Toward Electricity Decarbonisation

- Japan Perspective -

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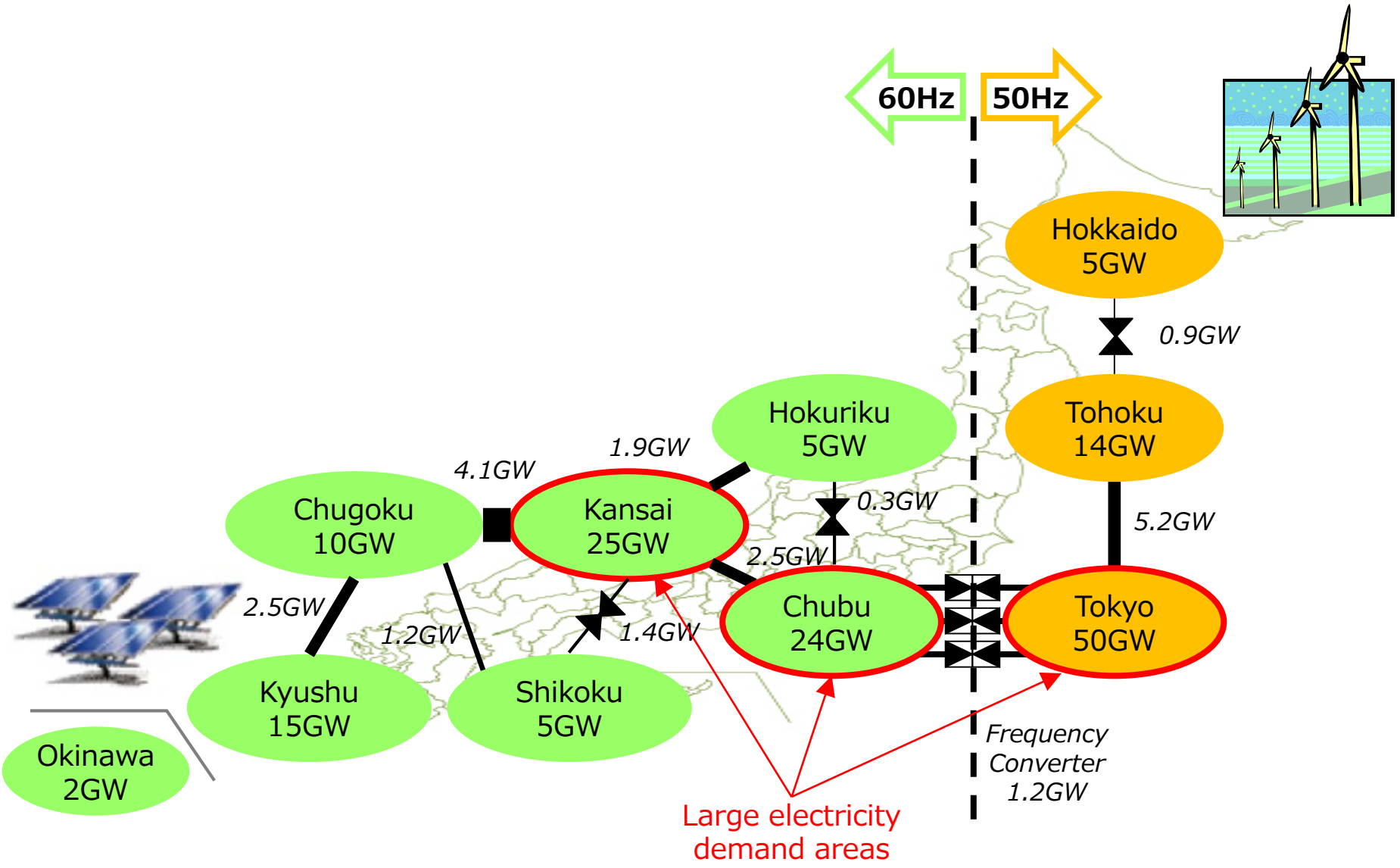
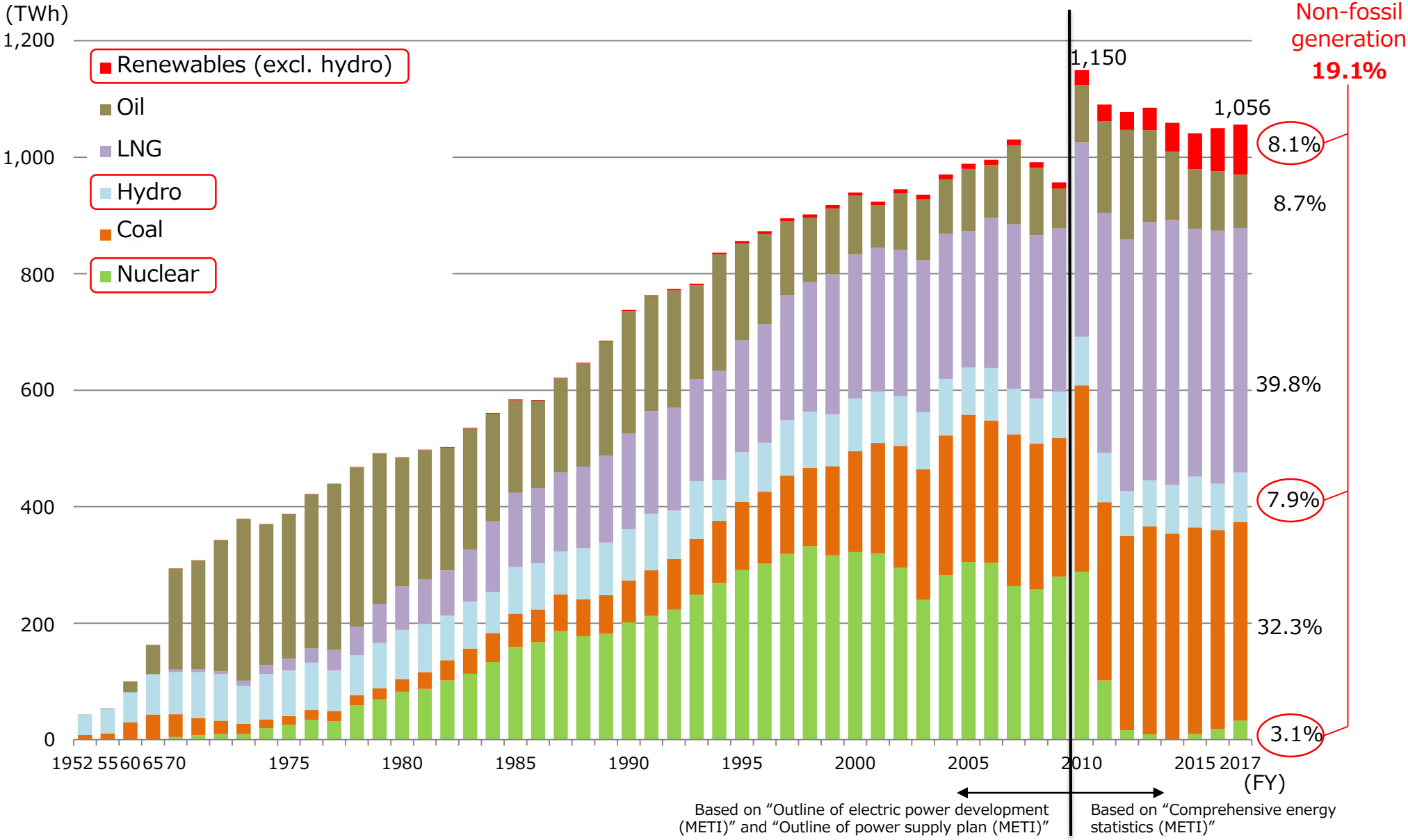
Grid structure



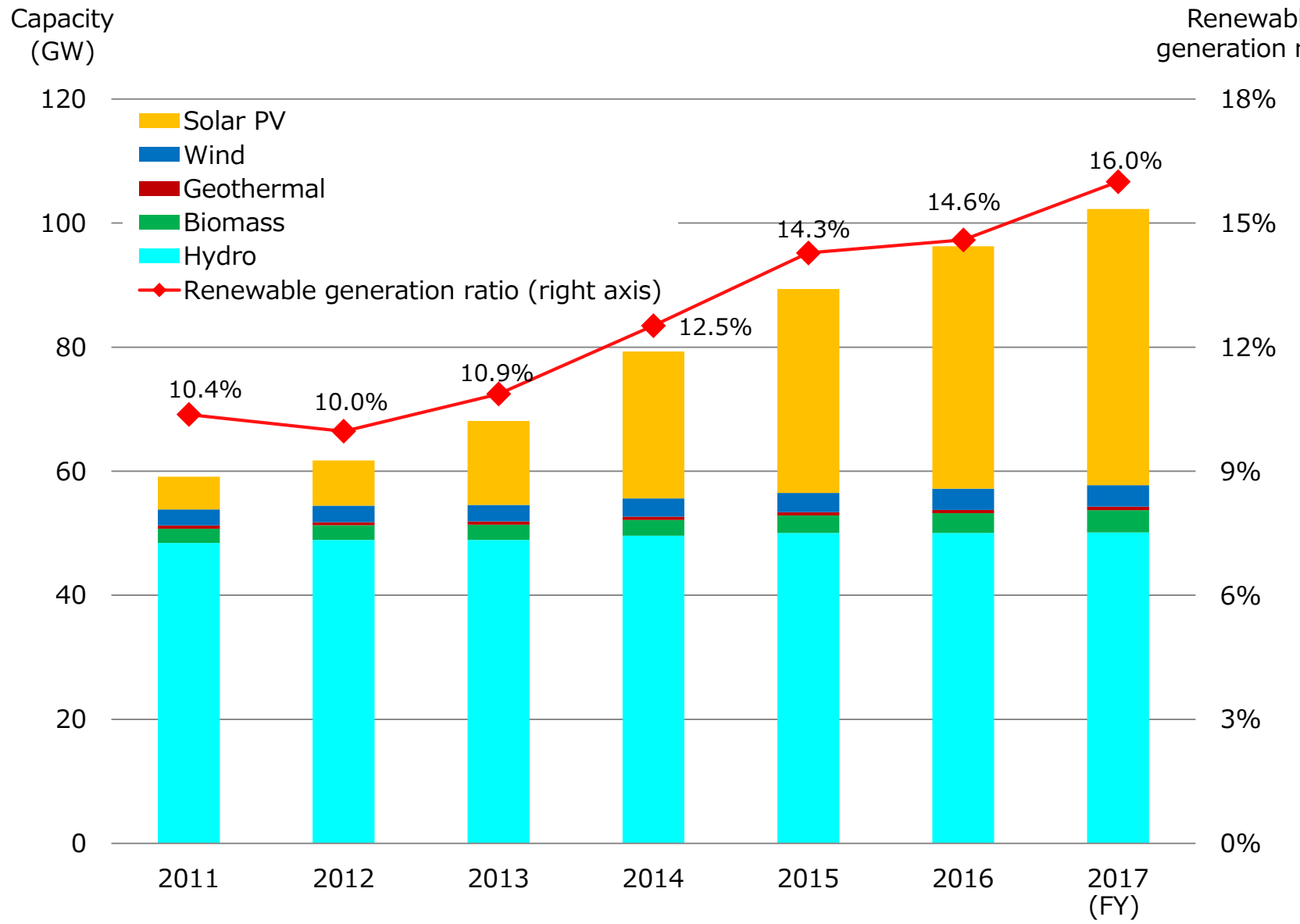
Note: The figure in each area indicates the maximum electricity demand in 2016.
The italic figure in each interconnection indicates operating capacity.

Power generation and power supply composition in Japan

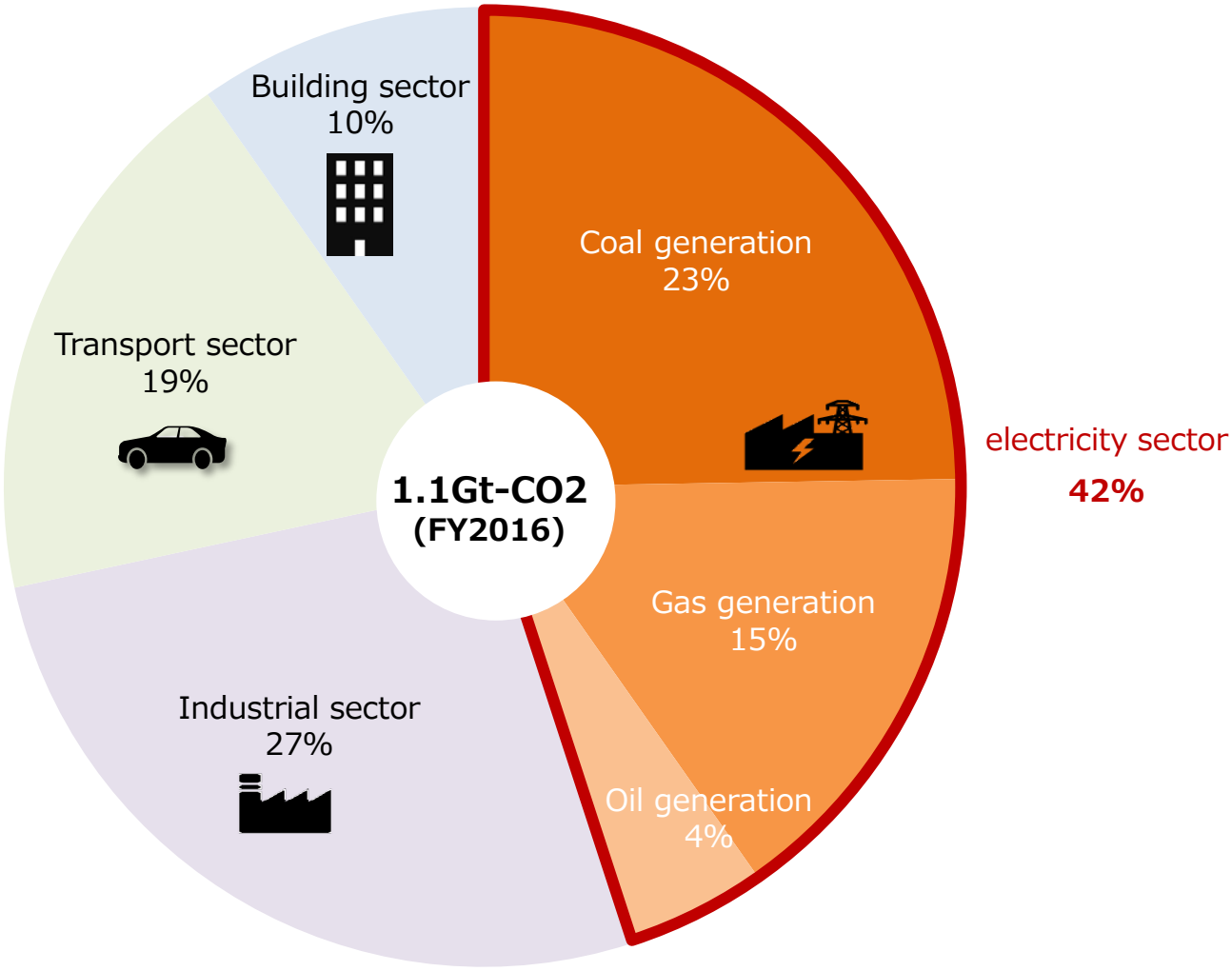


Source: Energy White Paper 2019 in Japan

Renewable electricity introduction in Japan



CO2 emissions from electricity sector in Japan



Source : Ministry of the Environment, GHG Emissions

Key measures for electricity decarbonisation

Electricity decarbonisation

Non fossil fuel generation + **Flexibility sources (Storage, DSR, hydrogen, etc.)**

Improving efficiency of fossil fuel generation + **Carbon Capture, Utilisation and Storage (CCUS)**

Decarbonisation of transport and building sectors through electrification

Long-Term Strategy under Paris Agreement as Growth Strategy

Vision: "Decarbonised Society" as the ultimate goal
80% GHG emissions reduction by 2050

Basic Principles of Policy: "Virtuous Cycle of Environment and Growth"

Sectoral vision

1. Energy
Pursuing every option for promoting energy transitions and decarbonisation

2. Industry
Decarbonised manufacturing

3. Transport
Contribution to the challenge of "Well-to-Wheel Zero Emission"

4. Community and Living
Realizing carbon neutrality, resilient and comfortable communities and lives by 2050/ creating "Circulating and Ecological Economy"

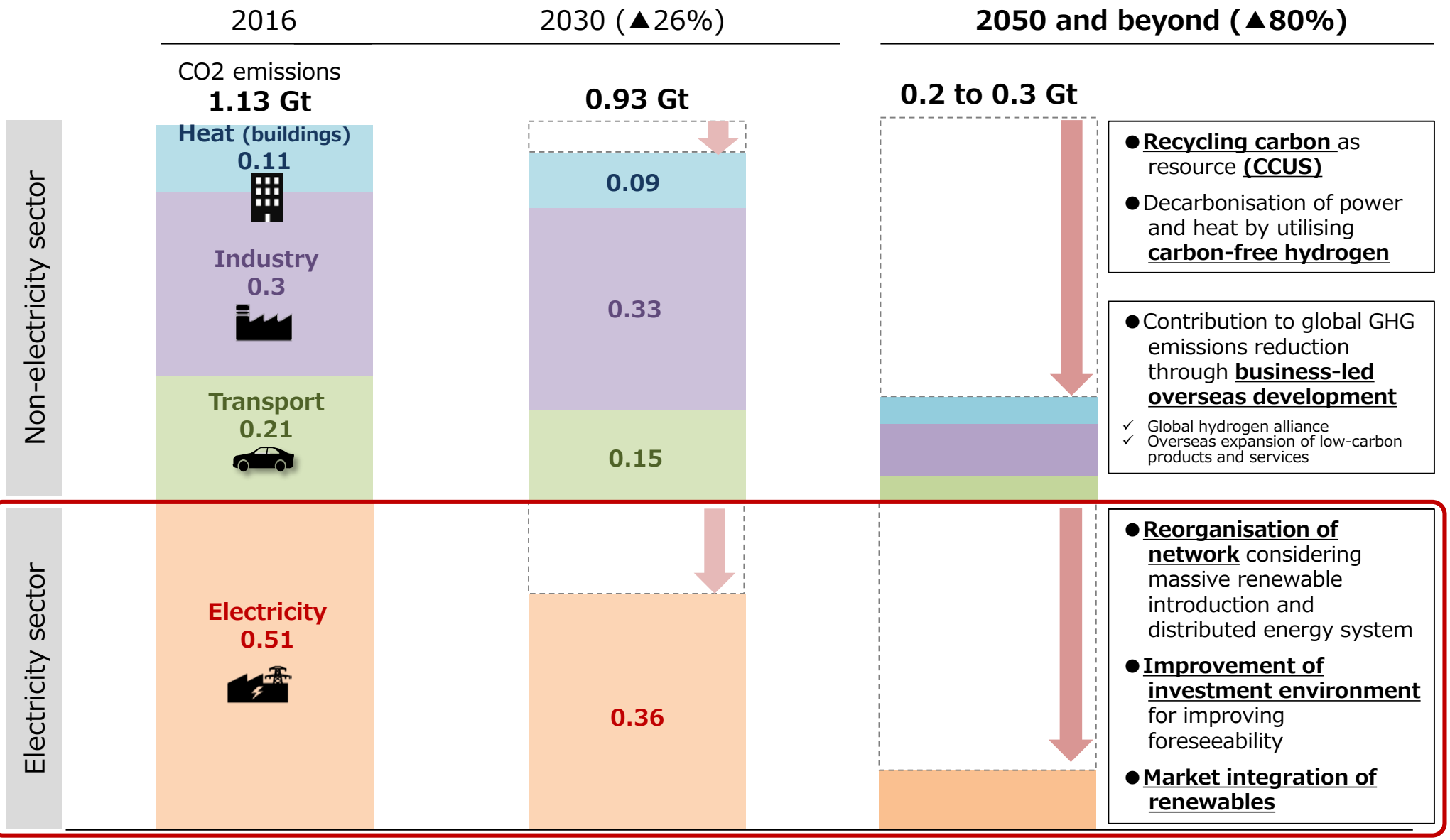
5. Measures for Carbon Sinks

Cross-sectoral measures to realize a "virtuous cycle of environment and growth"

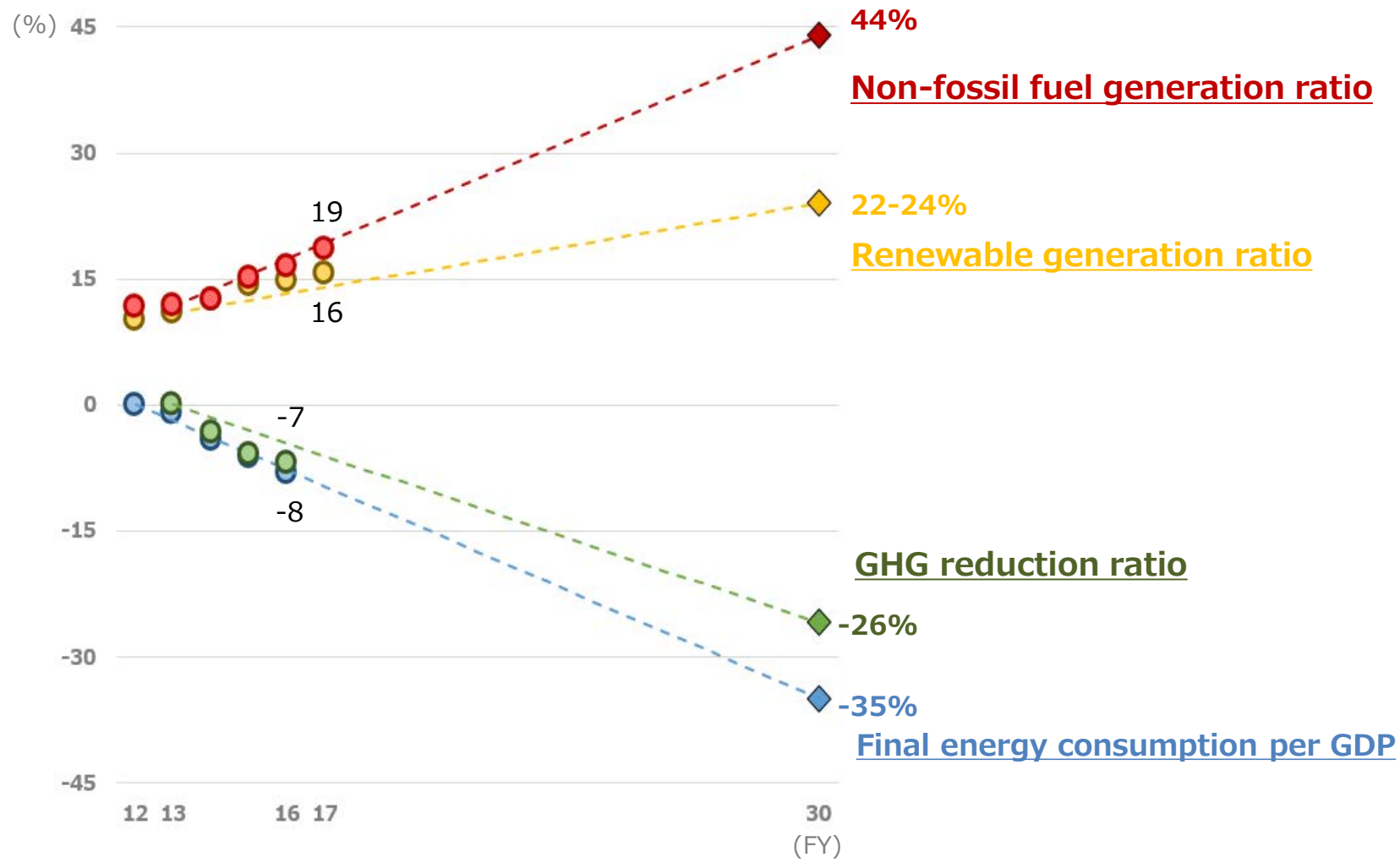
i. Promotion of innovation
ii. Promotion of green finance
iii. Business-led activities (improving business environments) and international cooperation

Decarbonising pathways toward 2050

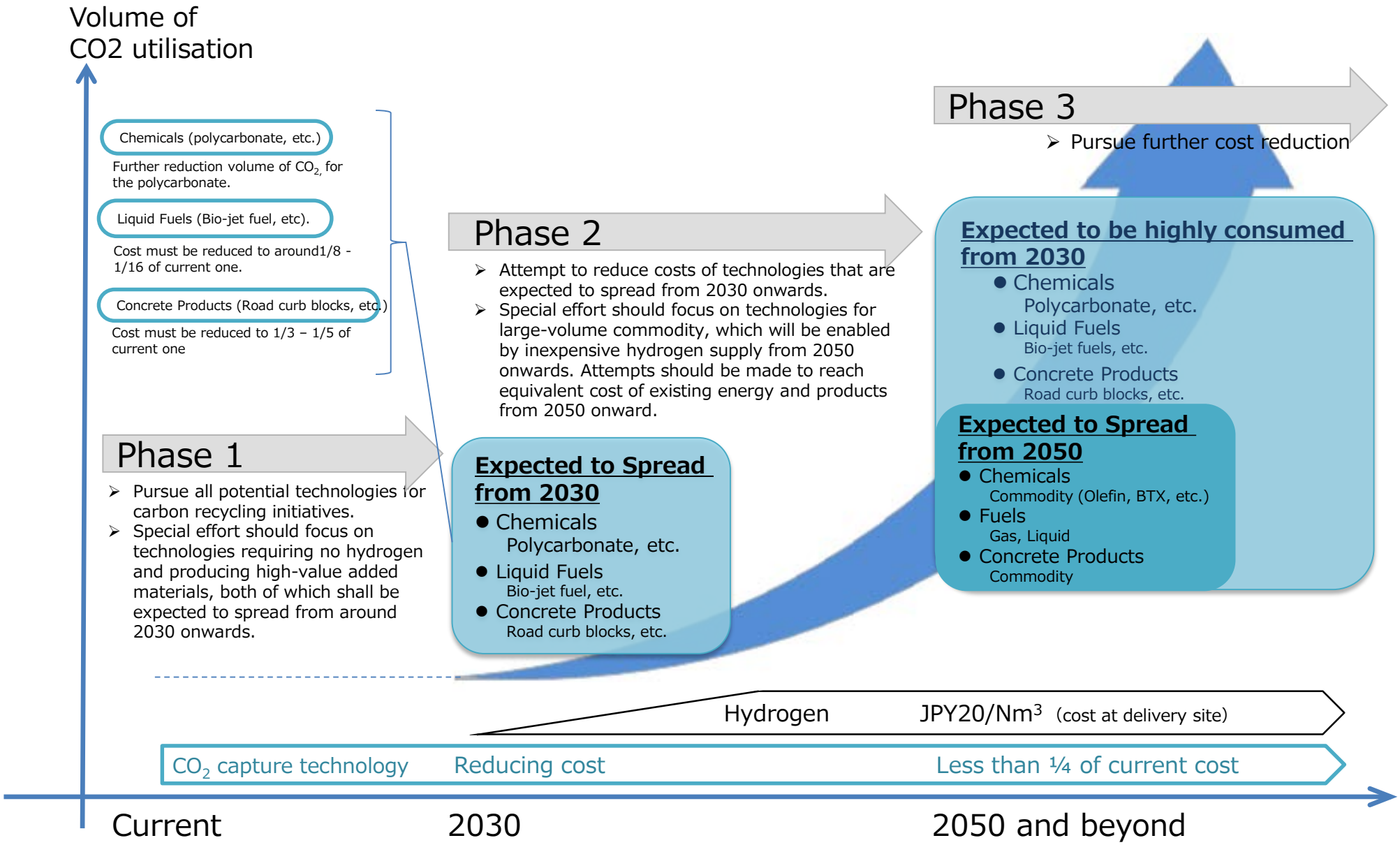
Substantial GHG emissions reduction through innovation and international cooperation is indispensable



Japan’s progress toward the mid-term target



Roadmap for Carbon Recycling Technologies



https://www.meti.go.jp/press/2019/06/20190607002/20190607002-2.pdf

Conclusion

- Japan set a goal of **reducing 80% GHG emissions by 2050** toward "Decarbonised Society"
- Electricity decarbonisation could be achieved through:
  - Expanding **non-fossil generation with flexibility sources**
  - Improving **efficiency of fossil fuel generation** as wells as **utilizing CCUS**
- Electricity decarbonisation also leads to **other sectors' decarbonisation** through **electrification**
- **Innovation is indispensable**

Speech by Prime Minister Abe at the WEF Annual Meeting (23 January 2019)

I would very much like to highlight what innovation does and how much innovation counts in tackling climate change, because, and this is an important “because,” **we NEED disruptions**. To remind us of that, the IPCC, in its recent "1.5-degree report," tells us that global net human-caused emissions of CO2 should reach "net zero" around 2050, meaning that any remaining emissions would need to be balanced out by removing CO2 from the air.

We must invite more and still more disruptive innovations before it’s too late. CO2, ladies and gentlemen, could well be the best and most affordable resource for multiple uses. There is artificial photosynthesis, for which a key discovery, one for photocatalysis, was made by Akira Fujishima, a Japanese scientist. An old technology of methanation is getting attention anew to remove CO2. It's time now to think about CCU, Carbon Capture AND Utilisation. Hydrogen, as both a primary source, and more importantly, a carrier of energy, must become cheaper and more easily affordable. My government is aiming to reduce the production cost of hydrogen by at least 90 per cent by the year 2050, to make it cheaper than natural gas.

We will be inviting to Japan topmost experts in science and technology from G20 member countries to combine forces in accelerating innovations. I am also pleased to tell you that my government, first among others, published a guidance paper in December last year along with the TCFD, or Task Force on Climate-related Financial Disclosures. ESG investment world-wide has grown over the last five years by more than 9 trillion US dollars. That's a big amount, **but we must channel even more into green innovation.** And the guideline we put together will help motivate more companies to spend greater amounts on disruptive innovations.

I must say that spending money for a green earth and a blue ocean, once deemed costly, is now a growth generator. Decarbonisation and profit making can happen in tandem. We policy makers must be held responsible to make it happen, as I will be stressing in Osaka this year.

Thank you

Ministry of Economy, Trade and Industry