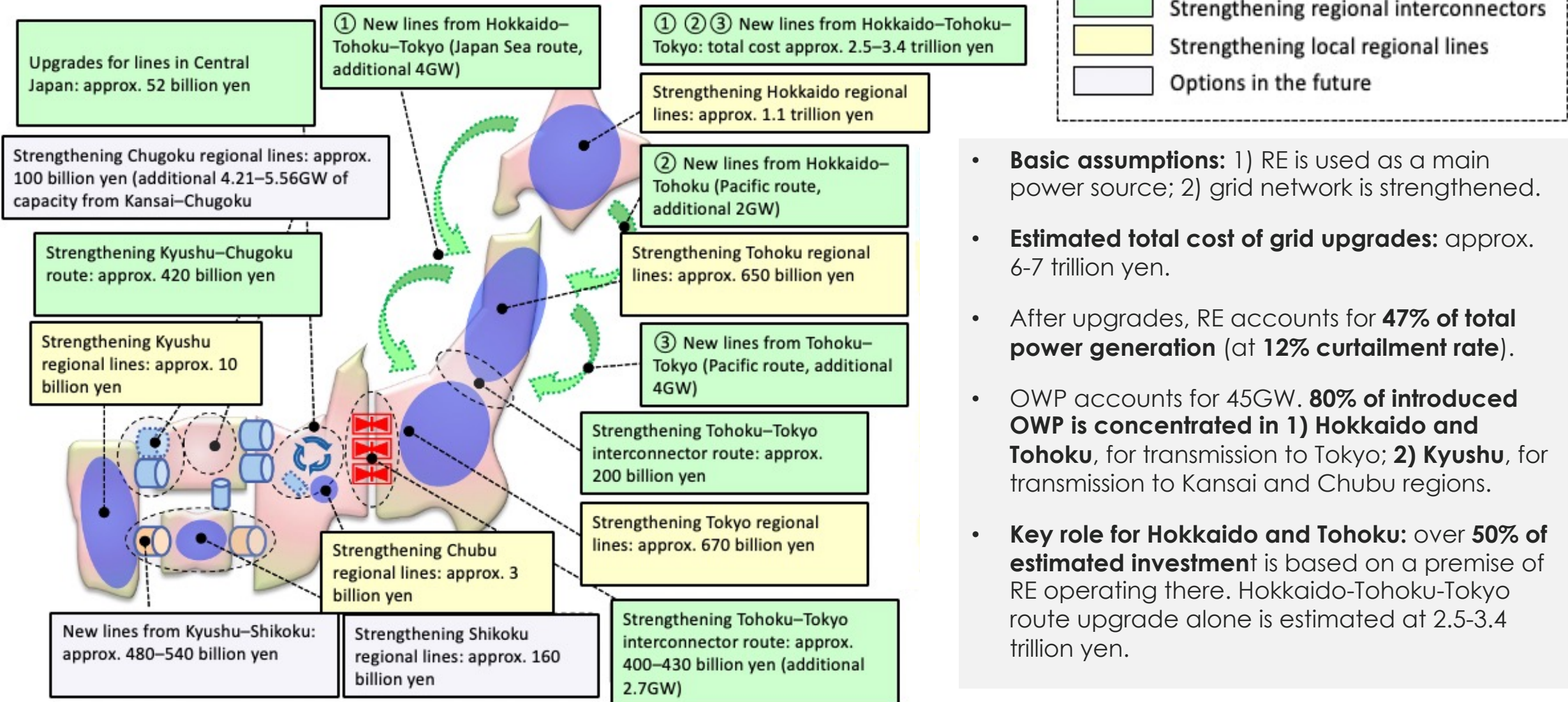
## The introduction of long-term grid planning and reform

- Long-term grid reforms have been a major element of Japan's electricity liberalisation. On 5 June 2020, the Bill to Amend the Electricity Business Act passed the Diet.
- A key change implemented in the amendment was the mandate that the Organisation for Cross-regional Coordination of Transmission Operators (OCCTO) **develop and implement a national grid plan, also known as the “Master Plan”, focused on trunk lines, or extra high voltage lines, within a grid operator’s jurisdiction, and interregional connections.**
- The Master Plan, which was finalised in March 2023, builds upon an initial long-term grid strategy produced by OCCTO in 2017 and looks to incorporate new considerations for line upgrade procedures in accordance with the expansion of non-firm power line designations across Japan. The aim of this plan is to **systematically address existing grid congestion concerns and to develop new lines to facilitate the projected growth of new renewable generators connecting to the grid.**
- The **basic principles** underpinning the Master Plan are:
  - Reducing network costs by assessing the need for upgrades after maximizing efficient use of existing grid capacity;
  - Assessing required capacity upgrades based on benefit-cost analysis, and projections of renewables curtailment; and
  - Assessing upgrade costs, including potential High Voltage Direct Current (HVDC) deployment.

# Overview of the Master Plan base scenario

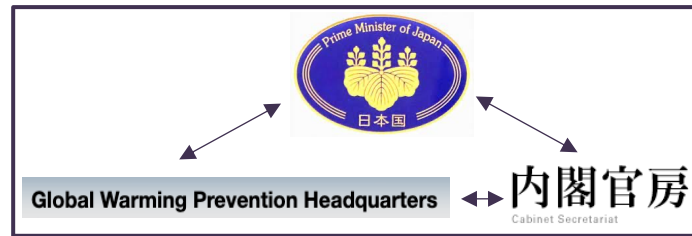


## Planned upgrades and expected costs

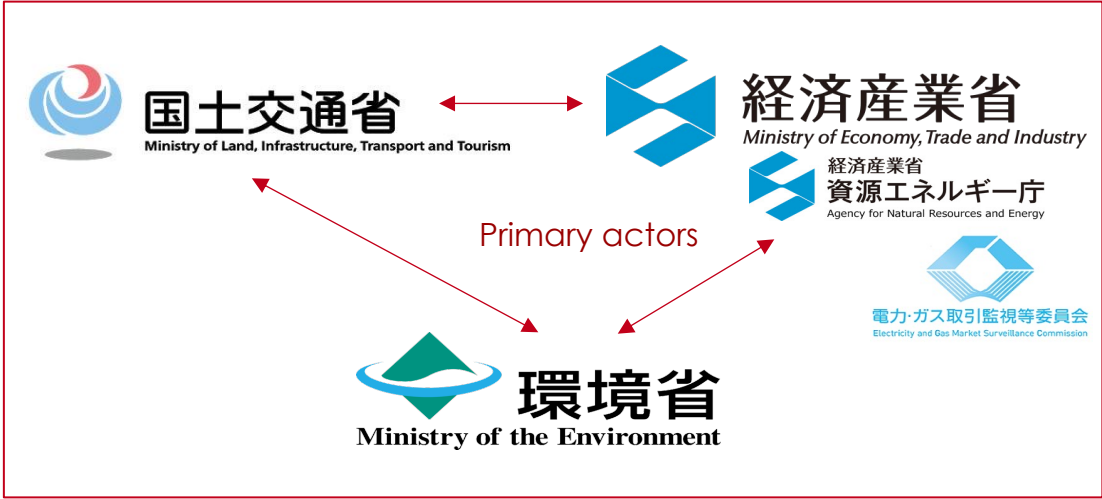


- **Basic assumptions:** 1) RE is used as a main power source; 2) grid network is strengthened.
- **Estimated total cost of grid upgrades:** approx. 6-7 trillion yen.
- After upgrades, RE accounts for **47% of total power generation** (at 12% curtailment rate).
- OWP accounts for 45GW. **80% of introduced OWP is concentrated in 1) Hokkaido and Tohoku**, for transmission to Tokyo; **2) Kyushu**, for transmission to Kansai and Chubu regions.
- **Key role for Hokkaido and Tohoku:** over **50% of estimated investment** is based on a premise of RE operating there. Hokkaido-Tohoku-Tokyo route upgrade alone is estimated at 2.5-3.4 trillion yen.

# Relevant government stakeholders



Quasi-governmental organisations



- Procurement Price Calculation Committee (METI)
- Grid Policy Working Group (METI)
- Subcommittee on Electricity and Gas Industry, Advisory Committee on Natural Resources and Energy (METI)
- Subcommittee for Offshore Wind Power Promotion, Environment Subcommittee, Port and Harbour Subcommittee, Council for Transport Policy (MLIT)
- Subcommittee on Large-Scale Introduction of Renewable Energy and Next Generation Power Network (METI)
- Committee on the Masterplan for Wide-Area Transmission Grid and Transmission Grid Rules under the Organisation for Cross-regional Coordination of Transmission Operators (OCCTO)
- Special Committee on Space and Ocean Development Subcommittee on Ocean Strategy (LDP)

Committees