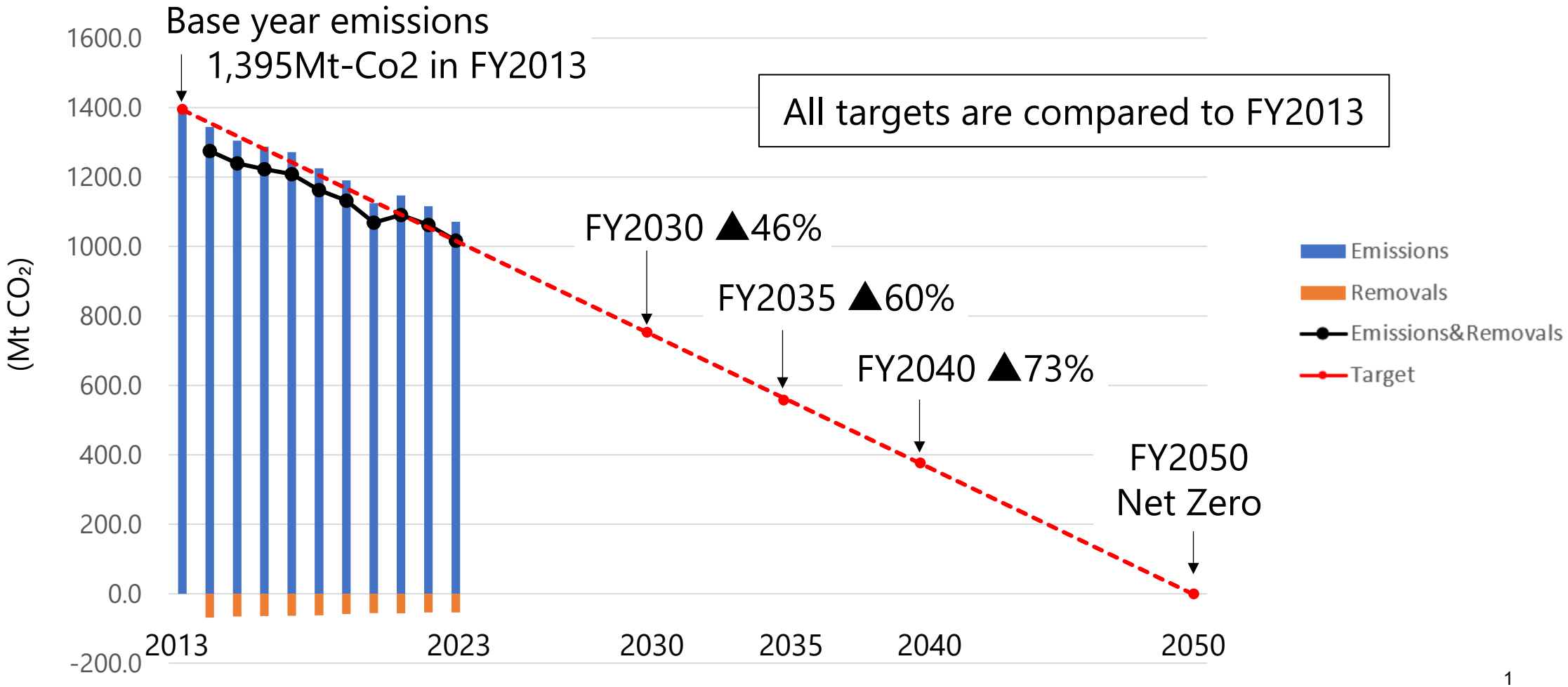
Carbon Neutral Port (CNP) Initiative
- CNP Certification -

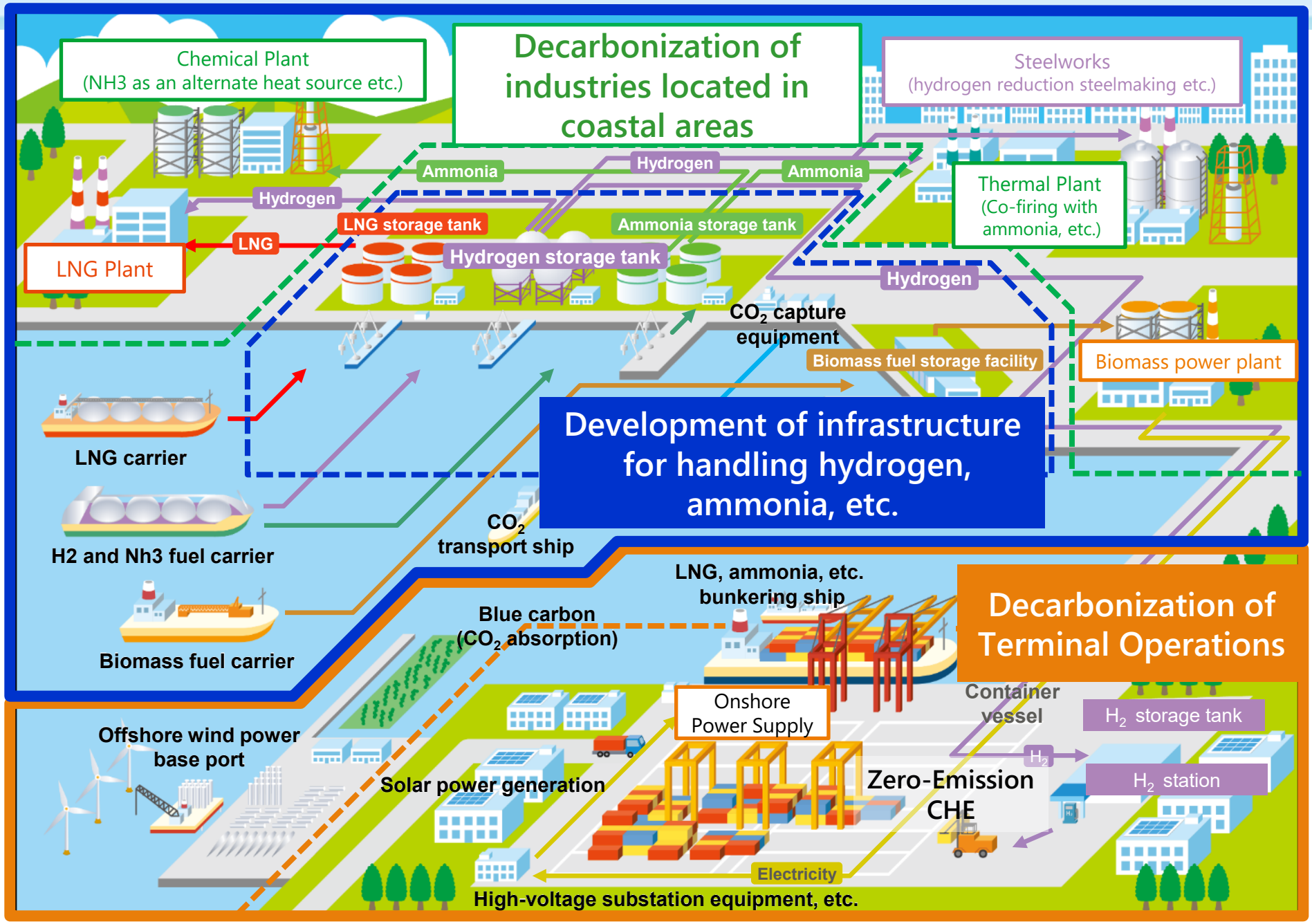
Yusuke Suemune
Ports and Harbours Bureau
Ministry of Land, Infrastructure, Transport and Tourism (MLIT)
JAPAN

Japan's progress towards net zero in 2050

■ Japan aims to reduce its GHG emissions by 46% in FY2030, by 60% in FY2035 and by 73% in FY2040 from its FY2013 levels to achieve net zero by 2050.



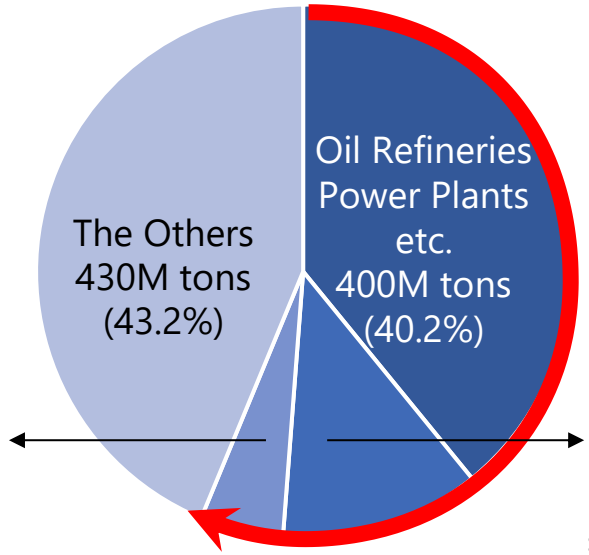
Carbon Neutral Port (CNP) initiative illustrated



Key features of ports in Japan

CO2 emissions in Japan (FY2023 / published in Apr. 2025)

Total: 989M tons

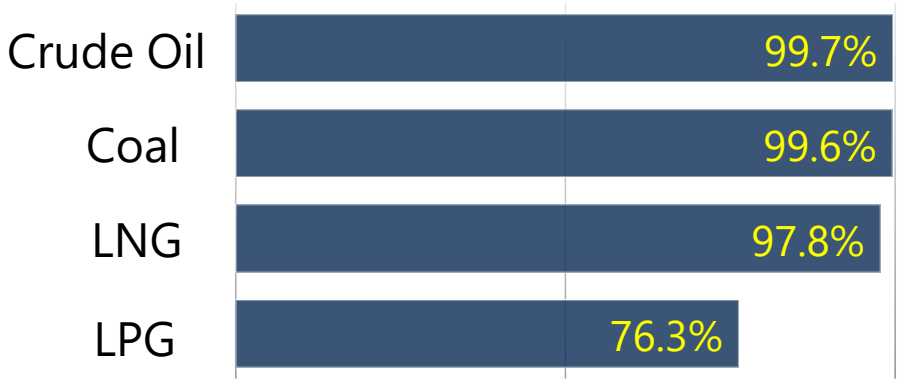


Chemical Complexes (Including petroleum and coal products) 50M tons (5.3%)

Steelworks 110M tons (11.4%)

Source: Prepared by MLIT based on National Institute for Environmental Studies

Dependency on imports

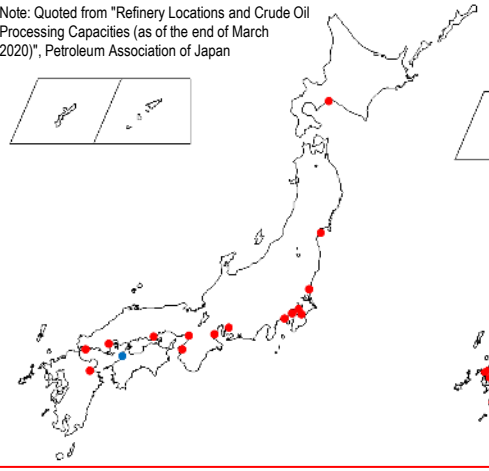


Source: Prepared by MLIT based on SHIPPING NOW 2023-2024 published by Japan Maritime Public Relations Center

Most of oil refineries, power plants, steel works and the chemical industries are in ports and coastal areas

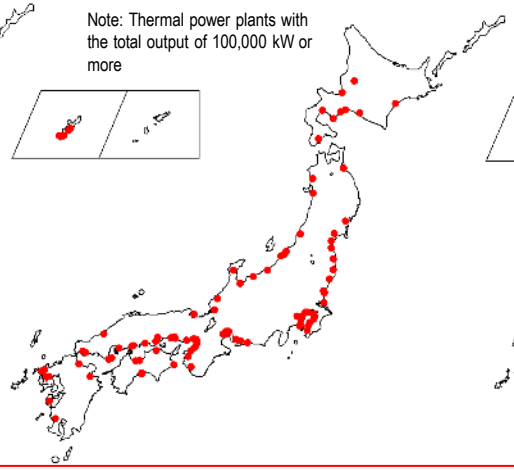
Oil Refineries

Note: Quoted from "Refinery Locations and Crude Oil Processing Capacities (as of the end of March 2020)", Petroleum Association of Japan



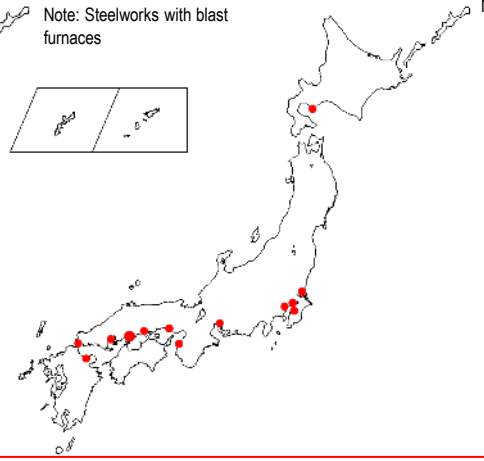
Thermal Power Plants

Note: Thermal power plants with the total output of 100,000 kW or more



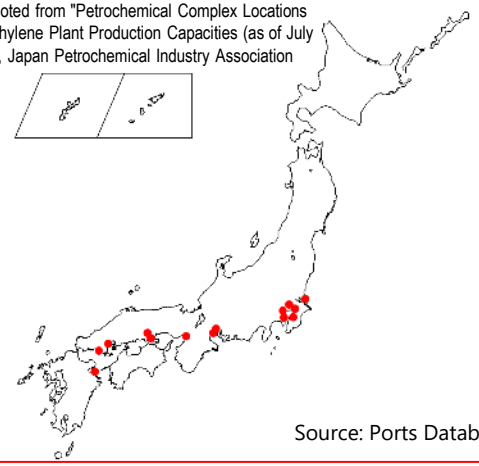
Steelworks

Note: Steelworks with blast furnaces



Petrochemical Complexes

Note: Quoted from "Petrochemical Complex Locations and Ethylene Plant Production Capacities (as of July 2019)", Japan Petrochemical Industry Association



Source: Ports Database, 2024

Amendment of Port and Harbour Act

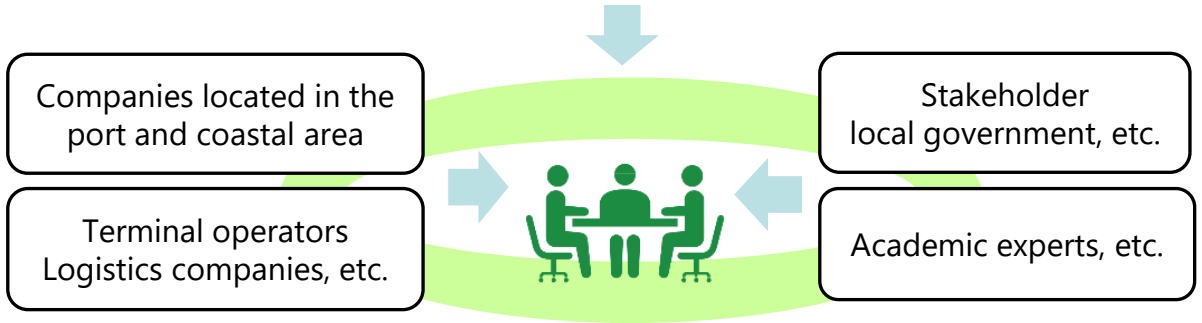
Port and Harbor Act amended in 2022

1. The port management bodies may organize **port decarbonization promotion councils** consisting of the relevant local governments, logistics companies, and industries located in the port or coastal area, and have them discuss the preparation and implementation of the decarbonization plans.

2. Port management bodies may develop **port decarbonization promotion plans** that establish public-private partnership efforts to decarbonize ports.

Port decarbonization promotion council

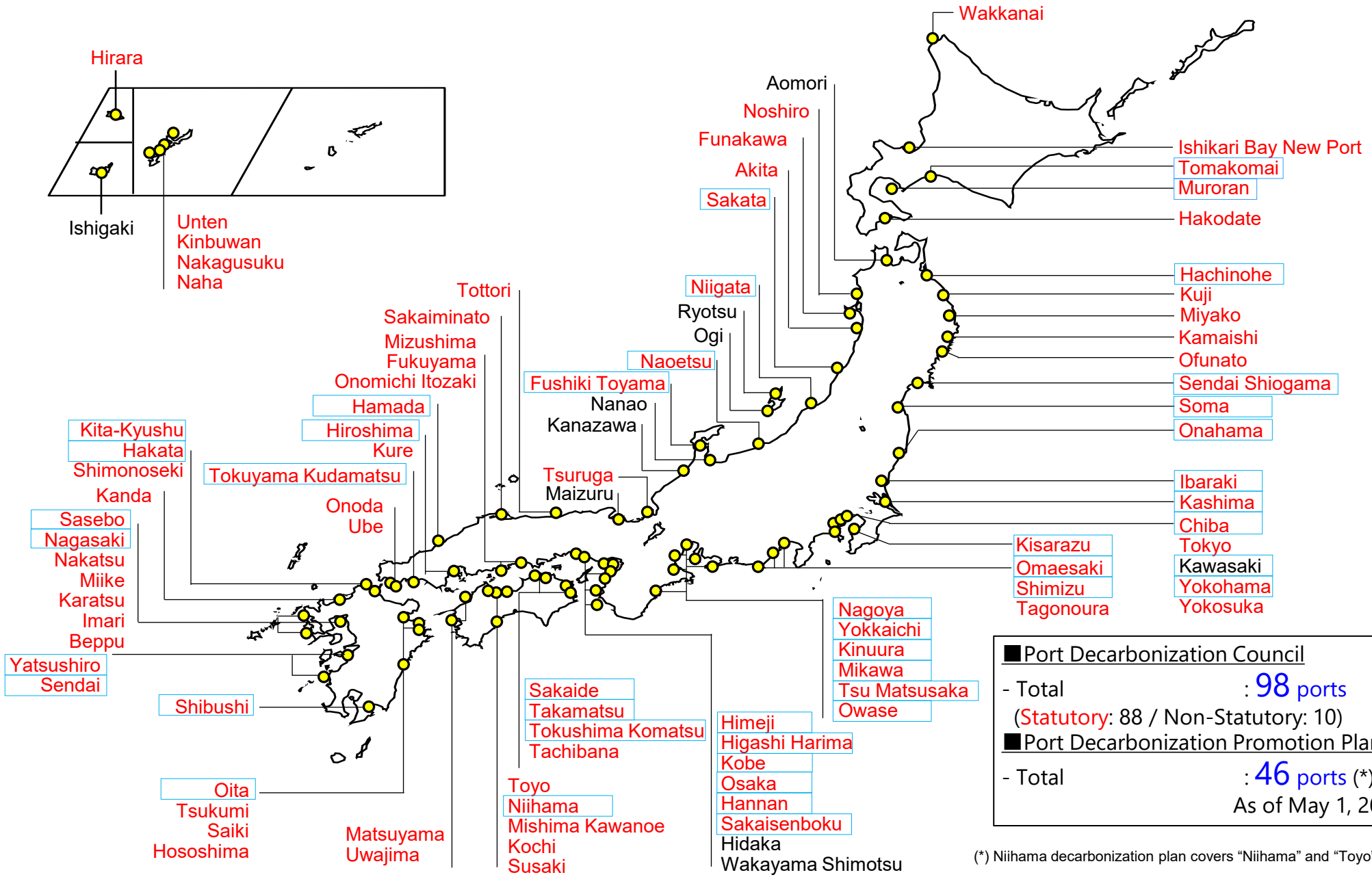
Port management body (local public organization)



Port decarbonization promotion plan

- ✓ Basic policy
- ✓ Period and targets of the plan (i.e. Target % for GHG reduction)
- ✓ Port decarbonization promotion projects and implementer
- ✓ Items concerning projects progress assessment
- ✓ Other items that Port management body deems necessary etc.

Port decarbonization promotion plan and council



■Port Decarbonization Council

- Total : 98 ports

(Statutory: 88 / Non-Statutory: 10)

■Port Decarbonization Promotion Plan

- Total : 46 ports (*)

As of May 1, 2025

(*) Niihama decarbonization plan covers “Niihama” and “Toyo”

Demonstration projects for hydrogen-fueled machine

Tokyo Port

- Project detail
  Cargo handling work using hydrogen fuel cell type RTG
- Implementation Entity
  Tokyo Metropolitan Gov.、NYK、UNI-X NCT Corp.、Mitsui E&S、Iwatani Corp.
- Project period
  2024.10 ~ 2025.3

Source: Tokyo Metropolitan Gov.

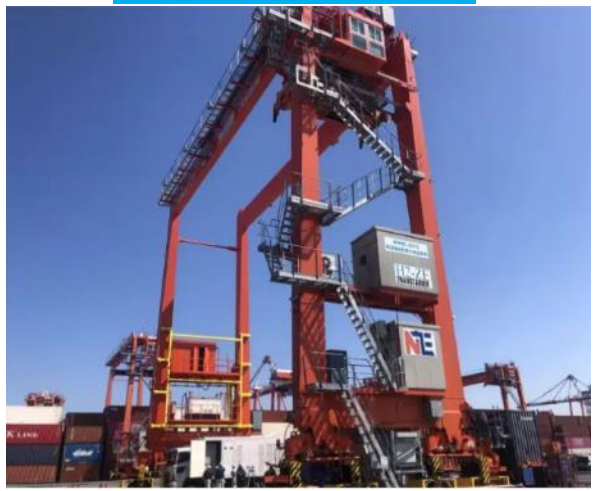
Fuel Cell power pack

Source: NEDO

Kobe Port

- Project detail
  Cargo handling work using hydrogen engine type RTG
- Implementation entity
  MLIT Kinki Regional Development Bureau
- Project period
  2024.04 ~

The World's First



Source: MLIT Kinki Regional Development Bureau

Hydrogen engine generator

Source: iLabo

Yokohama Port

- Project detail
  Cargo handling work using hydrogen fuel cell type RTG
- Implementation entity
  MLIT Kanto Regional Development Bureau
- Project period
  2024.06 ~ (Planned)

Source: UTOC Corp.

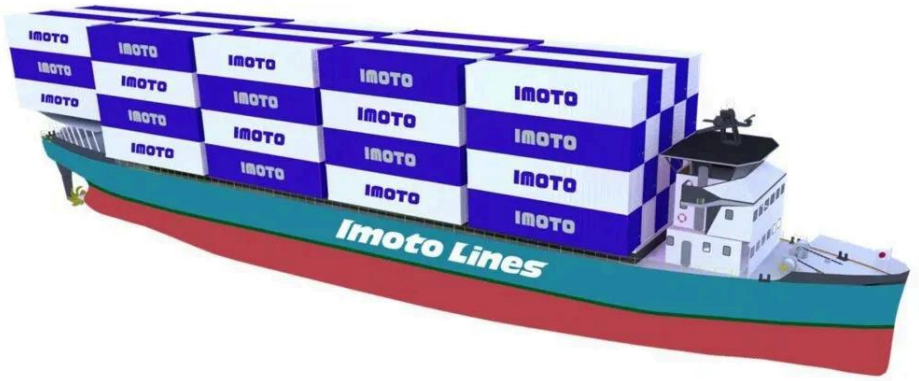
Low or zero emission vessel

Electric tanker: Asahi

Hydrogen FC ship: Mahoroba

Electric tugboat: Taiga

Electric container vessel (domestic use)



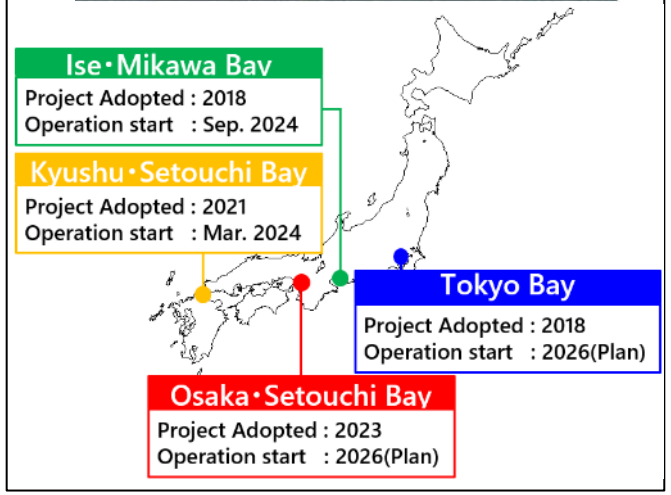
Source: Imoto Lines

Fit for new marine fuel

LNG

- Since 2018, MLIT has been providing subsidies for the facility development of LNG bunkering bases. 4 projects have been adopted and two projects are completed.

LNG bunkering vessel: Keys Azalea
Source: Keys Bunkering West Japan



Methanol

- In Sep. 2024 "Methanol bunkering simulation" was conducted at Yokohama Port as one of the initiatives to realize safe methanol fuel supply by Ship-to-Ship.
- ''Summary of the Study Group on the Formation of Methanol Bunkering Hubs'' has been issued by MLIT based on the study.

Source: Yokohama city

Ammonia

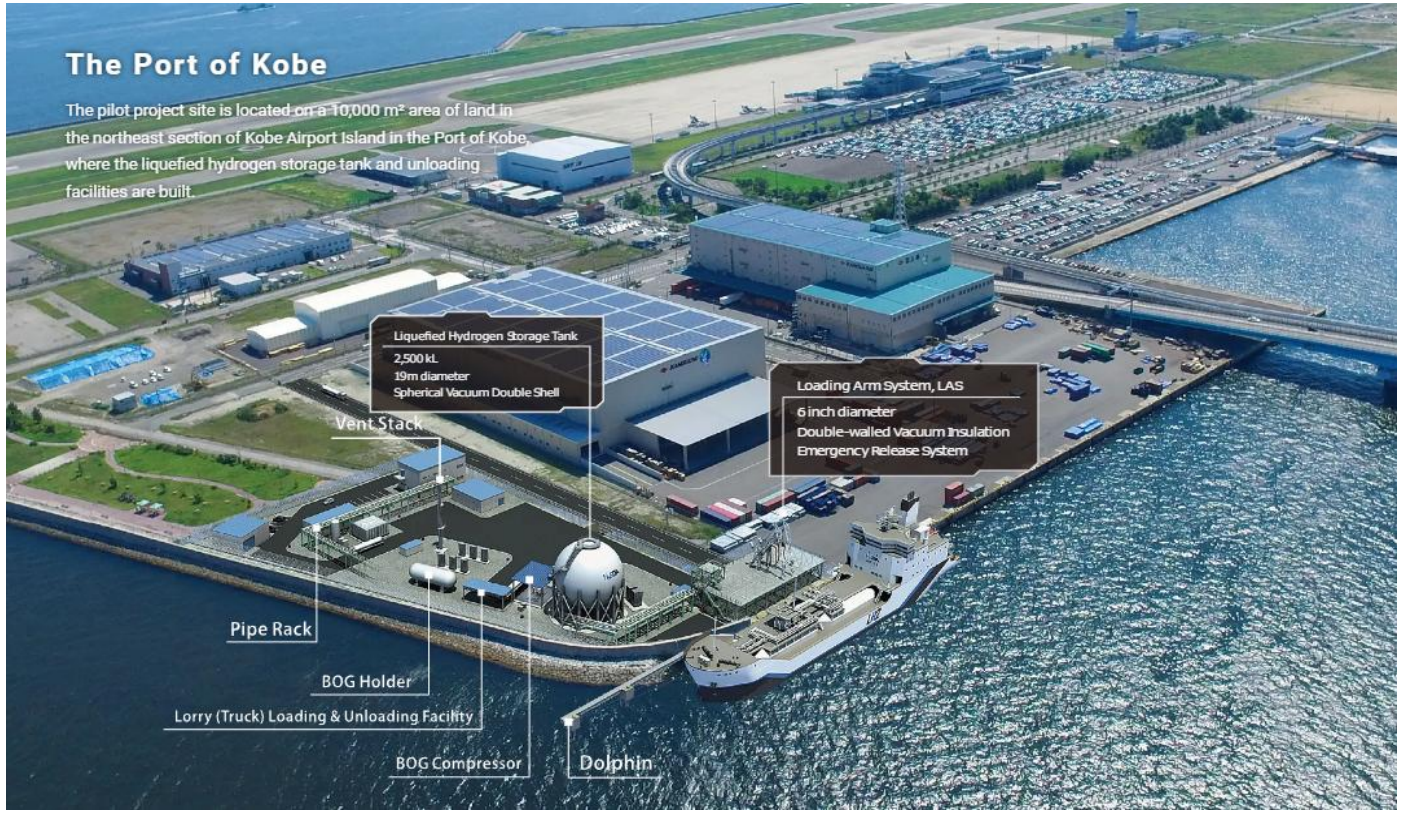
- In Aug. 2024, Ammonia-fueled tugboat "Sakigake" (World's First Commercial-Use Ammonia-Fueled Vessel) was completed by NYK, IHI and NK.
- MLIT will publish "Ammonia bunkering guidelines for safe and smooth operation.

Source: NYK

Development of infrastructure for handling hydrogen, ammonia etc.

- To establish a large-scale supply chain for liquefied hydrogen, ammonia etc. toward carbon neutrality in 2050, preparations are underway to establish handling infrastructure at ports.
- MLIT is developing guidelines for planning safe and efficient facility layout and operation.

Liquefied hydrogen storage and unloading facilities in Kobe




Loading arm / Source: HySTRA

CNP Certification (Container Terminal)

The need to 'visualize' decarbonization of ports

- There is no globally standardized approach for port decarbonization.
  Circumstances are unique depends on each country, port and terminal, such as Energy Policy, terminal functions, port management structure, energy policy etc.

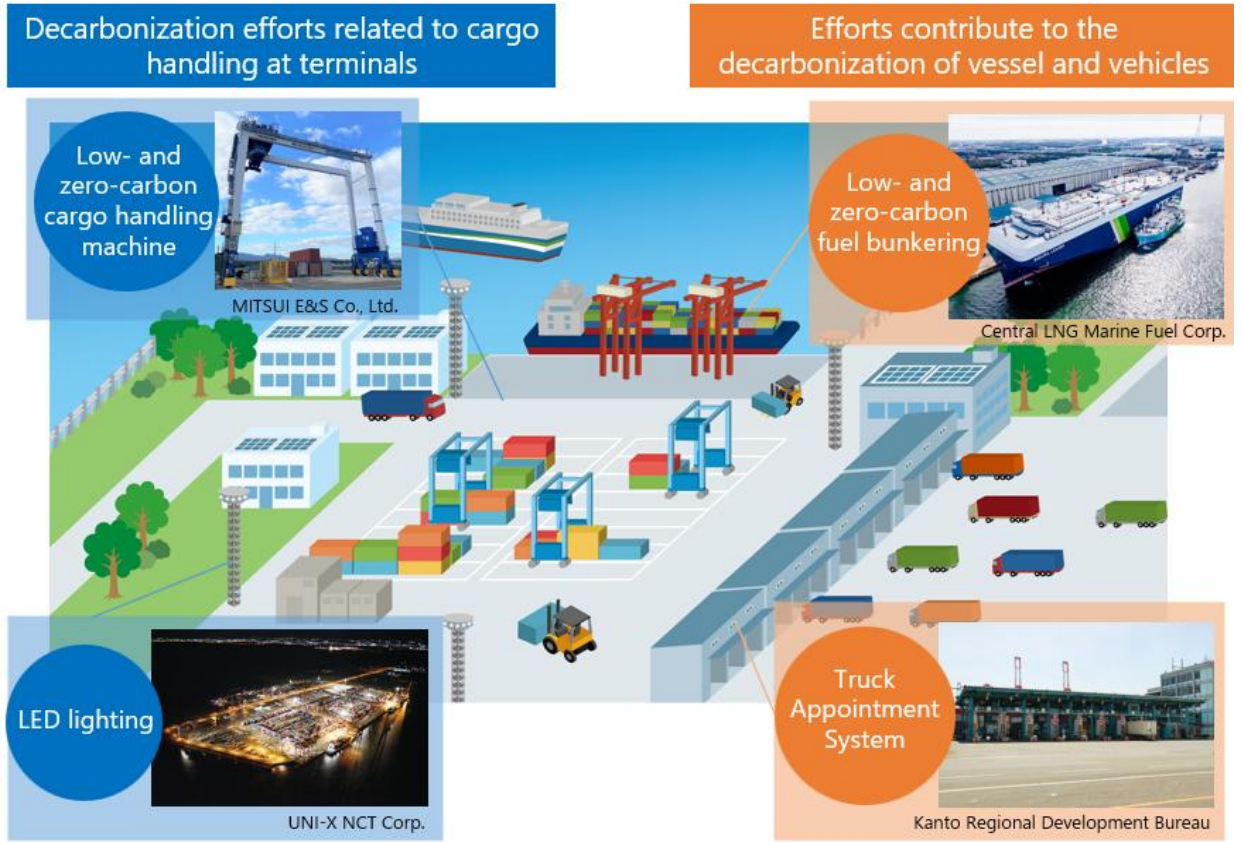
- Port decarbonization can NOT be achieved in a single step, nor in a short-term, rather, must be pursued from a long-term perspective.
  Some of decarbonization technologies are currently under development or not yet widespread, such as zero-emission fuels, bunkering facilities and zero-emission CHEs etc.

It is beneficial to objectively evaluate the status of decarbonization efforts at terminals based on common criteria and make the evaluation result visible to port users.

CNP Certification (Container terminal)

- In Jun 2025, MLIT will launch "Carbon Neutral Port (CNP) Certification" for container terminal to objectively evaluate terminals' decarbonization efforts.
- Evaluation based on "per-terminal" rather than "per-port" or "per-business unit"
- The multi-level certification moving toward carbon neutrality.

Examples of evaluation items for certification



Carbon Neutral Port
CNP

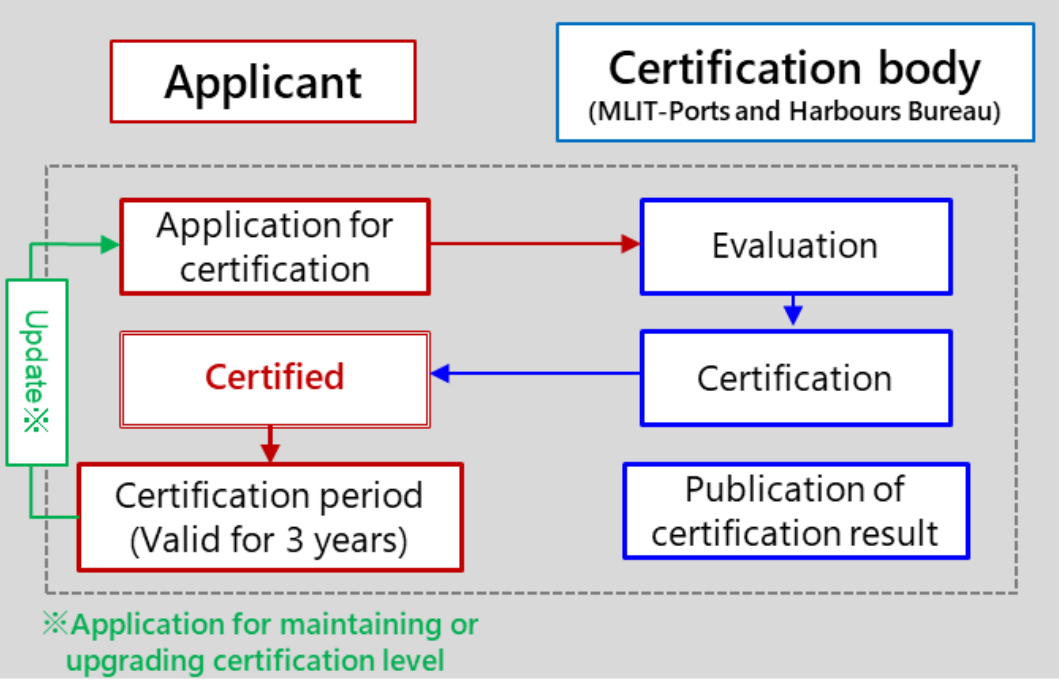
CNP Certification

(Certification logo)

Outline of CNP Certification

Outline of CNP Certification

(1) Certification Body .. Ports and Harbours Bureau, MLIT is a certification body.
(2) Certification Targets .. The targets of certification under this system are container terminals within Japan.
(3) Applicants .. Applicants will be
- Port administrators, if the terminal is operated by port administrators.
- Lessees or terminal operators, if the terminal is operated by private companies.



- Evaluation will be performed at multiple certification levels from Level 1 to Level 5.
- Certification validity is 3years.
- The application fee shall be free of charge for the time being.

CNP Certification evaluation table (Partially excerpted)

✓：Requirement　＋：Recommendation

Category		Evaluation Items	Evaluation Criteria	Certification Level				
				Level 1	Level 2	Level 3	Level 4	Level 5
(1) Efforts related to the decarbonization of cargo handling at the terminal	Common	・Decarbonization plan at the teminal ・CO2 emissions per TEU at the terminal	・Developing a feasible plan for container terminal decarbnization ・Publication of CO2 emissions per TEU at the terminal	✓	✓	✓	✓	✓
	Terminal	STS	Introduce STS with inverter system for energy saving, etc.	–	✓ 10% or more	✓ 50% or more	✓ 80% or more	✓ 100%
		RTG, RMG	Introduce low- or zero-emission equip., such as hybrid and electric machinery, or fuel savings through the introduction of automation.	–	✓ 10% or more	✓ 50% or more	✓ 80% or more	✓ 100%
		Straddle carrier	Introduce low- or zero-emission equip., such as hybrid and electric machinery	–	✓ 10% or more	✓ 50% or more	✓ 80% or more	✓ 100%
		Yard truck, AGV, and other cargo handling equip.	Introduce low- or zero-emission equip., such as hybrid and electric machinery, or fuel savings through the introduction of automation.	＋	＋	＋	＋	＋
		Yard lighting	Introduce LED lighting	–	✓ 10% or more	✓ 50% or more	✓ 80% or more	✓ 100%
		Reefer facility and other facilities	Energy saving measures, such as limiting temperature rises through low reflective heat paving, installing roofs, etc.	＋	＋	＋	＋	＋
(2) Efforts contribute to the decarbonization of vessels and vehicles	Vessel	Vessels at berth	Reduce CO2 emissions by onshore power supply, etc.	＋	＋	＋	＋	＋
		Low- or zero-emission fuel bunkering	Introduce low- or zero-emission fuel bunkering for vessels moored at the terminal, such as LNG, etc.	＋	＋	＋	＋	＋
		Port incentives for environmentally friendly ships	Introduce port incentives for low- or zero-emission vessels or impose penalties for fossil fuel vessels	–	–	–	✓	✓
	Vehicle	Trailer congestion at the gate, stagnation in the yard	Introduce gate reservation system for the efficient cargo handling, alleviate traffic congestion by extending gate operating hours, etc.	–	–	–	✓	✓
		Incentives for large commercial EV Trucks, FCV Trucks, etc.	Introduce incentives for EV trucks or FCV Trucks, such as priority gate lanes, or impose penalties for vehicles using fossil fuels	＋	＋	＋	＋	＋
(3) Others			Introduce low-carbon and decarbonized fuels and electricity, introduce environmental friendly tugboats, such as LNG or EV tugboats, implement technologies to reduce emissions, such as urea, eliminat the offshore waiting, utilize inland ports, promote the blue carbon and carbon offsetting measures	＋	＋	＋	＋	＋

How to evaluate

✓ : Requirement　　＋ : Recommendation

Category		Evaluation Items	Evaluation Criteria	Certification Level				
				Level 1	Level 2	Level 3	Level 4	Level 5
(1) Efforts related to the decarbonization of cargo handling at the terminal	Common	・Decarbonization plan at the teminal ・CO2 emissions per TEU at the terminal	・Developing a feasible plan for container terminal decarbnization ・Publication of CO2 emissions per TEU at the terminal	✓	✓	✓	✓	✓
	Terminal	STS	Introduce STS with inverter system for energy saving, etc.	–	✓ 10% or more	✓ 50% or more	✓ 80% or more	✓ 100%
		RTG, RMG	Introduce low- or zero-emission equip., such as hybrid and electric machinery, or fuel savings through the introduction of automation.	–	✓ 10% or more	✓ 50% or more	✓ 80% or more	✓ 100%
		Straddle carrier	Introduce low- or zero-emission equip., such as hybrid and electric machinery	–	✓ 10% or more	✓ 50% or more	✓ 80% or more	✓ 100%
		Yard truck, AGV, and other cargo handling equip.	Introduce low- or zero-emission equip., such as hybrid and electric machinery, or fuel savings through the introduction of automation.	＋	＋	＋	＋	＋
		Yard lighting	Introduce LED lighting	–	✓ 10% or more	✓ 50% or more	✓ 80% or more	✓ 100%
		Reefer facilities and other facilities	Energy saving measures, such as limiting temperature rises through low-reflective heat coating, installing roofs, etc.	＋	＋	＋	＋	＋
(2) Efforts contribute to the decarbonization of vessels and vehicles	Vessel	Vessels at berth	Reduce CO2 emissions by onshore power supply, etc.	＋	＋	＋	＋	＋
		Low- or zero-emission fuel bunkering	Introduce low- or zero-emission fuel bunkering for vessels moored at the terminal, such as LNG, etc.	＋	＋	＋	＋	＋
		Port incentives for environmentally friendly ships	Introduce port incentives for low- or zero-emission vessels or impose penalties for fossil fuel vessels	–	–	–	✓	✓
	Vehicle	Trailer congestion at the gate, stagnation in the yard	Introduce gate reservation system for the efficient cargo handling, alleviate traffic congestion by extending gate operating hours, etc.	–	–	–	✓	✓
		Incentives for large commercial EV Trucks, FCV Trucks, etc.	Introduce incentives for EV trucks or FCV Trucks, such as priority gate lanes, or impose penalties for vehicles using fossil fuels	＋	＋	＋	＋	＋
(3) Others			Introduce low-carbon and decarbonized fuels and electricity, introduce environmental friendly tugboats, such as LNG or EV tugboats, implement technologies to reduce emissions, such as urea, eliminat the offshore waiting, utilize inland ports, promote the blue carbon and carbon offsetting measures	＋	＋	＋	＋	＋

If all the "requirements" = ✓ needed at each level are met, certification at a given level will be granted

CNP Certification Portal Site

CNP Certification Portal Site is now available.
The system outline, guideline and application forms are posted here.
Certification results will also be posted through this portal site.

Link: https://www.mlit.go.jp/kowan/kowan_fr4_000088.html

English page will be available from 2025/6

Thank you for your attention.