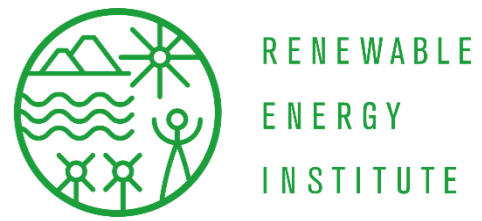


Scenarios for decarbonized grid 2050

How can civil society participate in energy and grid planning process?

Seiichiro KIMURA (Renewable Energy Institute)

Our activity for Energy and Grid Planning as a member of civil society



2016-2019

- **Research on “Asia Super Grid”**

Investigation of preceding study, definition of benefits and its analysis, estimation of construction costs and business model proposal of a return on investment.

2020-2021

- **Research on decarbonization scenarios with 100% renewables**

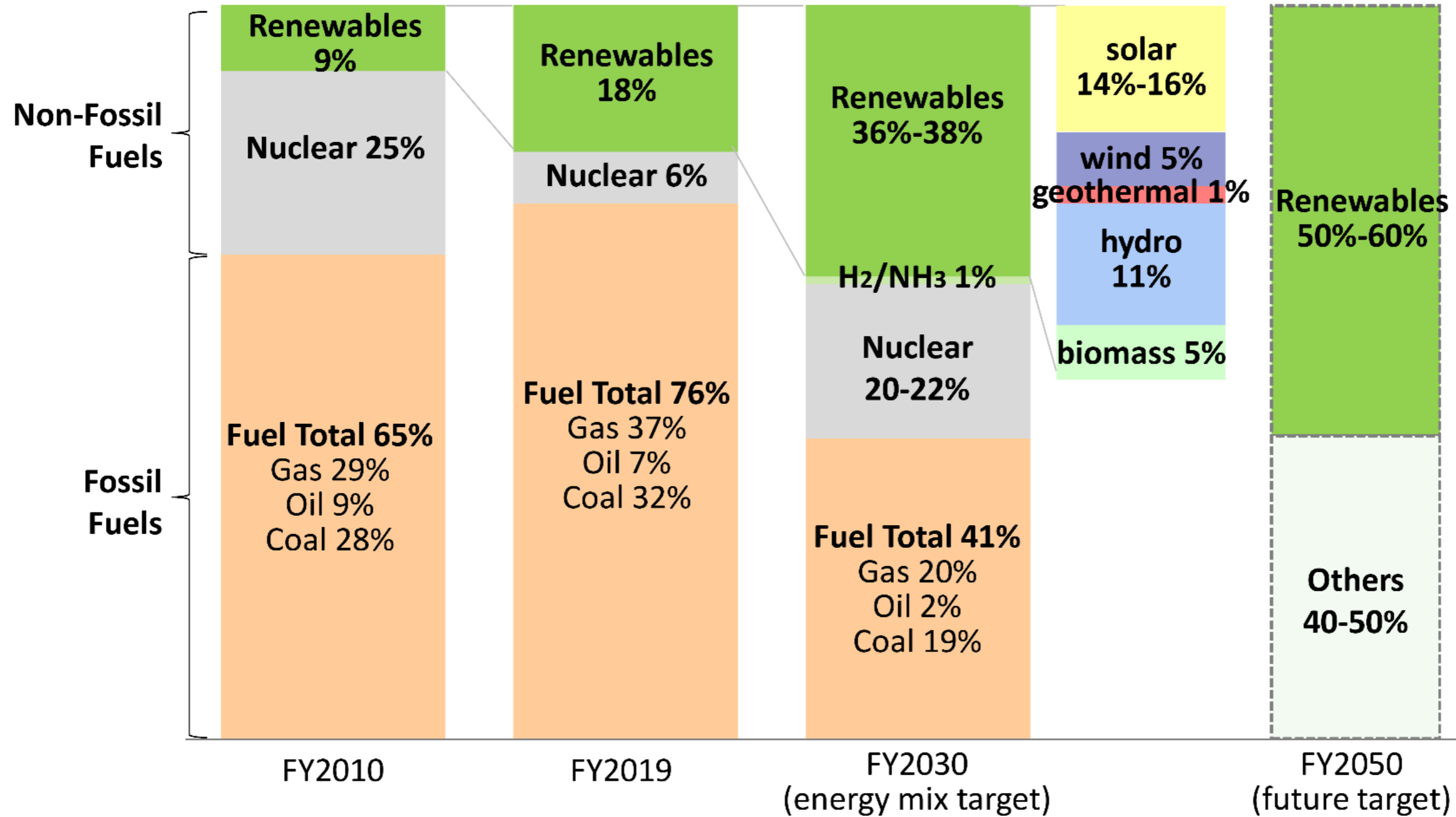
Examine whether or not decarbonization in 2050 can be done with 100% renewables. Evaluate with and without electricity imports, etc.

2021-2022

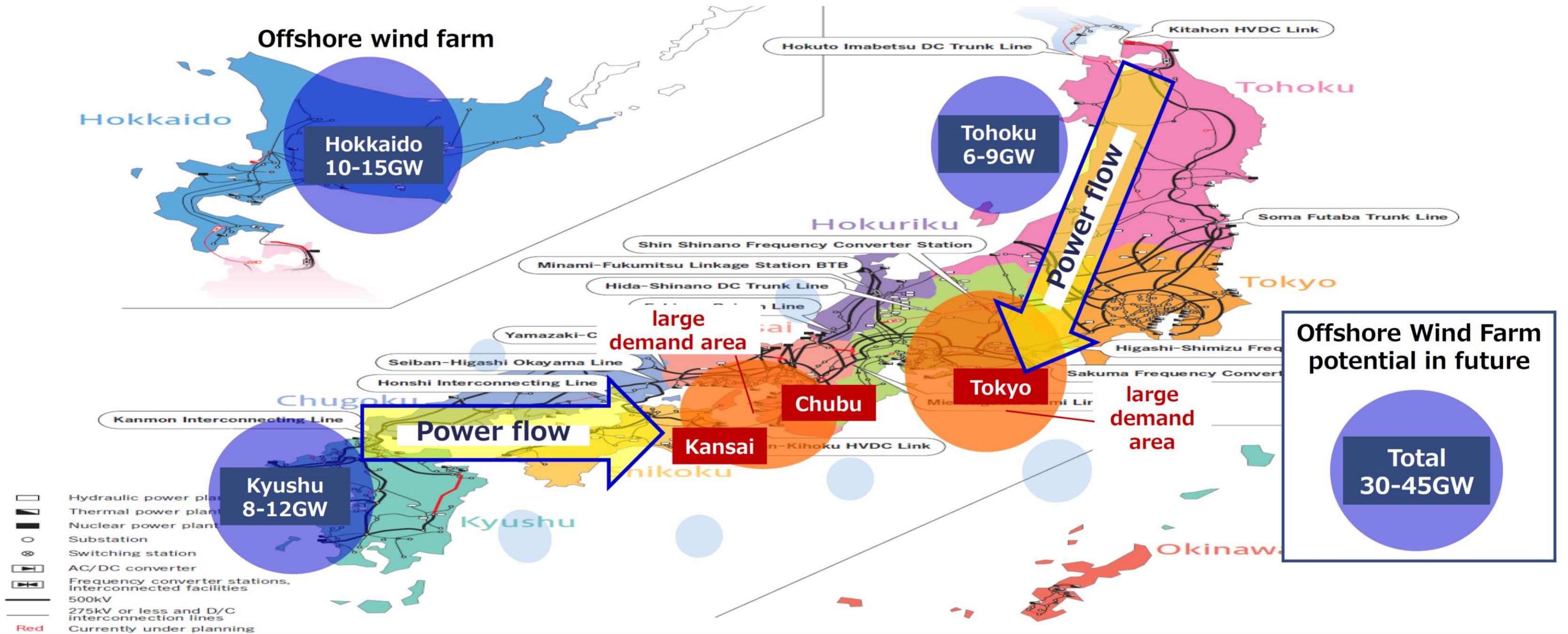
- **Comparative study of the government scenario and our scenario for grid enhancement**

Analysis between the Japanese government's proposed power supply plan for 2050 and our proposal to maximize the share of renewables.

Japan's Government target for the power mix in 2030/2050



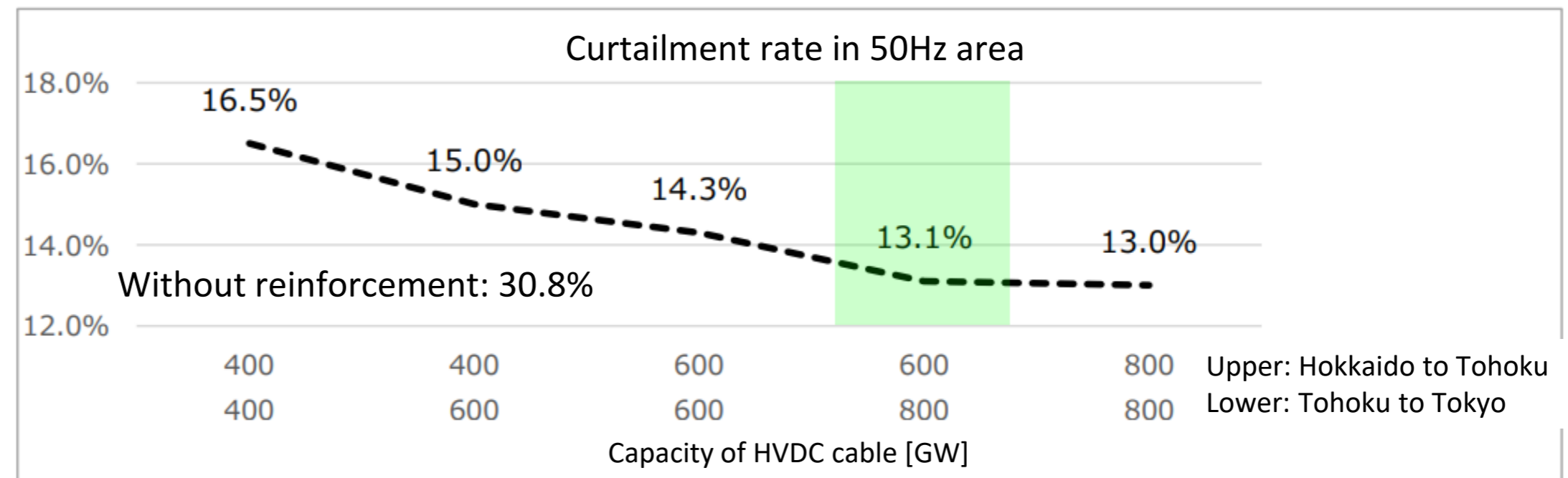
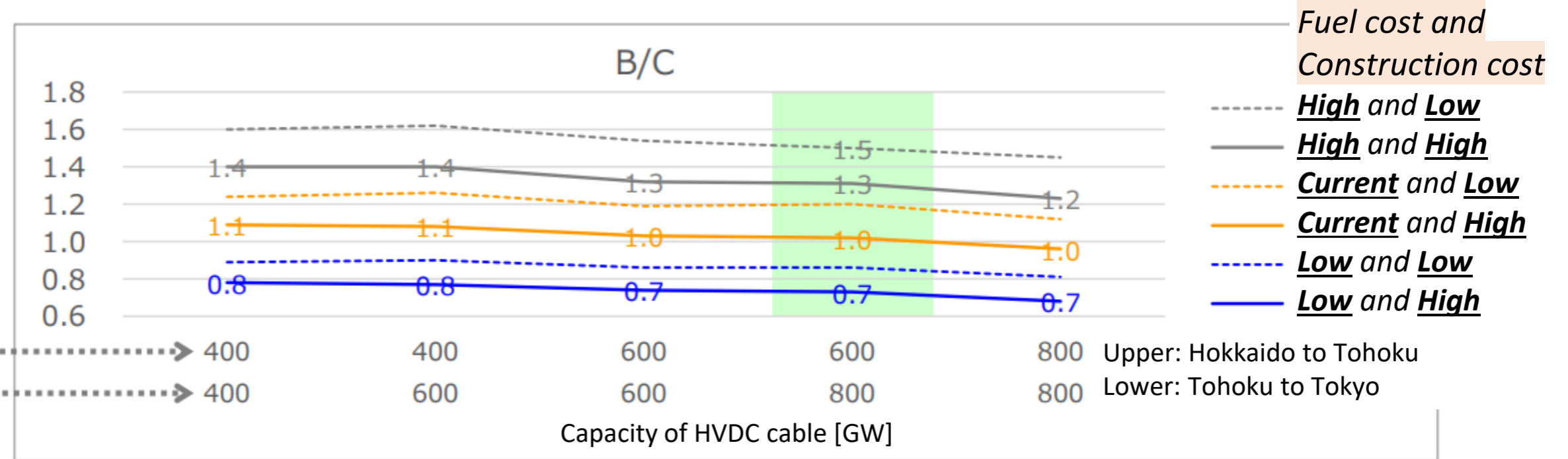
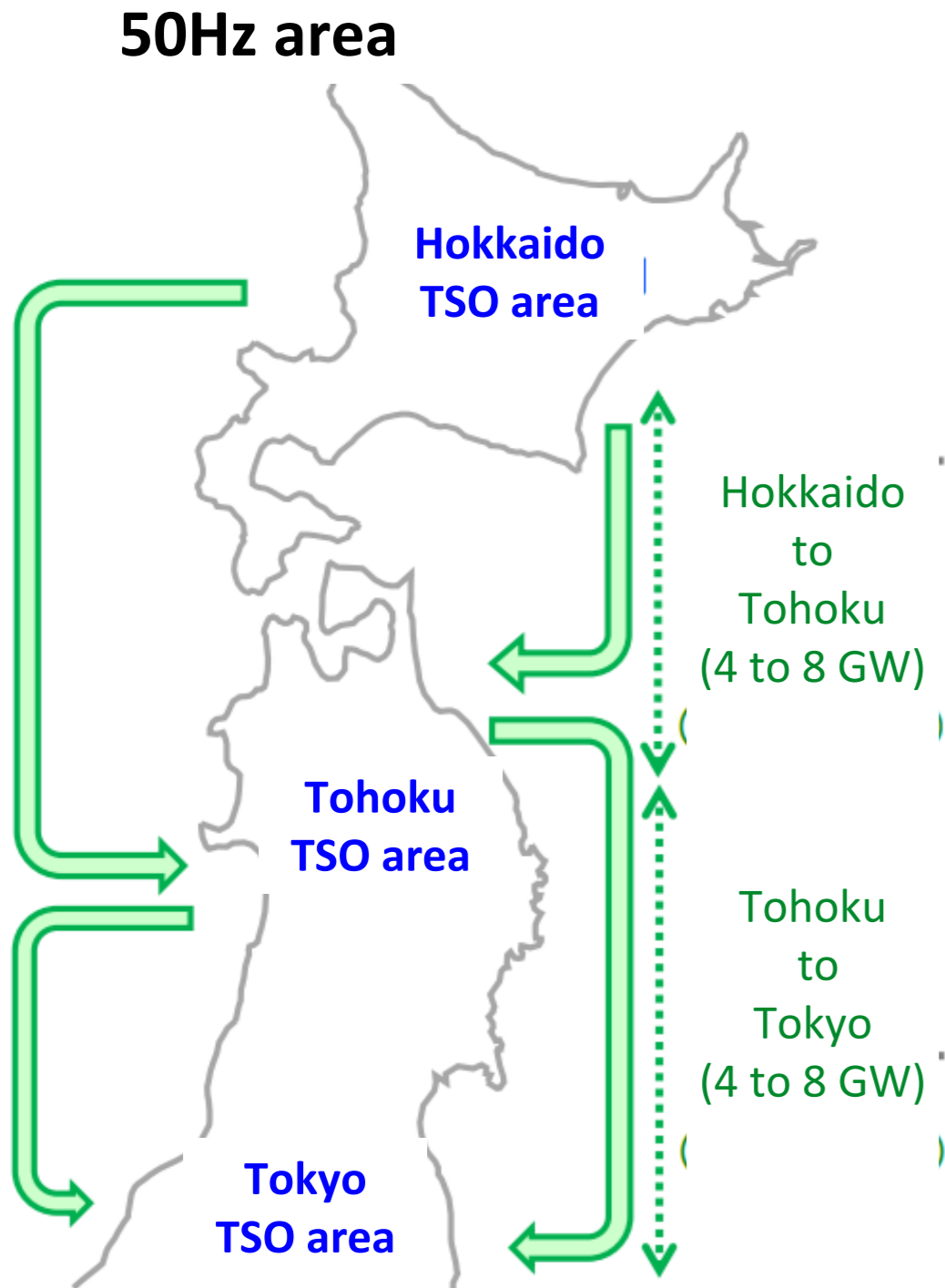
A master plan for transmission lines to maximize the use of renewable energy sources, particularly offshore wind is under discussion.



OCCTO's result for the Master Plan

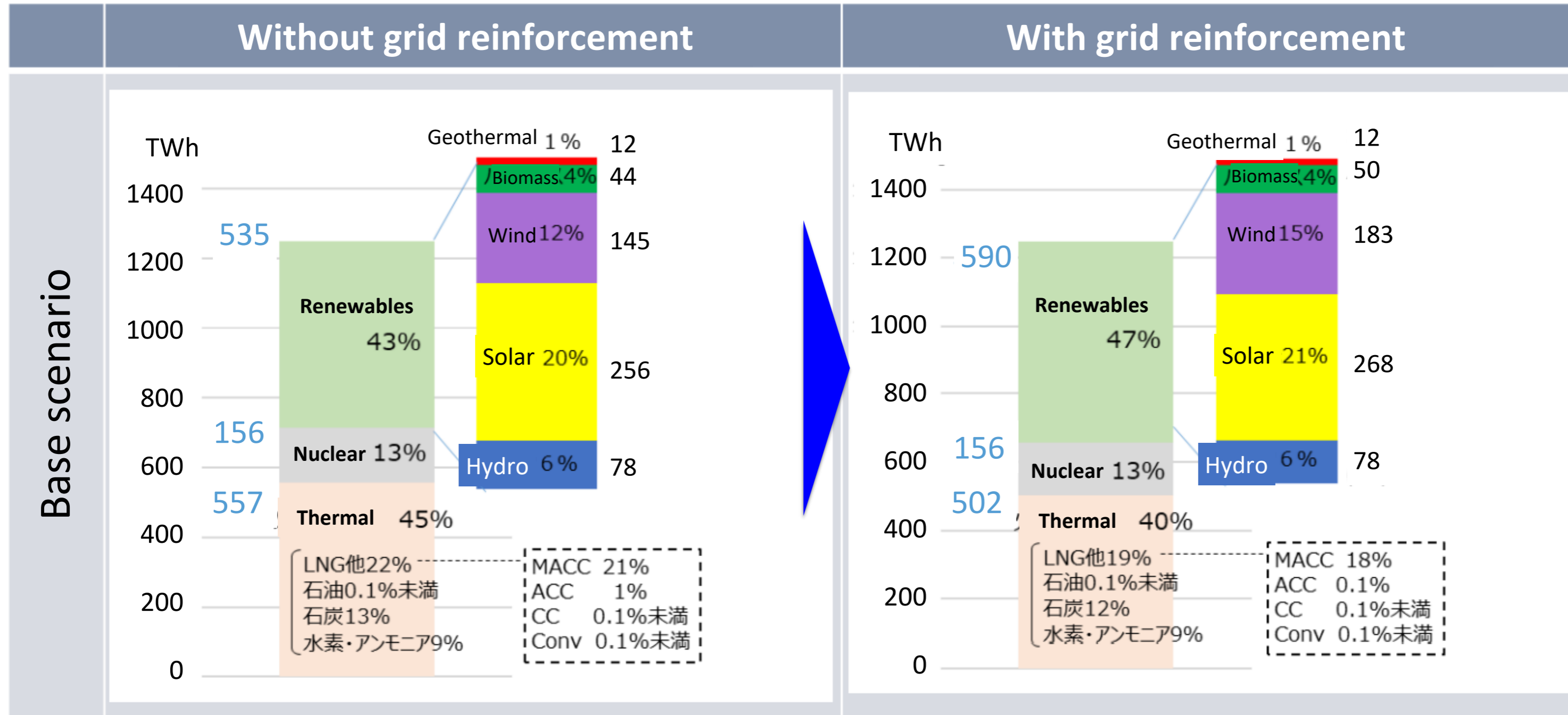
OCCTO Base Scenario

Benefits include fuel costs, CO2 costs, transmission losses, and adequacy. Costs include the cost of inter-regional interconnection and reinforcement within TSO area.



OCCTO's result for the Master Plan

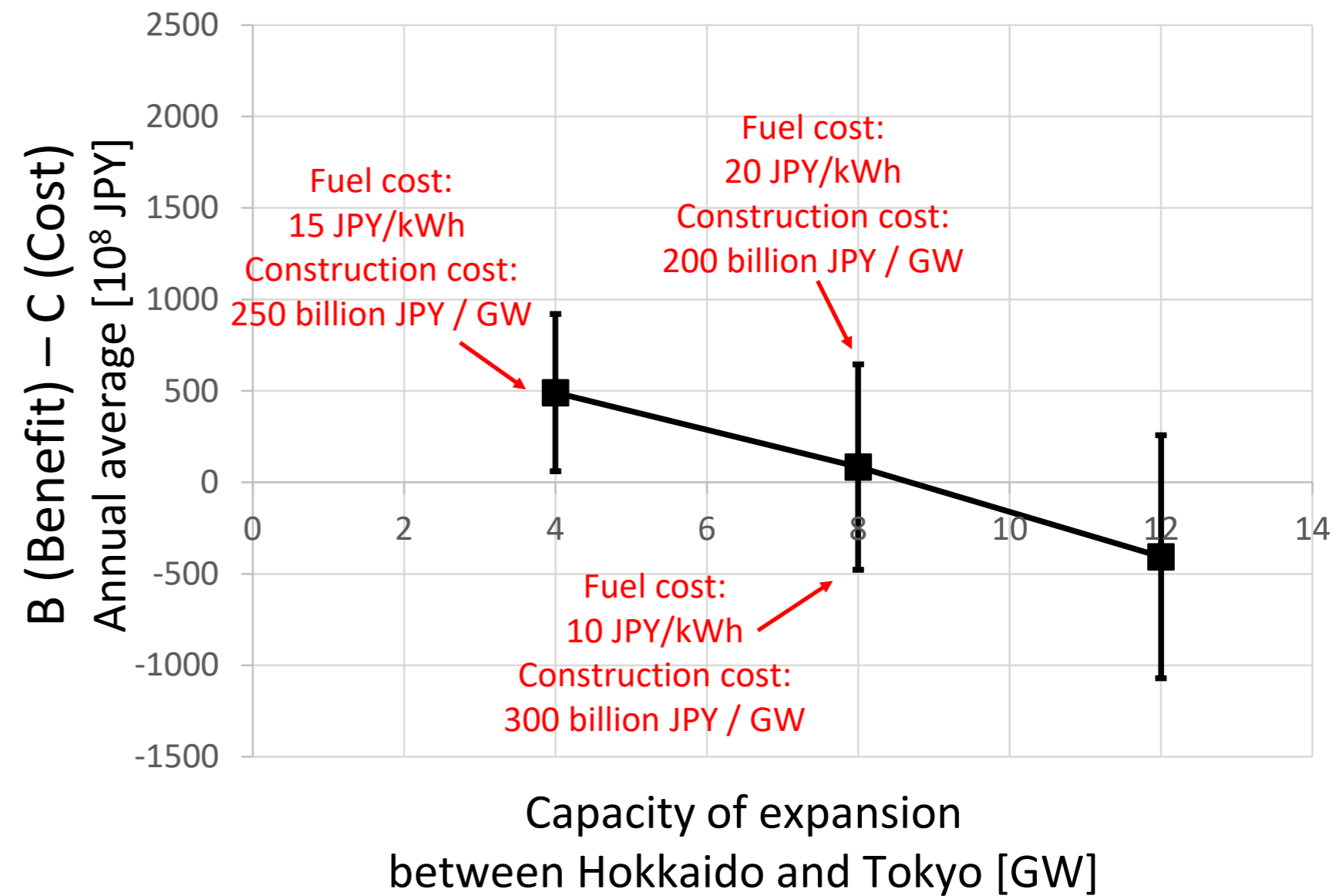
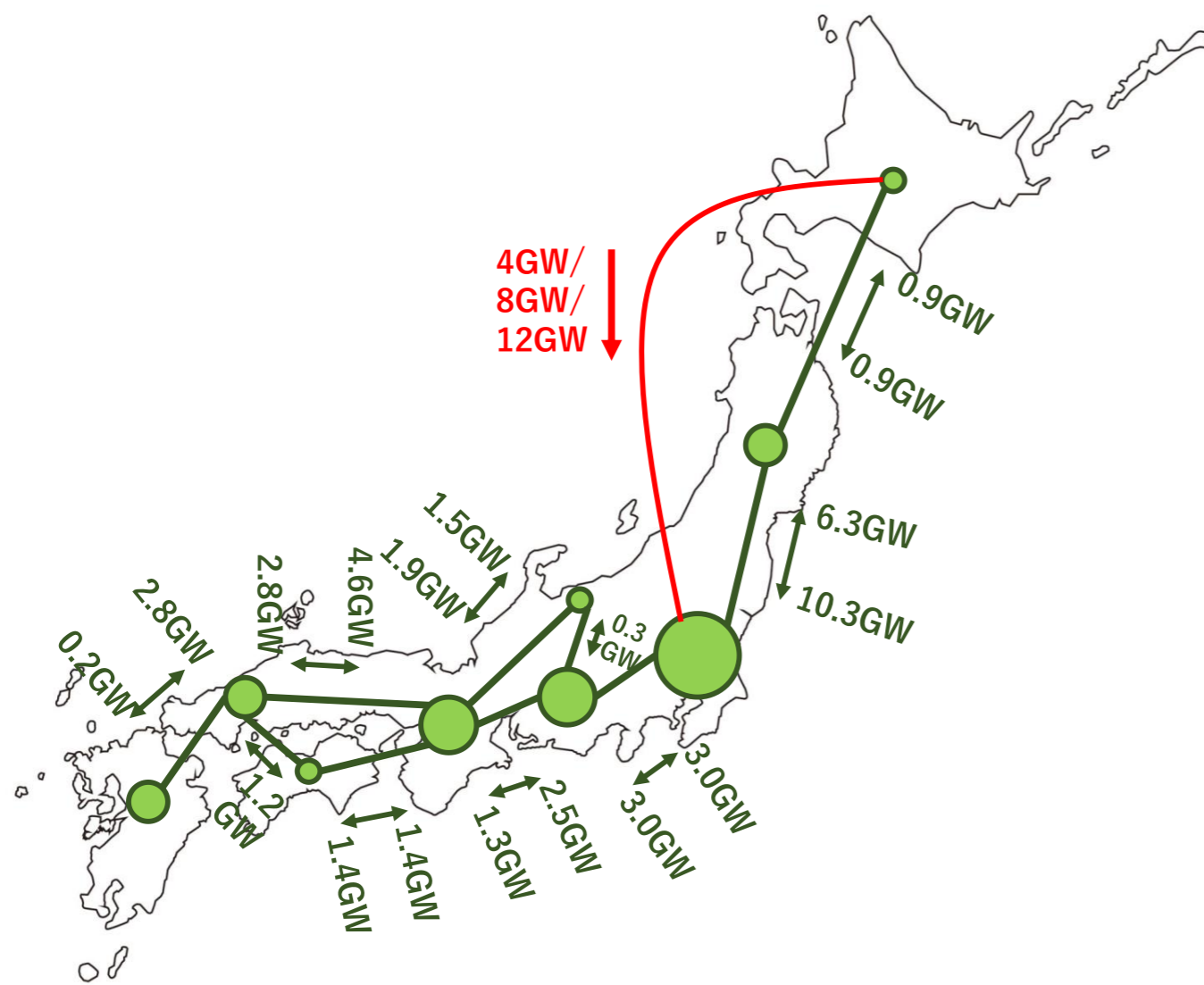
OCCTO Base Scenario



Share of Renewables: +4%

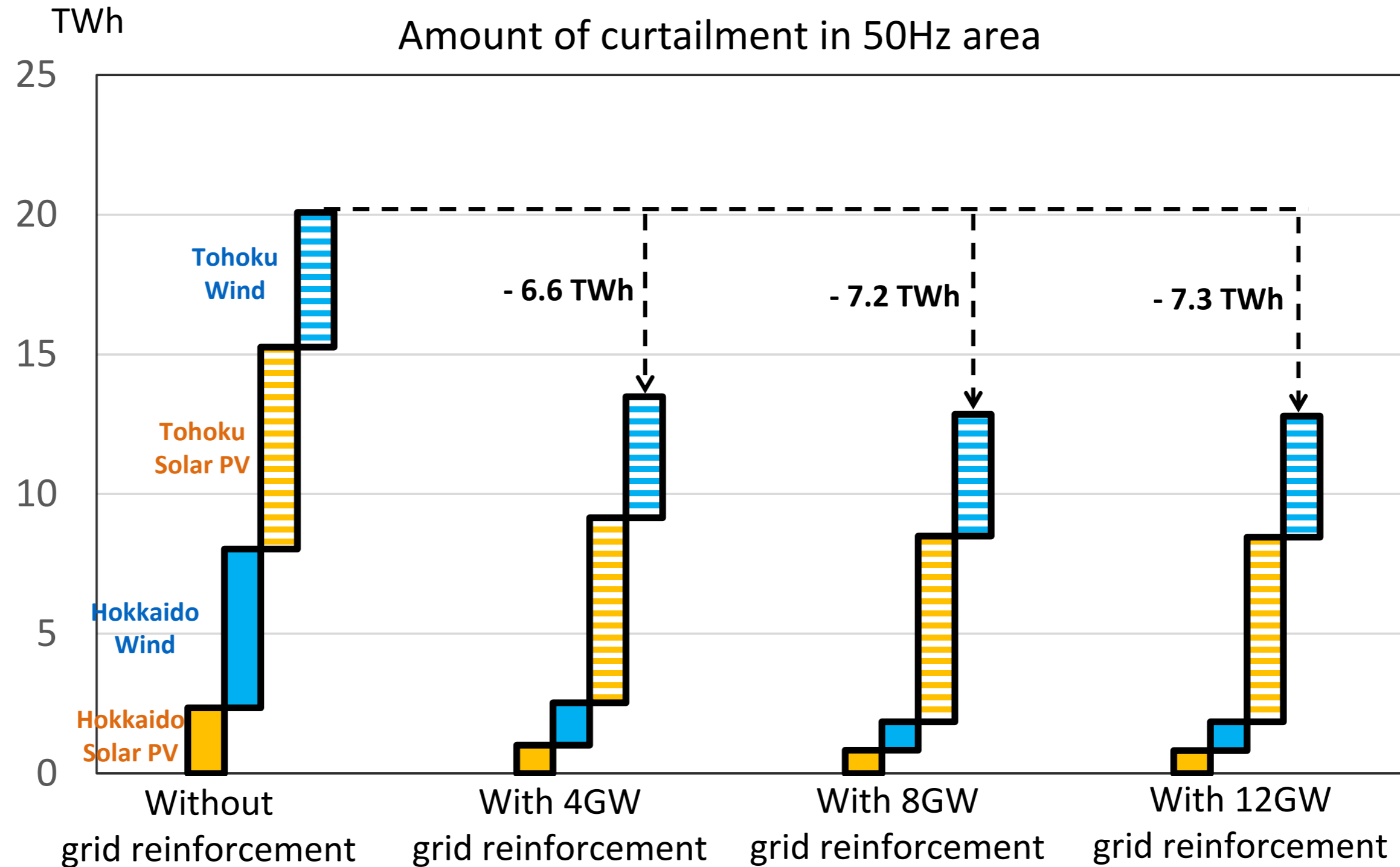
Our result under the same condition of OCCTO base scenario

Transmission line reinforcement only between Hokkaido and Tokyo under the same conditions as in the OCCTO Base Scenario



Our result under the same condition of OCCTO base scenario

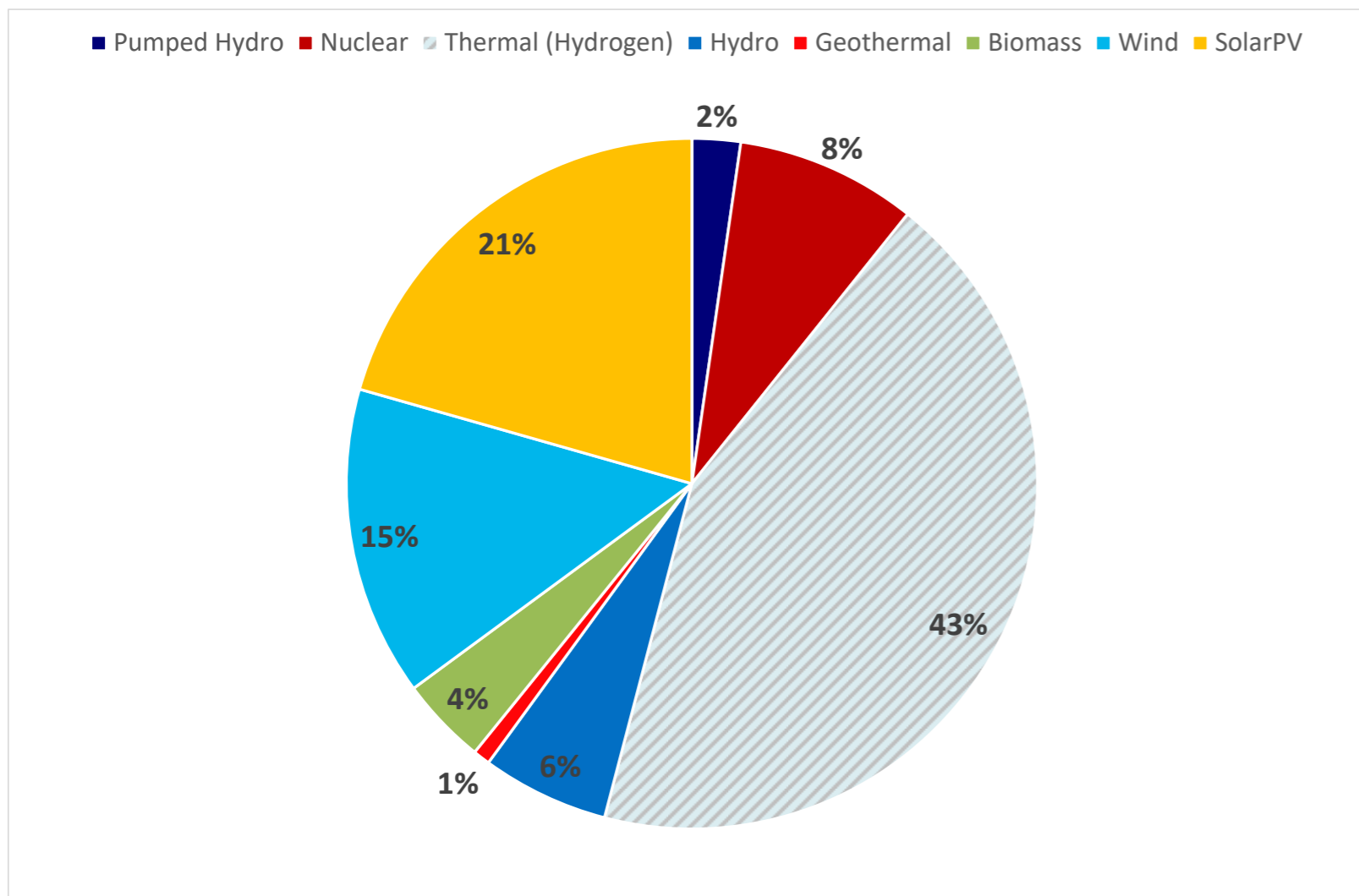
Transmission line reinforcement only between Hokkaido and Tokyo under the same conditions as in the OCCTO Base Scenario



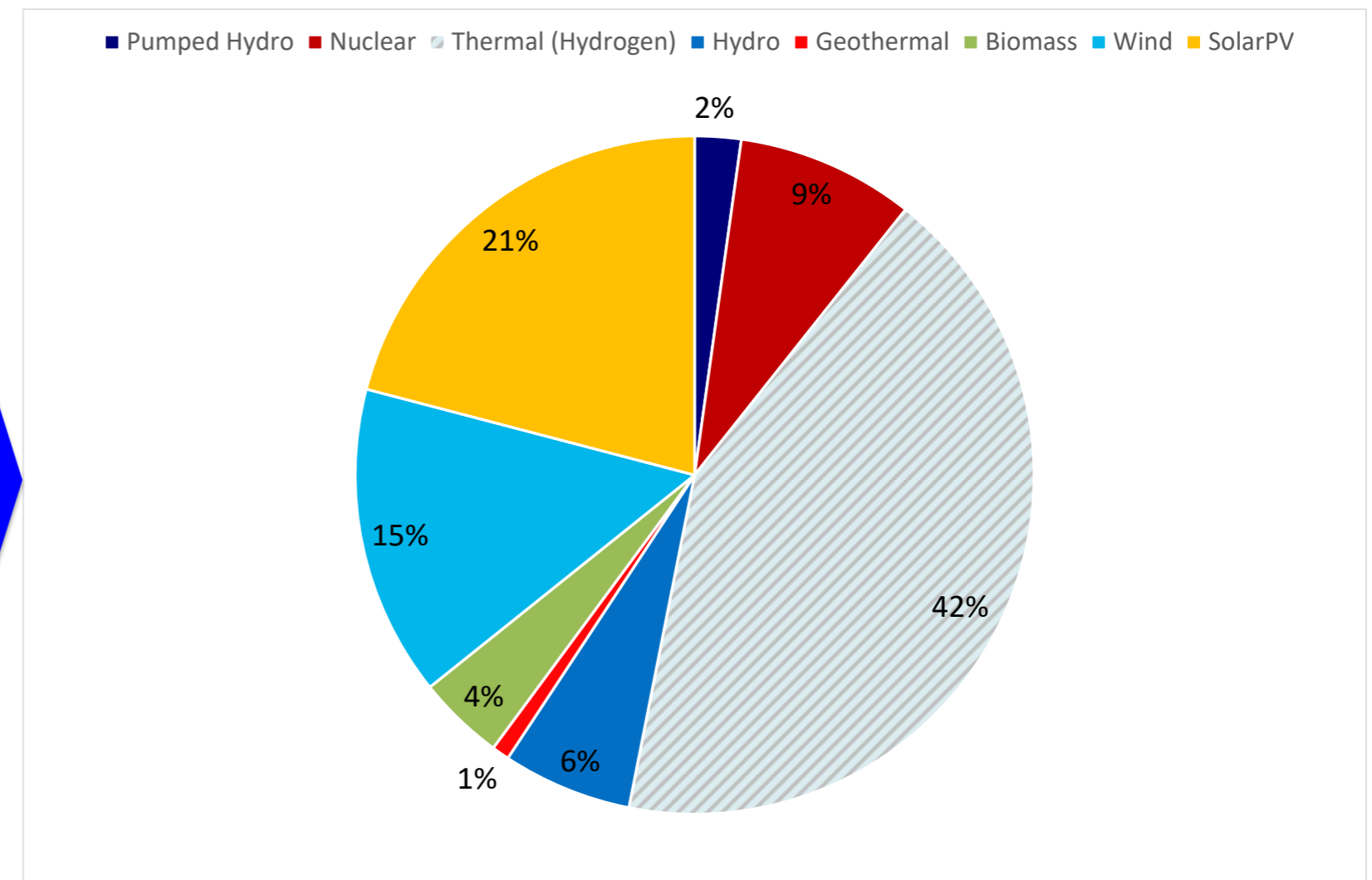
Our result under the same condition of OCCTO base scenario

8 GW transmission line reinforcement between Hokkaido and Tokyo under the same conditions as in the OCCTO Base Scenario

Without grid reinforcement



With 8 GW grid reinforcement



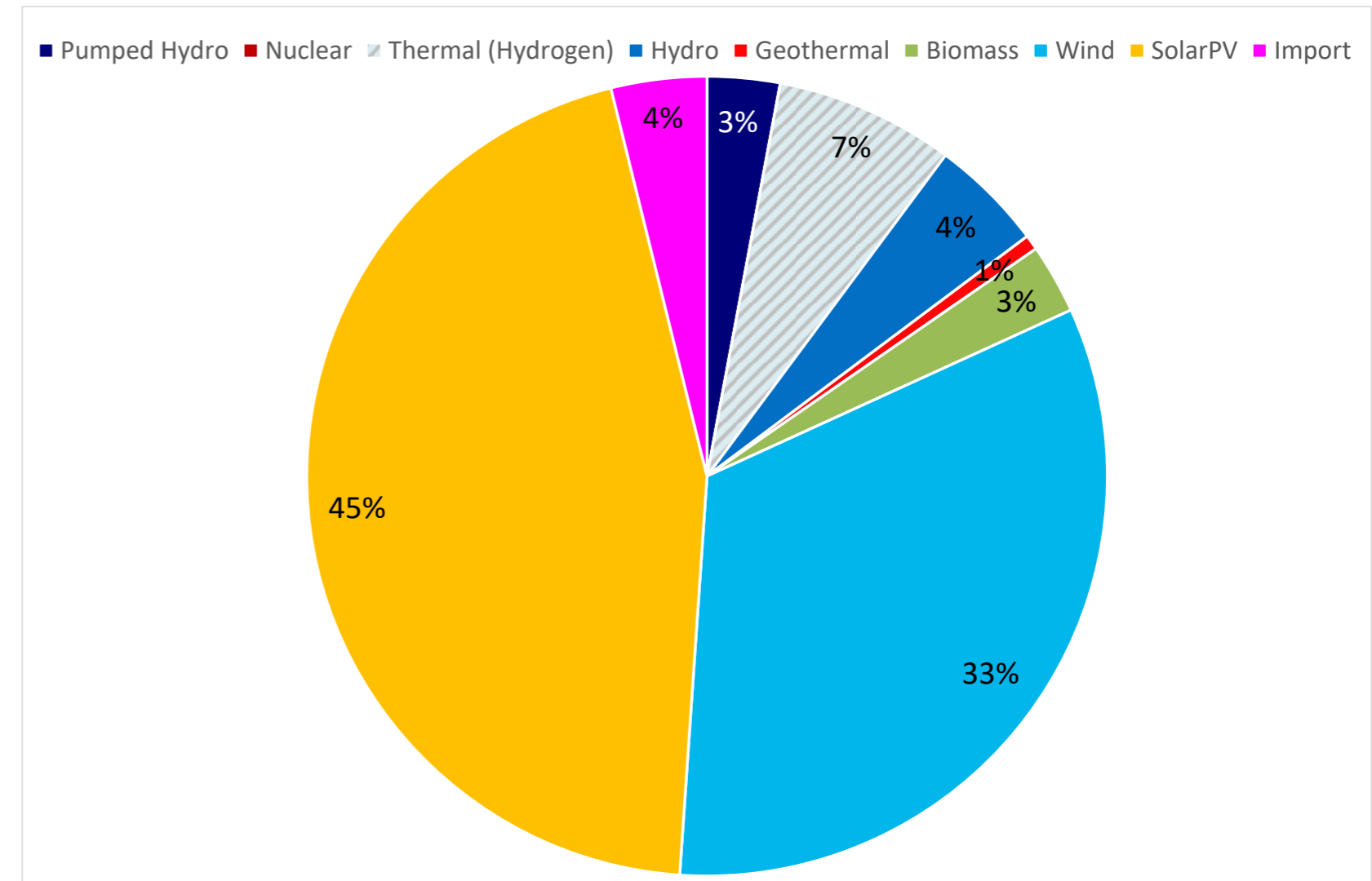
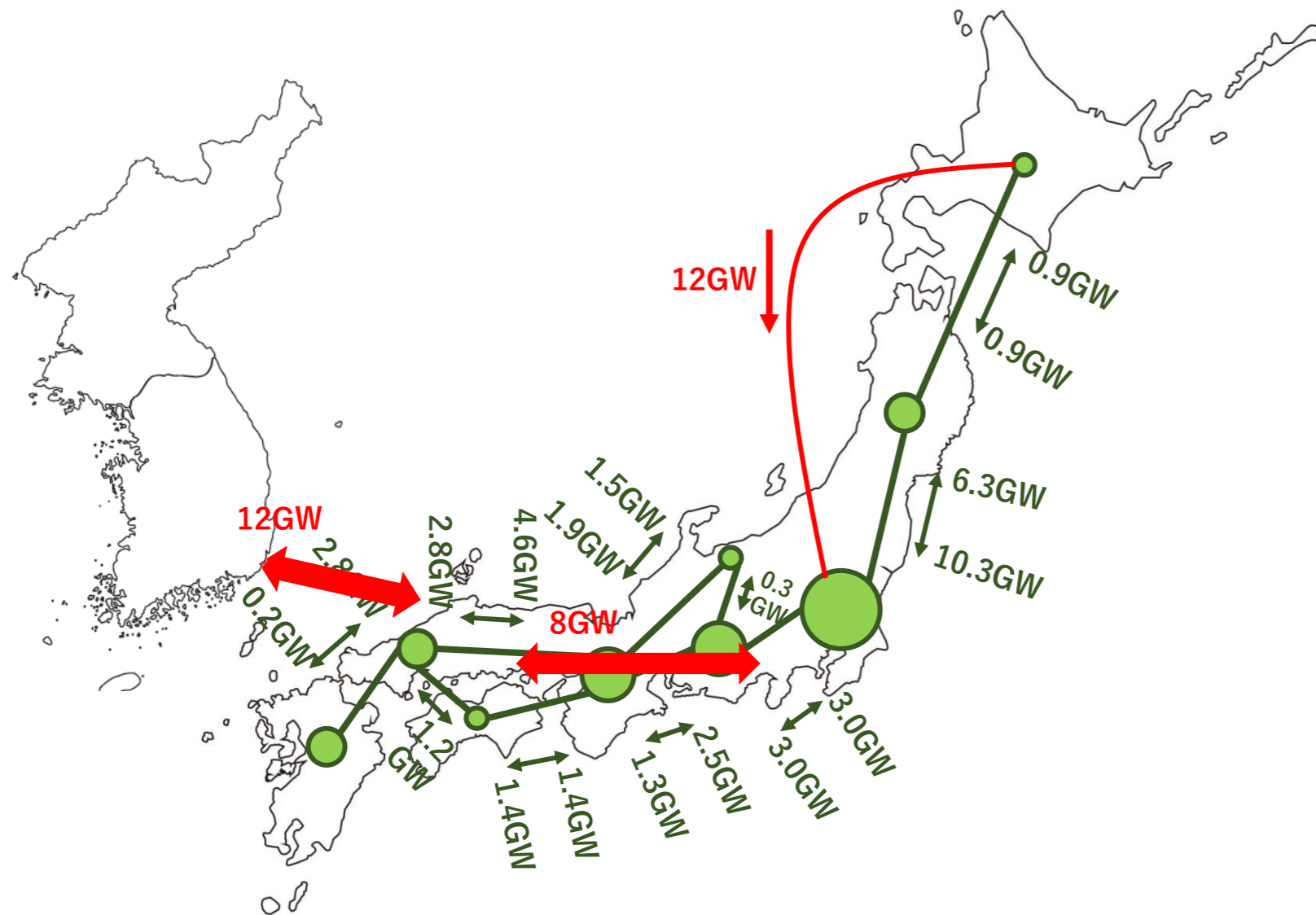
Share of Renewables: +2%*

*This analysis does not take into account grid reinforcement in the western Japan area.

Our original analysis for 100% energy supply from renewables

Take possible means to achieve 100% renewable energy supply

Install twice as much solar power and 1.8 times as much wind power as in the OCCTO Base Scenario, as well as utilize EV charge/discharge, hydrogen production, and storage batteries. In addition, domestic and international interconnection lines is assumed.



Note: Exports from Japan to South Korea were calculated to be about 1/6 of imports.



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Thank you for your kind attention.