

Climate change policy and Marine Protected Areas in Japan



Mitsutaku MAKINO
Atmosphere and Ocean Research Institute (AORI)
University of Tokyo



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1. CC policy in Japan: reduction and adaptation

Year	Policy event
1997	UNFCCC COP3 held in Kyoto (Kyoto Protocol). The Global Warming Prevention Headquarter was established in the Cabinet Office.
1998	Legislation of “ Act on Promotion of Global Warming Countermeasures ” (<u>Reduction</u>).
(various reduction measures to achieve the Kyoto Protocol)	
2018	Legislation of “ Climate Change Adaptation Act ”
2020	Declaration of Carbon Neutrality in 2050 by the Prime Minister
2021	Formulation of “ Green Growth Strategy Through Achieving Carbon Neutrality in 2050 ”

We have no specific descriptions about marine conservation or MPAs in the national CC-related policies.

“Green Growth Strategy through Achieving Carbon Neutrality in 2050”, however, set 14 important sectors for the future of Japan’s economy, and the offshore wind power is the first of them.

Energy related industries

 01_Offshore wind pwr.
Solar, heat energy

 02_Hydrogen,
Fuel Ammonia

 03_Next generation
heat energy

 04_Nuclear
power

Transport/manufacturing industries

 05_Automobile,
Storage batteries

 07_Shipping

 09_Food, Agri.
fishery, forestry

 11_Carbon Recycling,
Materials

 06_
Semiconductors
Info/Com.

 08_Logistics,
people flow,
Civil eng.

 10_Aircraft

Home/Office related industries

 12_Housing/Building
Next gen. electric power
management

 13_Resource
circulation

 14_Lifestyle related

2. Japan's NDC

- **Carbon Neutrality in 2050, and 46% decrease by 2030 (compared to 2013)**
- **No specific descriptions relating to marine conservation or protected area.**

Japan's Nationally Determined Contribution (NDC)

Japan's Greenhouse Gas Emission Reduction Target

Japan aims to reduce its greenhouse gas emissions by 46 percent in fiscal year 2030 from its fiscal year 2013 levels, setting an ambitious target which is aligned with the long-term goal of achieving net-zero by 2050. Furthermore, Japan will continue strenuous efforts in its challenge to meet the lofty goal of cutting its emission by 50 percent.

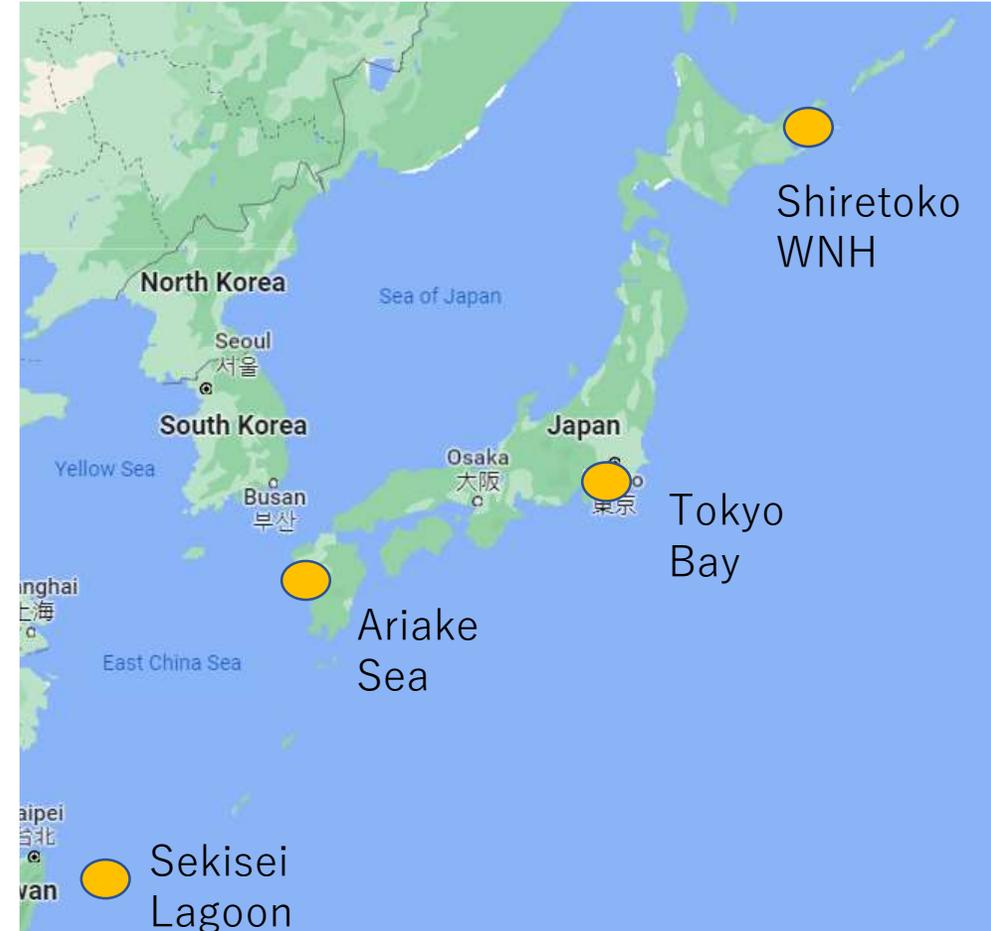
Table: Targets and estimates by greenhouse gases and other classifications¹⁾

(Unit: Million t-CO₂e)

	Targets and estimates in fiscal year 2030 ¹⁾	Fiscal year 2013
Greenhouse gas emissions and removals	760	1,408
Energy-related CO ₂	677	1,235
Industry	289	463
Commercial and others	116	238
Residential	70	208
Transport	146	224
Energy conversion ²⁾	56	106
Non-energy-related CO ₂	70.0	82.3
Methane (CH ₄)	26.7	30.0
Nitrous oxide (N ₂ O)	17.8	21.4
Four gases incl. alternative CFC ³⁾	21.8	39.1
Hydrofluorocarbons (HFCs)	14.5	32.1
Perfluorocarbons (PFCs)	4.2	3.3
Sulfur hexafluoride (SF ₆)	2.7	2.1
Nitrogen trifluoride (NF ₃)	0.5	1.6
Greenhouse gas removals	-47.7	—
	Japan aims to contribute to international emission reductions and removals at the level of a	

3. Cases from CC adaptation/mitigation in MPAs

- 1) Shiretoko WH (NEAMPAN site)
- 2) Sekisei Lagoon (coral reef restoration)
- 3) Tokyo Bay (blue carbon)
- 4) Ariake Sea (short neck clam fishery)



3.1) Shiretoko World Heritage

- NEAMPAN site. One of the richest seas in Japan. The **seasonal drift sea-ice** from Russia (and nutrient in it) is the base of marine ecosystem here.

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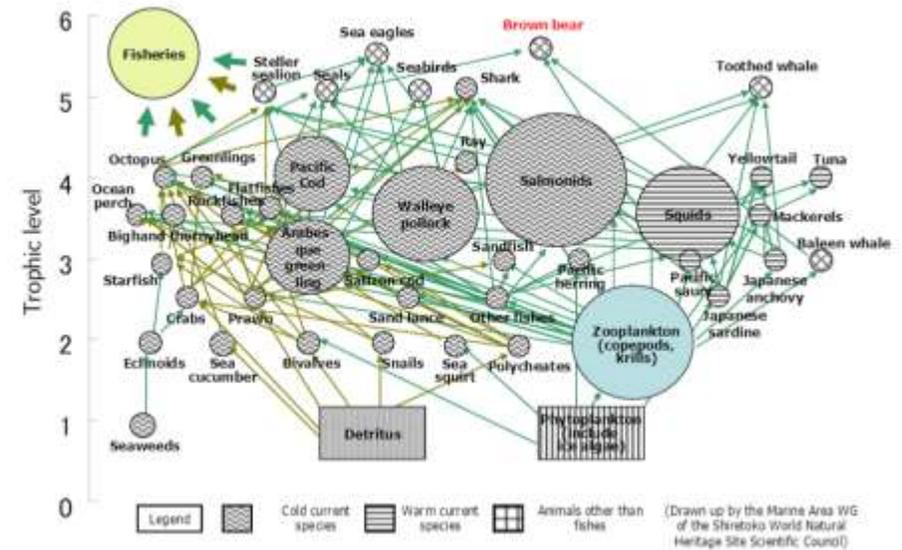
- The amount and days of sea-ice has decreased by 20% in recent 50 years.
- Salmonids and squid are decreasing. More and more **warm-water species** are harvested (e.g., yellowtail).



Yellowtail (*Seriola quinqueradiata*)

Mitigation/adaptation measures

- The World Heritage Marine Management Plan to be revised by April 2023, and the effects of climate change will be officially described (e.g., decrease in sea-ice, changes in ecosystem structure, etc.)
- Common squid and yellowtail are newly designated as **indicator species** to monitor the long-term ecosystem changes (other indicator species: salmonids, pollock, cod, mackerel, sealion, orca, sea birds, etc.)
- Based on the above monitoring results, regulations on fishing and tourism will be adaptively revised.
- Also, Ministry of Environment is planning **enlargement of the Heritage area** (National Park area).



3.2) Sekisei Lagoon

- The largest coral reef in Japan (363 species), protected as a National Park since 1977.
- Local fisheries and tourism sector are using this lagoon.

<CC effects>

- Coral reef deterioration (high water temperature, typhoon, starfish, heavy rain, wastewater, acidification, etc.)



Mitigation/adaptation measures

- Sekisei Lagoon Nature Restoration Master Plan was formulated in 2005 by the Ministry of Env., with its objective as a sustainable relationship between people and the sea.
- In 2022, at the national level, “Action Plan to Conserve Coral Reef Ecosystems in Japan (Min. of Env.)” was revised. In this plan, **CC and bleaching events are treated “as premises.”**
- For the Sekisei Lagoon, **heat-resistant individuals** will be selected and protected in the places that will be biologically important after the progress of CC.



3.3) Tokyo Bay

- The most developed bay in Japan. Suffering from red tide and blue tide (deoxygenation) every summer.
- The majority of the coastline was reclaimed, and wetlands and seagrass beds destroyed. As a result, coastal ecosystem deteriorated.
- A local NGO in Yokohama (incl. fishers, residents, researchers, local school, local company, etc.) started eelgrass planting activities since the 1990's. Local fishers set this area as No-take zones.



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Mitigation/adaptation measures

- Based on the estimate of the eelgrass growth, **Blue Carbon Credit** was issued (12.3 ton CO2 in 2019), and local companies purchased it.
- Similarly, based on the aquaculture kelp around this area, 260 ton CO2 of Blue Carbon Credit was issued in 2019, and purchased by the World Triathlon Championship in Yokohama.
- The revenue are used for NGO's eelgrass **recovery activities**, presumably giving positive effects on coastal ecosystem. Also, local fishers say they are now having good relationship with local residents (**social capital**).



<https://www.kanaloco.jp/>



<https://yokohamatriathlon.jp/>

3.4) Ariake Sea

- Very productive inland sea in the western part of Japan. Famous fishing area of *asari* short-necked clam and *nori* seaweed.

<CC effects>

- Frequency of **extremely heavy rain** increased, which negatively influenced clam resources (low salinity, mad, etc.)

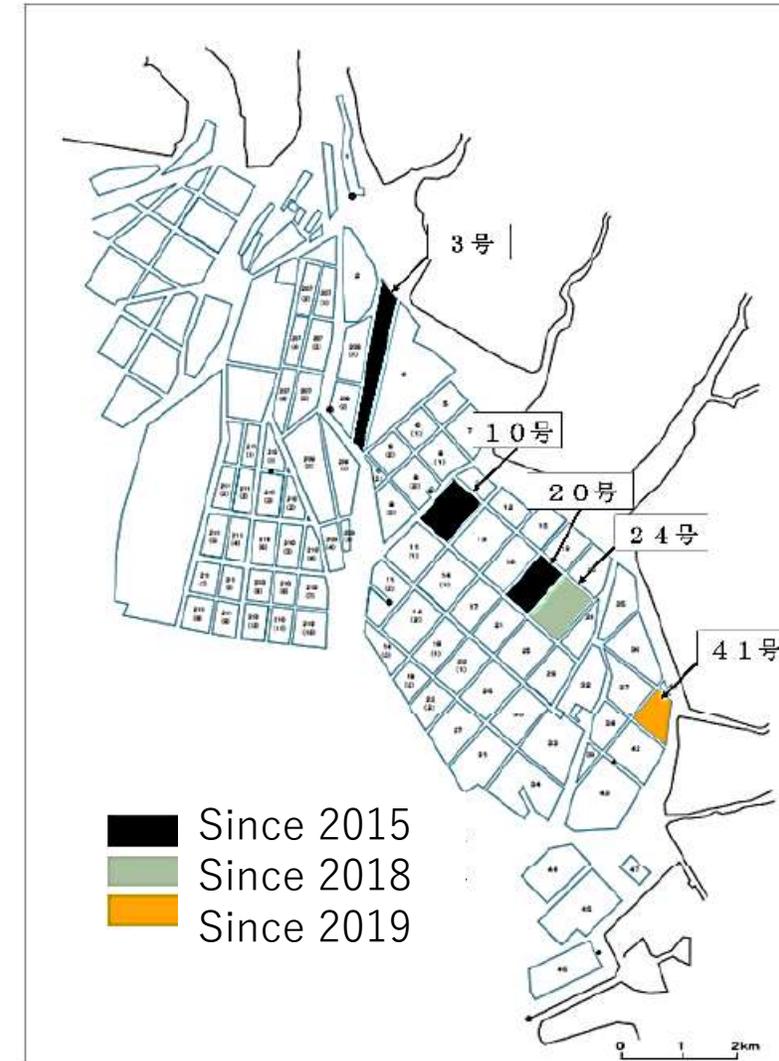


Mitigation/adaptation measures



<https://osakana.suisankai.or.jp/>

- Since 2015, clam fishers established **MPAs for protection of mother clams**.
- The MPAs area gradually expanded in 2018 and 2019.
- In addition, before the heavy rain season starts (usually in July), local fishers tries to move juvenile calms to less affected areas from the river water flow.



4. Role of MPA networks for better conservation in NEA

- **Information sharing of our experiences** (trials, successes, failures, etc.) are the most important and useful. Therefore, this kind of symposium is very valuable and highly appreciated.
- We need more **scientific knowledge about interactions/connections amongst MPAs** in NEA under the changing environment. Natural science is the base (oceanography, biology, marine chemistry etc.)
- In the future, we can set **common parameters** for coordinated ecosystem monitoring in the NEA, and share those results for the better planning and assessment of MPAs in NEA.

Thank you very much!

Sector-based policy measures

- **Ministry of Environment:** Enlargement of National Parks in marine areas (Case 1), promotion of Nature Restoration Plans in marine areas (Case 2).
- **Ministry of Land, Infrastructure, Transport and Tourism:** Trial of Blue Carbon Credit in Yokohama (Case 3).
- **Fisheries Agency:** adaptive setting of marine protected areas for short-necked clam in Ariake Sea (Case 4).
- **Ministry of Economy, Trade and Industry:** Promotion of offshore wind farms which produce multiple benefits in local fisheries, carbon absorption, tourism, research, etc (Case 5).

Concept of multiple benefits from offshore wind farms

Power generation + fisheries resource increase/aquaculture + carbon absorption + tourism + scientific monitoring, etc.

