
Integration of blue carbon into Japan's latest NDC and GHG inventory

October 21, 2025

Kazumasa NAGAMORI

Decarbonized Society Promotion Office

Global Environmental Bureau

Ministry of the Environment, Japan

Seaweed and Seaweed in Japan

- Traditionally consumed as food
- Decreasing size due to environmental change, expansions of seaweed eaters etc.
- Conservation/recovery of seagrass meadows and seaweed beds are being implemented by local people/business/fishermen.

Seaweed with its zoospore

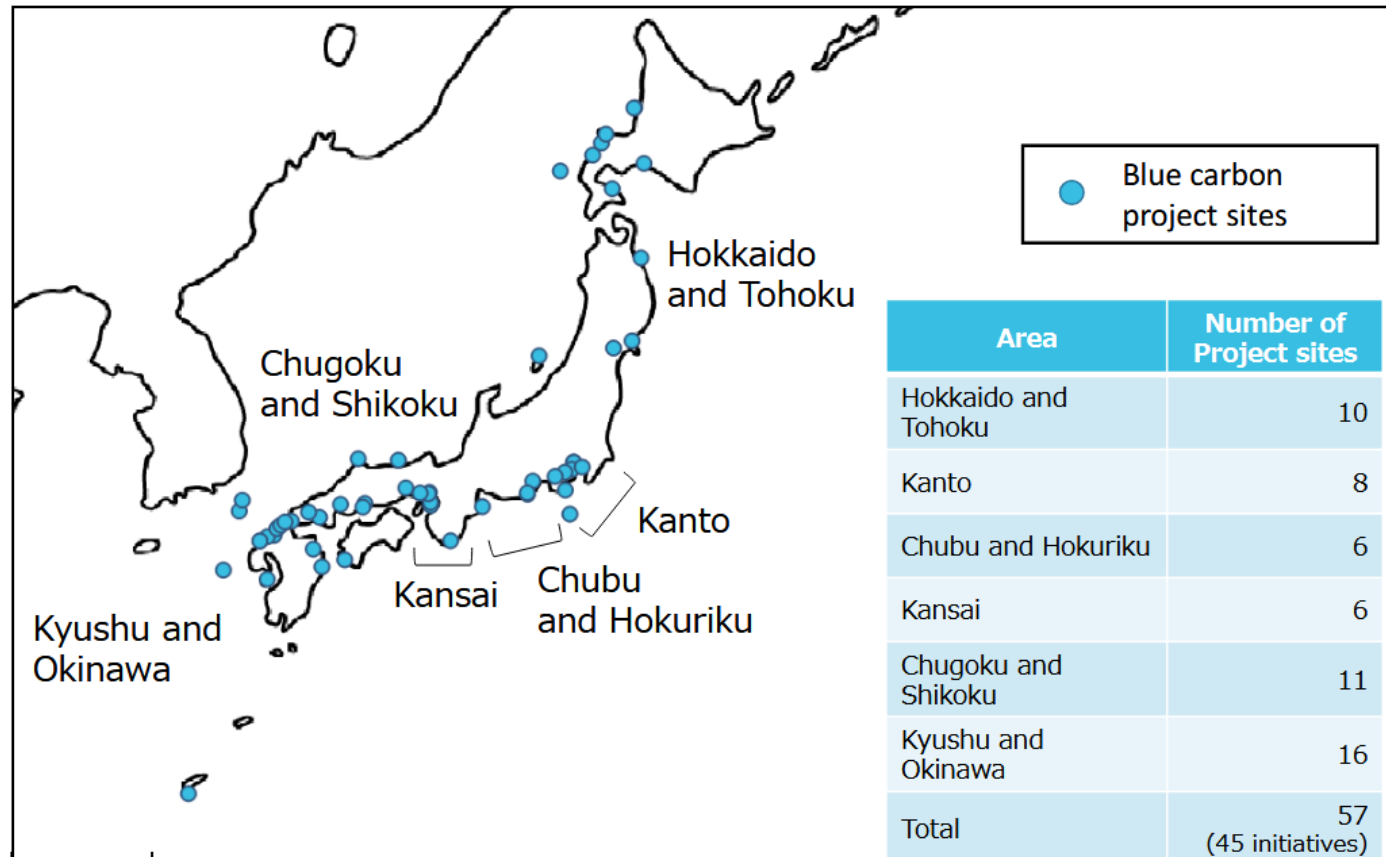


Pictures: "Traditional food in Japan", website of Ministry Agriculture, Forestry and Fishery (MAFF) of Japan



**Preservation of seaweed beds
(removal of sea urchins)**

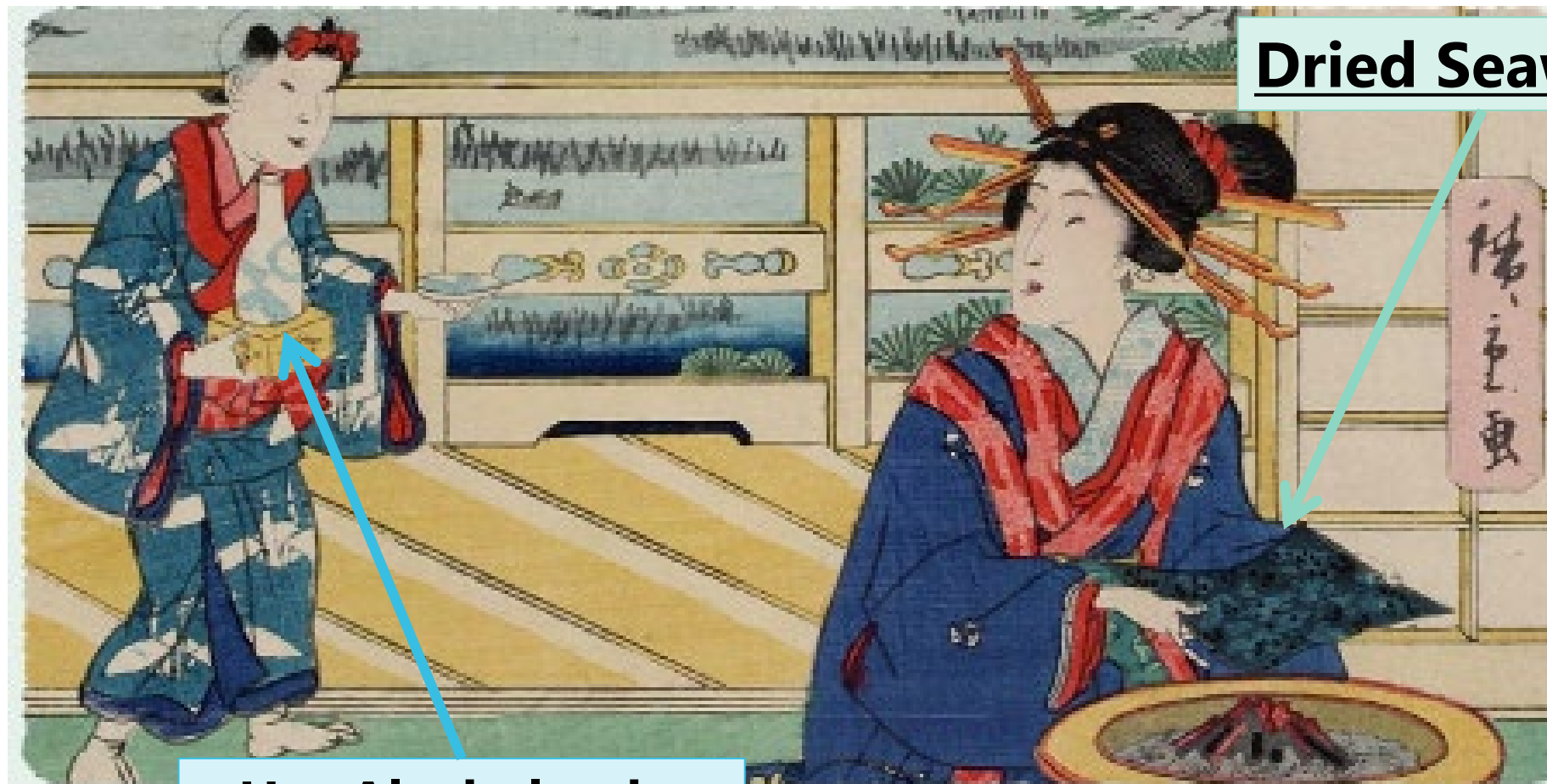
Source: Fishery annual report 2021, Ministry Agriculture, Forestry and Fishery



Source: Case Study on Blue Carbon Initiatives in Japan, MOEJ

Seaweed and Algae in Japan

- Seaweed has been consumed as food for a long time.
 - Used for paying national taxes (8th century).
 - Dried seaweed, Nori, became popular among people (17th century).



Hot Alcohol, sake

Dried Seaweed

Seaweed and Algae in Japan

- About 1,500 species of seaweed grow in sea around Japan.
- 50 of them are consumed as food.



Kelp (brown algae)



Seaweed with its zoospore



Green laver (green algae)

Multi-benefits Multi-stakeholders around Blue carbon



■ Multi benefits

Environment

Climate Change mitigation

- carbon storage
- carbon cycle

Biodiversity Conservation

- marine environment
- fisheries environment

Economy

Regional Development

- maintaining local industry
- community revitalization

Society

Fostering Environmental Awareness

- environmental education
- Environmental Training

■ Multi Stakeholders

Governments

- Local
- Environment
- Land, Infrastructure, Transport, Tourism
- Fisheries

Fishery Cooperative Association

NGOs

Companies

Community

Education/ Research Institutes

Overview of Blue Carbon Activities in Japan



- Local actions are supported by various organizations, because BC has multiple benefits such as biodiversity conservation, regional development, and environmental education, etc.
- GHG Inventory provides scientific basis to these actions.

Financial/Tech Support

■ "Creating Satoumi* Model Project": **MOEJ** has selected **41 projects** and financially supported since 2022.

*Marine and coastal environment along with human settlements

■ **MAFF*** supports local actions. In FY2021, **>400 organizations**, **>58 kha** seaweed beds or tidal flats.

Law/Vision

■ **Law** for the Promotion of Activities to Enhance Biodiversity in Local Communities.(in 2024)

■ **Future Vision** of Seaweed Beds and Tidal Flats (Fisheries Agency, revised in 2023)

Carbon Credit

■ **J Blue Credit®**: operated by Japan Blue Economy association (**JBE**), which was authorized by **MLIT**.

GHG Inventory

■ **Mangroves** are Reported in April 2023

■ **Seagrasses/Seaweeds** are Reported in April 2024

Inter-Ministry / International Cooperation

■ **Blue Carbon Liaison Council** with relevant ministries to share information on initiatives by private sector and ministries.

■ **MOEJ** became a member of **International Partnership for Blue Carbon (IPBC)**.

Local Action

- **Conservation** activities
- **Creating** seaweed
- **Environmental education**

Multiple Benefits

■ Biodiversity ■ Water Quality ■ Tourism ■ Landscape ■ Fisheries ■ Education ■ Food ■ Biofuel and ■ Climate Change Mitigation...etc.

Case Study on Blue Carbon Initiatives in Japan



<https://www.env.go.jp/en/earth/ondanka/blue-carbon-en/materials.html#case>

Sharing knowledge and experience on local initiatives

⇒What kind of activities?

Where is your base of activity?

Who participates in the activity?



Case Study on Blue Carbon Initiatives in Japan

Conserving and Restoring Coastal Ecosystems
as a Solution to Climate Change

December 2023
Blue Carbon Liaison Council
(Ministry of the Environment)

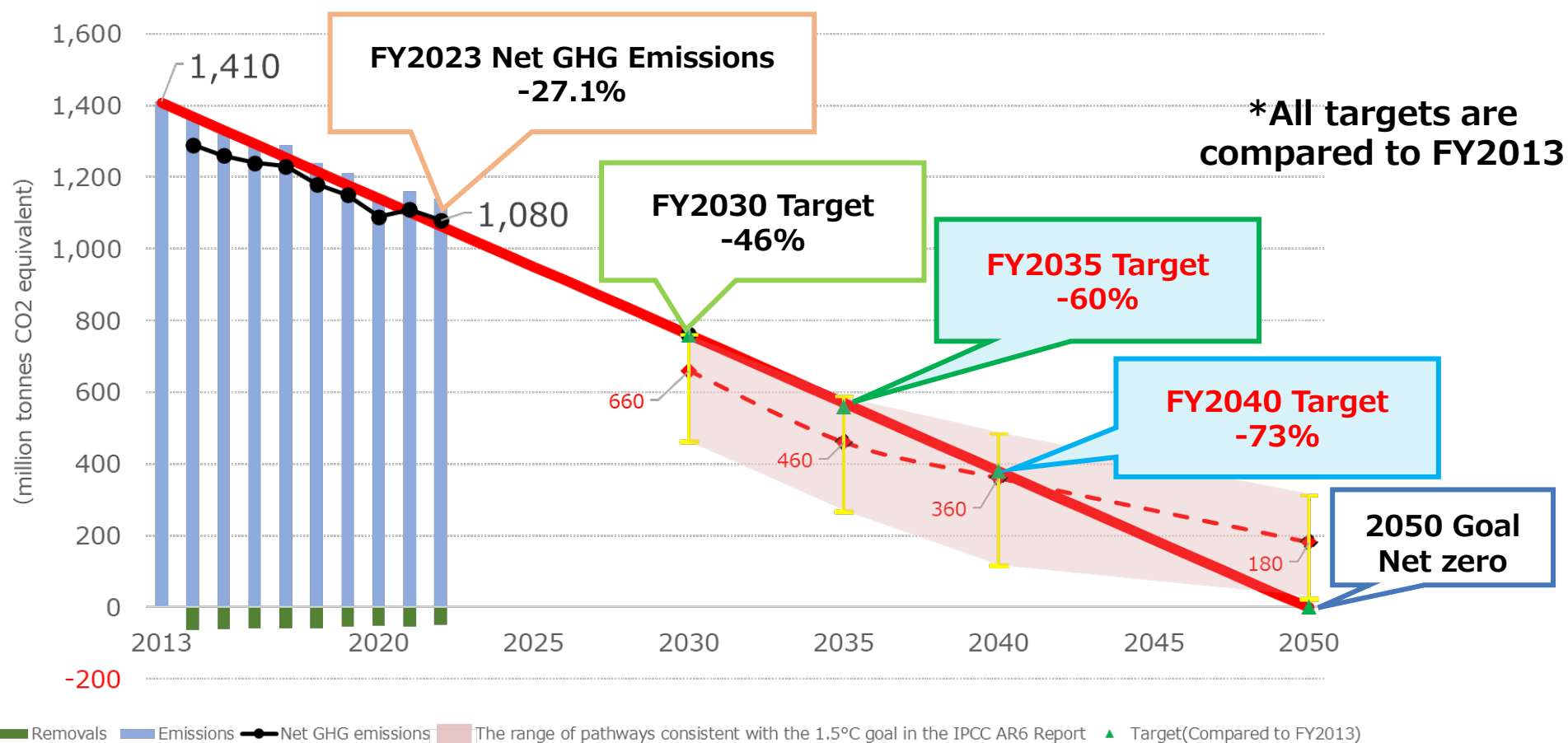


45 local initiatives

- Improvement of water bottom quality
- Cultivation
- Seaweed bed creation
- Environmental education
- Restoration of fishing grounds etc.

Japan's New GHG Emission Reduction Targets

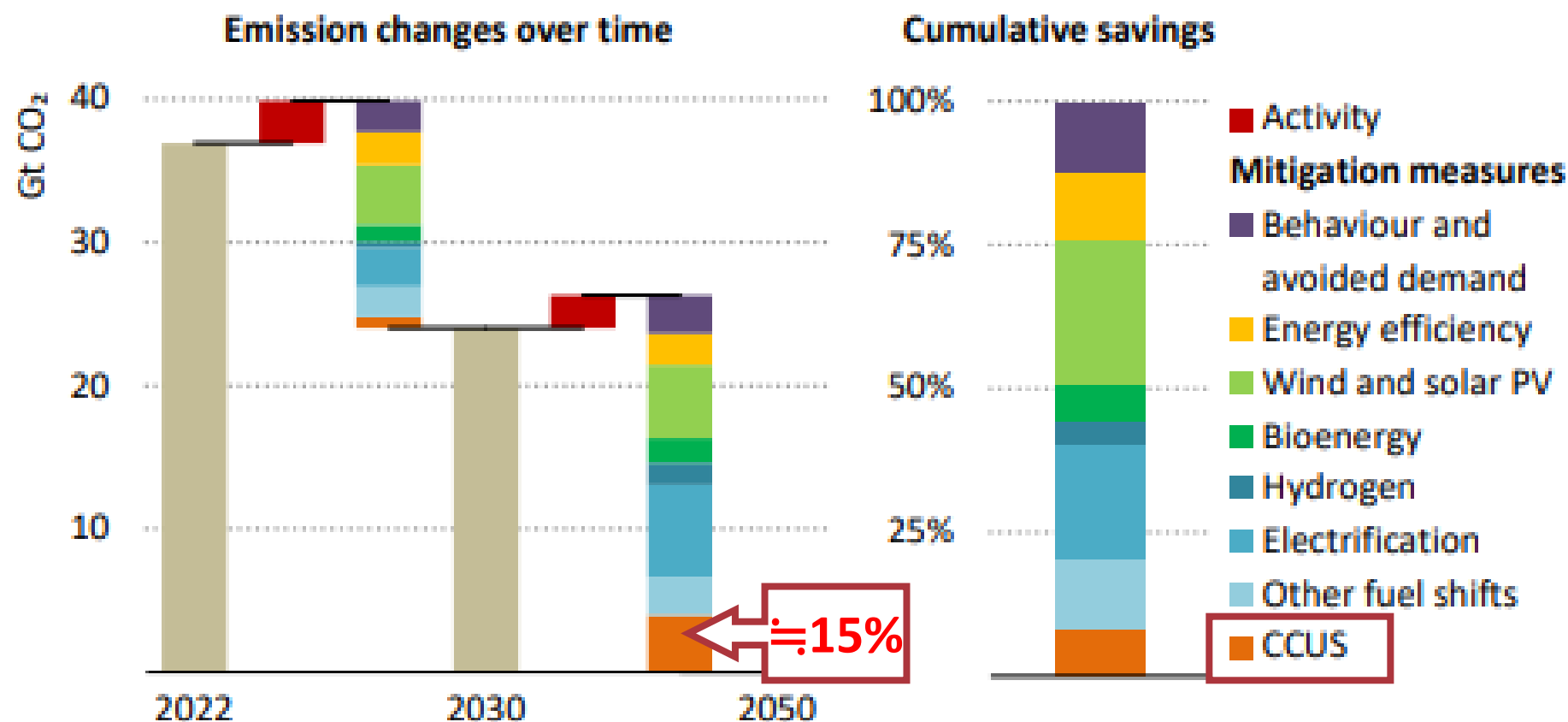
- Japan will pursue efforts to steadily reduce its GHG emissions on a **linear pathway from FY2030 target towards the achievement of net zero by 2050.**
- As for the new NDC, Japan sets ambitious targets to reduce its GHG emissions **by 60% in FY2035 and by 73% in FY2040**, from its FY2013 levels, **aligned with the global 1.5°C goal.**
- These targets will **increase** medium and long-term predictability and **accelerate Green Transformation (GX) investments, towards simultaneous achievement of net zero and economic growth.**



Mitigation Measures in IEA “Net Zero Roadmap”

- Before 2030, “Wind and solar PV”, “Electrification”, “Energy efficiency” “Behaviour and avoided demand” will make a significant contribution.
- After 2030, **CCUS (15%)** will also have a significant impact on CO₂ reduction.

Figure 2.5 ▶ CO₂ emissions reductions by mitigation measure in the NZE Scenario, 2022-2050



Bluecarbon in Japan's NDC (2025)



3. Scope and coverage:

(a)	General description of the target;	...
(b)	Sectors, gases, categories, and pools covered by the nationally determined contribution, including, as applicable, consistent with Intergovernmental Panel on Climate Change (IPCC) guidelines;	<Sectors of Coverage> All sectors and categories encompassing the following: (a) Energy ... (f) Others included in the GHG inventory - Activities related to contributions from the LULUCF sector: (afforestation and reforestation (AR), deforestation (D), forest management (FM), cropland management (CM), grazing land management (GM), urban greening (UG), and <u>coastal wetlands (BC)</u>)

Bluecarbon was Added here in Feb 18, 2025

- ...The estimation methodologies for the carbon removals/sequestration of blue carbon ecosystems in Japan have been developed for some ecosystems but not for all. Japan continues to efforts developing the estimation methodologies for other blue carbon ecosystems to reflect them in GHG inventory and will lead international rule making in this area. ... In addition, with regard to offshore blue carbon, which has great interest as an sinks of removal, Japan will examine the possibility of initiatives to sequesterate carbon by producing and cultivating seaweed, sequestering them in the deep sea, and estimating and assessing the carbon sequestration amount and also considering their use as bio-resources.

	FY2013	FY2030	FY2035	FY2040
Expected LULUCF contribution to NDC [kt-CO₂]	—	-47,740	-90,990	-84,240
Forest carbon sinks	—	-38,000	-80,000	-72,000
Carbon removals in agricultural soils and etc.	—	-8,500	-8,750	-9,000
Urban greening	—	-1,240	-1,240	-1,240
Blue Carbon	—	—	-1,000	-2,000

Key Policies and Measures under the Action Plan



- To achieve Japan's new NDC, the following policies and measures will be implemented under the **Action Plan: the Plan for Global Warming Countermeasures**, in coordination with **the Strategic Energy Plan and the GX2040 Vision**.
- These policies and measures will be advanced or revised through follow-up activities.

Energy Conversion

- Maximize the use of **renewable energy, nuclear power, and other highly effective decarbonization power sources**
- Utilize **LNG-fired power as a transition energy**, promote **decarbonization of thermal power plants** using hydrogen, ammonia, CCUS, etc., and facilitate efforts to **fade out inefficient coal-fired power plants**
- Utilize **CCUS, hydrogen in hard-to-abate sectors**

Industry, Business, Transportation, etc.

- Support transition to **innovative equipments** in factories and introduction to energy efficient facilities in **SMEs**
- **Improve energy efficiency of semiconductor products**, develop and utilize cutting-edge technologies such as **photoelectric conversion**, and improve **energy efficiency of data centers**, with expected increase in electricity demand
- Reduce CO2 emissions throughout **product lifecycle**, from manufacturing to disposal, in the **automotive sector**, advance decarbonization in **logistics systems**, and use next-generation fuels in **aviation and marine transportation** sectors

Local Communities and Lifestyle

- Accelerate **local decarbonization and revitalization** and create more than 100 "**decarbonization leading areas**" by FY2030
- **Shift to decarbonized lifestyles**, including energy-efficient housing and food loss reduction
- Support installation of **high insulation windows, energy efficient water heaters, electric commercial vehicles, and perovskite solar cells**, and its **demand generation** by introducing such products to national and municipal government buildings
- Advance **decarbonization of the entire value chain**, including development of **Scope 3 GHG emissions accounting methods**

Cross-cutting Issues

- Establish and implement "**pro-growth carbon pricing**"
- Promote transition to a **Circular Economy**, advance measures under the Act concerning Sophistication of Recycling Businesses, facilitate deployment of **waste treatment facilities with CCU** and facilitate **solar panel recycling**
- Advance efforts on **forest management, blue carbon and other carbon removal activities**
- Contribute to **global emissions reduction** utilizing Japan's decarbonization technologies and expand cooperation under the **Joint Crediting Mechanism (JCM)** and **City-to-City collaboration** including under the **Asia Zero Emissions Community (AZEC)**

New calculation of blue carbon ecosystem (seagrass meadows and seaweed beds)

- For the first time in the world, removals
 - in seagrass meadows and seaweed beds were
 - estimated and reported in April 2024 (approximately 0.34 Mt in FY2023).
- From FY2025, we began to study calculation and evaluation of the amount of blue carbon in offshore areas expected as a large carbon sink.

Status of Reflection of Blue Carbon Ecosystems in Greenhouse Gas Inventories



<Photos>

UNEP「Blue Carbon」: <https://wedocs.unep.org/handle/20.500.11822/7772>
MOE Japan : <https://www.env.go.jp/nature/saisei/>

Institutional arrangement for including BC in Japan's GHG inventory



United Nations
Framework Convention on
Climate Change



GHG inventory preparation

Committee for the Greenhouse Gas Emission Estimation Methods conducted by MOE

- Authorizing the methodology of blue carbon sequestration for Japanese GHG inventory to be submitted to UNFCCC

**Estimation of
seagrass and seaweed
area**

**Development of
removal factors**

Committee for role of blue carbon contributing global warming prevention conducted by MLIT

- Considering technical issues such as methodology of blue carbon sequestration and system for data collection

Agriculture, Forestry and Fisheries Research Council conducted by FA

- Developing methodology, parameter and collecting data for carbon sequestration through seagrass and seaweeds beds
- Published a guidebook in 2023

