Republic of the Philippines
Data Collection Survey on the Promotion of the Blue Economy

Final Report

Feburary 2026

Japan International Cooperation Agency

INTEM Consulting, Inc.
Oriental Consultants Global Co., Ltd

1R
JR
26-012

Table of Contents

Attachment

List of Tables

Page No.

List of Figures

Page No.

List of Abbreviations

Abbreviation	Definition
AAIBP	Al-Amanah Islamic Investment Bank of the Philippines
ABCF	ASEAN Blue Carbon and Finance Profiling initiative
ACTS	Advanced Customer Transaction System
ADB	Asian Development Bank
ADMP	Aquaculture Development and Management Plan
AFAB	Authority of the Freeport Area of Bataan
AFD	Agence Française de Développement
AGV	Automated Guided Vehicle
AIS	Automatic Identification System
ALB	Airborne LiDAR Bathymetry
APAC	Asia Pacific
APEC	Asia Pacific Economic Cooperation
APSN	APEC Port Services Network
ASC	Aquasilviculture Stewardship Contract
ASEAN	Association of Southeast Asian Nations
ATI	Asian Terminals Incorporated
AUU	Abandoned, Unutilized and Underutilized
BAFS	Bureau of Agriculture and Fisheries Standards
BAFTI	Bangsamoro Agriculture and Fisheries Training Institute
BARMM	Bangsamoro Autonomous Region in Muslim Mindanao
BCAP	Blue Carbon Action Partnership
BCESMM	Blue Carbon Ecosystem Service Management Mechanism
BDO	Banco de Oro
BDP	Bangsamoro Development Plan
BE	Blue Economy
BEDC	Bangsamoro Economic Development Council
BERDS	Biodiversity, Ecosystems, Research and Development Services
BEZA	Bangsamoro Economic Zone Authority
BFAR	Bureau of Fisheries and Aquatic Resources
BIMP-EAGA	Brunei-Indonesia-Malaysia-Philippines East ASEAN Growth Area
BMARINA	Bangsamoro Maritime Industry Authority
BMB	Biodiversity Management Bureau
BPDA	Bangsamoro Planning and Development Authority
BPMA	Bangsamoro Ports Management Authority

BSP	Bangko Sentral ng Pilipinas
CCC	Climate Change Commission
CDA	Corporation Development Authority
CENRO	Community Environment and Natural Resources Office
CEZA	Cagayan Economic Zone Authority
CFLC	Community Fish Landing Center
CGT	Cavite Gateway Terminal
CIC	Credit Information Corporation
CIRAD	Centre de coopération internationale en recherche agronomique pour le développement
CLSU	Central Luzon State University
CNFIDP	Comprehensive National Fisheries Industry Development Plan
CNP	Carbon Neutral Port
COAST	Climate and Ocean Adaptation and Sustainable Transition
COI-NEXT	Program on Open Innovation Platform with Entrepreneurial Ecosystems
CONPAS	Container Fast Pass
COP21	Conference of the Parties 21
CPA	Cebu Port Authority
CPHMAIP	Comprehensive Post-Harvesting, Marketing & Ancillary Industries Plan
CREATE ACT	The Corporate Recovery and Tax Incentives for Enterprises Act
CTV	Crew Transfer Vessel
DA	Department of Agriculture
DBM	Department of Budget and Management
DBP	Development Bank of the Philippines
DENR	Department of Environment and Natural Resources
DENR-BMB	DENR – Biodiversity Management Bureau
DENR-CCS	DENR – Climate Change Services
DEPDev	Department of Economy, Planning, and Development
DILG	Philippines Department of the Interior and Local Government
DOE	Department of Energy
DOF	Department of Finance
DOST	Department of Science and Technology
DOST-PCAARRD	Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development
DOST-PCIEERD	Department of Science and Technology-Philippine Council for Industry, Energy, and Emerging Technology Research and Development
DOTr	Department of Transportation

DPL	Development Policy Loan
DPWH	Department of Public Works and Highways
DX	Digital Transformation
EAFM	Ecosystem Approach to Fisheries Management
EEZ	Exclusive Economic Zone
EMB	Environmental Management Bureau
EPSDP	Enhanced Philippine Seaweed Development Program
ESMAP-IFC	Energy Sector Management Assistance Program-International Finance Corporation
ESRM	Environmental and Social Risk Management
EU	European Union
EV	Electric Vehicle
FAO	Food and Agriculture Organization
FARMC	Fisheries and Aquatic Resource Management Council
FCV	Fuel Cell Vehicle
FishCoRe	The Philippine Fisheries and Coastal Resiliency (FishCoRe) Project
FLA	Fishpond Lease Agreement
FMA	Fisheries Management Area
FRP	Fiber Reinforced Plastic
FSCC	Financial Stability Coordination Council
GDP	Gross Domestic Product
GEMP	Government Energy Management Program
GFDT	Global Facility to Decarbonize Transport
GHG	Greenhouse Gas
GP	Gratuitous Permits
GPAS	Green Port Award System
GRaSPS	Green Resiliant Smart Port Strategy
GRT	Gross Tonnage
HACCP	Hazard Analysis and Critical Control Point
HCR	Harvest Control Rule
HF/VHF	High Frequency / Very High Frequency
HUDCO	Housing and Urban Development Corporation Limited.
IARRD	Inland Aquatic Resources Research Division
IC	Insurance Company
ICT	Information and Communication Technology
ICTSI	International Container Terminal Services, Inc
IEC	Information, Education and Communication

IMCAM	Integrated Marine and Coastal Area Management
IMO	International Maritime Organization
IMTA	Integrated Multi-Trophic Aquaculture
IPCC	Intergovernmental Panel on Climate Change
IPORTS	Internet-based Port Operations and Terminal Receipting System
IQ	Individual Quota
IRR	Implementing Rules and Regulations
ITSF	Inter-Agency Technical Working Group for Sustainable Finance
ITV	Internal Transfer Vehicle
IUU/IUUF	Illegal, Unreported and Unregulated
JBE	Japan Blue Economy Association
JCM	Joint Crediting Mechanism
JGA	JICA Global Agenda
JICA	Japan International Cooperation Agency
JIRCAS	Japan International Research Center for Agricultural Sciences
JST	Japan Science and Technology Agency
JTF	Japan Trust Fund
FfKfW	Kreditanstalt für Wiederaufbau
LBP	Land Bank of the Philippines
LED	Light Emitting Diode
LGU	Local Government Unit
LNG	Liquefied Natural Gas
LPG	Liquefied Petroleum Gas
LRP	Limit Reference Point
MAFAR	Ministry of Agriculture, Fisheries and Agrarian Reform
MaOI	Marine Open Innovation Institute
MAPALLA	Manila Bay-Pasig River-Laguna Lake Ferry System
MARINA	Maritime Industry Authority
MARPOL	International Convention for the Prevention of Pollution from Ships
MC	Memorandum Circular
MCS	Monitoring, Control and Surveillance
MEBED	Marine Ecosystems for Blue Economy Development Program
MENRE	Ministry of Environment, Natural Resources and Energy
MFARMC	Municipal Fisheries and Aquatic Resources Management Council
MFBM	Ministry of Finance, Budget and Management
MFP	Municipal Fish Port

MICT	Manila International Container Terminal
MIDP	Maritime Industry Development Plan
MinDA	Mindanao Development Authority
MMDA	Metropolitan Manila Development Authority
MNHPI	Manila North Harbour Port Inc.
MOST-BARMM	Ministry of Science and Technology (BARMM)
MOTC	Ministry of Transportation and Communications
MP	Mariculture Park
MPA	Marine Protected Area
MRRD	Marine Resources Research Division
MRV	Monitoring, Measurement and Verification
MSMEs	Micro, Small and Medium Enterprises
MSP	Marine Spatial Planning
MSY	Maximum Sustainable Yield
MTIT	Ministry of Trade, Investment and Tourism
NAPC	National Anti-Poverty Commission
NBCAP	National Blue Carbon Action Partnership
NBFI	Non-Bank Financial Institution
NBFTC	National Brackishwater Fisheries Technology Center
NDC	Nationally Determined Contribution
NEDA	National Economic and Development Authority
NEDO	New Energy and Industrial Technology Development Organization
NFDC	National Fisheries Development Center
NFRDI	National Fisheries Research and Development Institute
NFTC	National Freshwater Technology Center
NGO	Non-Governmental Organization
NIFTC	National Inland Fisheries Technology Center
NMC	National Maritime Council
NORAD	Norwegian Agency for Development Cooperation
NPO	Non-Profit Organization
NSTDC	National Seaweed Technology Development Center
NZE	Near Zero Emission
O&M	Operation and Management
ODA	Official Development Assistance
OIN	Ocean Impact Navigator
OPRC	International Convention on Oil Pollution Preparedness, Response and Co-operation

OPS	Onshore Power Supply
OX	Ocean Transformation
PBL	Policy-Based Loan
PCAARRD	Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development
PCAF	Philippine Coucil for Agriculture and Fisheries
PCG	Philippine Coast Guard
PDIC	Philippine Deposit Insurance Corporation
PDP	Philippine Development Plan
PEC	Port Environmental Code
PEMSEA	Partnerships in Environmental Management for the Seas of East Asia
PENCAS	Philippine Ecosystem and Natural Capital Accounting System
PEP	Port Environmental Policy
PFDA	Philippine Fisheries Development Authority
PHIVIDEC	Philippine Veterans Investment Development Corporation
PHL	Post-Harvest Loss
PMMA	Philippine Merchant Marine Academy
PMO	Port Management Office
PNHS	Philippine Nautical Highway System
PNLC	PEMSEA Network of Learning Centers
PNLG	PEMSEA Network of Local Governments for Sustainable Coastal Development
PPA	Philippine Ports Authority
PPMC	Poro Point Management Corporation
PPP	Public Private Partnership
PRDP	Philippines Rural Development Plan
PRFS	Pasig River Ferry Service
PSA	Philippine Statistics Authority
RBCAP	Regional Blue Carbon Accounting Protocol
RCBC	Rizal Commercial Banking Corporation
RFO	Regional Fisheries Office
RFP	Regional Fish Port
Ro-Ro	Roll-on/Roll-off
RTG	Rubber Tired Gantry Crane
SATREPS	Science and Technology Research Partnership for Sustainable Development
SBITC	Subic Bay International Terminal Corp.
SBMA	Subic Bay Metropolitan Authority
SBSR	Shipbuilding and Ship Repairing

SDGs	Sustainable Development Goals
SDS-SEA	Sustainable Development Strategy for the Seas of East Asia
SEAFDEC	Southeast Asian Fisheries Development Center
SEC	Securities and Exchange Commission
SEEA	System of Environmental-Economic Accounting
SERD	Socio Economics Research Division
SET-UP	Small Enterprise Technology Upgrading Program
SFTG	Philippine Sustainable Finance Taxonomy Guidelines
SMBC	Sumitomo Mitsui Banking Corporation
SOLAS	International Convention for the Safety of Life at Sea
SPC	Special Purpose Company
SRF	Shore Reception Facilities
SRNH	Strong Republic Nautical Highway
STCW	International Convention on Standards of Training, Certification and Watchkeeping for Seafarers
STS	Ship-to-Shore
SU	Start-up
TABS	Terminal Appointment Booking System
TAC	Total Allowable Catch
TBI	Technology Business Incubator
TTPD	Technology Transfer and Promotion Division
TWG	Technical Working Group
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
USAID	United States Agency for International Development
VMS	Vessel Monitoring System
WB	World Bank
WEF	World Economic Forum
ZEB	Zero Emission Building
ZJC	Zones of Joint Cooperation
ZSL	Zoological Society of London for the Philippines

Chapter1 Background and Overview of the Survey

1.1 Overview of the Survey

1.1.1 Overview of the Survey

The Republic of the Philippines (hereinafter, "the Philippines") is an archipelagic nation comprising 7,641 islands and possesses a coastline of 36,289 km, which is the fifth-longest in the world. In 2022, total production from fisheries and aquaculture exceeded 4.33 million tons, placing the Philippines 11th globally in fisheries production (FAO, 2022), and under the current administration, the need to further strengthen the conservation of marine resources has been stated from the perspective of food security (State of the Nation, 2024). The Philippines also plays a significant role in maritime industries. Filipino workers account for more than 25% of the world's 1.5 million seafarers, and the country is the world's largest supplier of seafarers (BIMCO / ICS, 2016) and the Philippines ranks fourth globally in shipbuilding in terms of ship deliveries (MOFA, 2021). Marine industries, including fisheries, seafood processing, and shipping, accounted for 3.88% of GDP as of 2023 and recorded year-on-year increase of 9.9%, indicating that marine industries constitute a key sector for the Philippines' sustainable development (PSA, 2023).

Given the Philippines' abundant marine resources, the potential of the blue economy, which promotes economic development through the sustainable use of marine resources, spans multiple sectors. However, the country has not yet fully harnessed its marine resources. In the fisheries sector, catch volumes had declined by approximately 10% over the past decade as of 2023 due to overfishing, degradation of habitats, and other factors, and It is also estimated that 20% to 40% of catch volume is discarded during distribution and other stages of the supply chain (World Bank, 2023). Initiatives that contribute to sustainable marine industries, including low-carbon transition measures, also remain at an early stage. Challenges related to Greenhouse Gas (GHG) emissions in the maritime sector are significant, with the Philippine government's Maritime Industry Development Plan 2019–2028 (MIDP 2019-2028) sets a target of reducing GHG emissions by 15% by 2028 and emphasizes the need to advance decarbonization and low-carbon measures. Financial frameworks to accelerate the blue economy are also being developed. The Philippine Securities and Exchange Commission (SEC) issued guidelines on blue finance in September 2023. Efforts to establish Marine Protected Area (MPA) to support marine biodiversity conservation and local communities have only recently commenced.

In response to these circumstances, the Philippine Congress is seeking to enact a Blue Economy Act with the objective of strengthening the legal framework for the blue economy across multiple sectors (not yet adopted as of January 2026). The bill includes measures such as reviewing existing policies and regulations related to marine activities, ensuring compliance with international law of the sea, and strengthening enforcement capacity for legal systems to protect marine resources. However, the Philippines currently lacks a central ministry responsible for promoting the effective use of marine resources, and the institutional arrangements and implementation framework for advancing the blue economy remain underdeveloped.

Meanwhile, the Government of Japan has been advancing initiatives related to the blue economy through domestic institutional development and collaboration with international organizations. Japan's Fourth Basic Act on Ocean Policy sets national measures related to the ocean, including maritime security, shipping, and fisheries, and promotes the "Ocean Transformation (OX)" agenda. Through the development of ocean-related

industries and proactive contributions to international efforts related to the Sustainable Development Goals (SDGs), Japan aims to build a sustainable ocean. In 2024, Japan, together with Association of South-East Asian Nations (ASEAN) and the United Nations Development Programme (UNDP), launched the "ASEAN Blue Economy Innovation Project" and expressed its commitment to contributing to the development of the blue economy in ASEAN and the Indo-Pacific region. In the shipping sector, Japan's Ministry of Land, Infrastructure, Transport and Tourism (MLIT) launched the "International Shipping GHG Zero Emissions Project" in 2022 and is pursuing international contributions to climate change mitigation, including future support for developing countries' transition to zero-emission shipping. In addition, MLIT approved the establishment of the Japan Blue Economy Association (JBE), which promotes technological research on blue carbon and related areas, and it also advances the issuance, certification, and management of Japan's carbon credits known as "J-Blue Credit".

Based on the above, this study will organize the current status of implementation and coordination among relevant stakeholders as well as the state of policies, legal frameworks, and related systems for the blue economy, identify and analyze key challenges, and, with a primary focus on the priority sectors of fisheries, maritime transport, and finance, examine both sector-specific and cross-cutting opportunities for cooperation from short-term and medium- to long-term perspectives.

1.1.2 Survey Title

The survey is titled the "Data Collection Survey on the Promotion of the Blue Economy" and targets the Republic of the Philippines.

1.1.3 Survey Items

The survey items are as follows.

(1) Information collection and analysis on the Blue Economy trends in the Philippines

1. Policies, laws and regulations, and implementation arrangements of the Philippine government (including inter-ministerial coordination; coordination with local government units (LGUs) and fisheries associations; and industry–government–academia collaboration), as well as the current situation, challenges (including capacity and human resources), and needs
2. Status of utilization of, and access to, financing and funds
3. Status of utilization of, and access to, technology and data
4. Initiatives undertaken by development aid agencies, donor countries, and other relevant organizations, including the status of international coordination
5. Trends, challenges, and needs in the private sector (including private companies and NGOs)
6. Organization and integration of the information collected and existing plans
7. Analytical frameworks and methods to be used to evaluate the feasibility of cooperation in the short-term and medium- to long-term cooperation

(2) Information collection and analysis on Japan's initiatives related to the blue economy

1. Trends in the Government of Japan's blue economy policies and implementation
2. Trends among private companies in the blue economy domain in Japan and their potential needs
3. Survey of public and private resources in Japan (including at the domestic and regional levels) relevant to blue economy cooperation

(3) Examination and analysis of development challenges in promoting the blue economy

1. Information collection and qualitative/quantitative analysis on the current situation in the Philippines and areas for improvement in the priority themes of fisheries, maritime transport, and finance, including consultations with the Philippine government regarding its future vision and targets
2. Assessment of needs in the Bangsamoro Autonomous Region in Muslim Mindanao (BARMM)
3. Information collection and analysis on cross-cutting issues and improvement measures related to mainstreaming the blue economy

(4) Information collection and analysis with a view to formulating a short-term cooperation program

1. For the issues identified under (1) 1., and which the Philippine government has already prioritized and recognized as requiring urgent improvement; sorting the status of the relevant projects and initiatives
2. Using the analytical approaches and methodologies considered under (1) 7., conduct analyses and based on Japan's interests, technologies, and other strengths, examine the feasibility of addressing individual issues, while also proposing options and priorities for issue response measures that consider cross-sectoral approaches and potential spillover effects through combinations of JICA programs.

1.2 Concept of the Blue Economy

1.2.1 Defenitions by International Organizations

The Blue Economy is a concept widely advocated in recent years, but there is no internationally unified definition. Tanaka (2023) summarizes the background of the discussions leading to the establishment of this concept as follows.

1992
- Foundation established in the UN Conference on Environment and Development (Earth Summit)" Agenda 21. Under the context of resource conservation and management for development, it proposed "Rational use and development of coastal areas, all seas and marine resources, as well as conservation of the marine environment"

2002
- At the World Summit on Sustainable Development (WSSD; "Rio+10"), paragraph 30 of the Johannesburg Plan of Implementation notes that oceans, seas, islands and coastal areas are integral to the Earth's ecosystem and are essential to global food security as well as to

sustaining economic prosperity and the well-being of many national economies (especially in developing countries).

2012

- At the United Nations Conference on Sustainable Development (Rio+20), the outcome document characterizes a "green economy in the context of sustainable development and poverty eradication" as an important tool for achieving sustainable development, while emphasizing that it should not be treated as a rigid set of rules.
- The report Green Economy in a Blue World extends green economy thinking to the marine and coastal domain by examining how key ocean-linked sectors ("the blue world") can transition toward a green economy.

Source: Prepared by JICA Study Team, based on Tanaka (2023)

"Green economy" is defined as “one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities” (UNEP, 2011). At the 2012 United Nations Conference on Sustainable Development (Rio+20), the two main themes were (1) "a green economy in the context of sustainable development and poverty eradication" and (2) "the institutional framework for sustainable development", which were proposed as means to achieve both objectives simultaneously in the context of sustainable development and poverty eradication in the outcome document "The Future We Want" (UNEP, 2012). The United Nations Environment Programme (UNEP) presented a new concept of a green economy extended to the oceans in its "Green Economy in a blue world report" (Commonwealth of Learning, 2016). The report frames this as “one that improves human well-being and social equity, while significantly reducing environmental risks and ecological scarcities,” and proposes it as a concept aimed at realizing healthy and economically productive oceans, through enhancing sustainability across sectors such as shipping; fisheries (aquaculture and capture fisheries); tourism; marine-based renewable energy (offshore wind and wave power); seabed resource drilling and mining; and agriculture, among others (UNEP, 2012).

In United Nations Environment Programme’s Blue Economy Concept Paper, the Blue Economy is described as an ocean economy that aims to “improve human well-being and social equity, while significantly reducing environmental risks and ecological scarcities”; more specifically, it conceptualizes oceans and waters as “Development Spaces” in which spatial planning integrates development and conservation, and frames it as a sustainable development model that incorporates equity and the value of natural capital (UNEP, 2016).

The World Bank, in “The Potential of the Blue Economy” (WB, 2017), defines the blue economy as an approach that seeks to promote economic growth, social inclusion, and the preservation or improvement of livelihoods, while at the same time ensuring environmental sustainability of the oceans and coastal areas; the ocean-related economic activities associated with the blue economy, as organized by the World Bank, are presented in Table 1.2-1.

Table 1.2-1 Activites and Indusrties Related to the Blue Economy (As defined by the World Bank)

Type of Activity	Activity Subcategories	Related Industries/Sectors	Drivers of Growth
Harvesting and trade of marine living resources	Seafood harvesting	Fisheries (primary fish production)	Demand for food and nutrition
		Secondary fisheries and related activities (e.g., processing, net and gear making, ice production and supply, boat construction and	Demand for food and nutrition

		maintenance, manufacturing of fish- processing equipment, packaging, marketing and distribution)	
		Trade of seafood products	Demand for food, nutrition, and protein
		Trade of non-edible seafood products	Demand for cosmetic, pet, and pharmaceutical products
		Aquaculture	Demand for food, nutrition, and protein
	Usage of marine living resources for pharmaceuticals and chemicals	Marine biotechnology and bioprospecting	R&D and usage for health care, cosmetic, enzyme, nutraceutical, and other industries
Extraction and use of marine nonliving resources (non-renewable)	Extraction of minerals	(Seabed) mining	Demand for minerals
	Extraction of energy sources	Oil and gas	Demand for (alternative) energy sources
	Freshwater generation	Desalination	Demand for freshwater
Use of renewable non-exhaustible natural forces (wind, wave, and tidal energy)	Generation of (offshore) renewable energy	Renewables	Demand for (alternative) energy sources
Commerce and trade in and around the oceans	Transport and trade	Shipping and shipbuilding	Growth in seaborne trade; transport demand; international regulations; maritime transport industries (shipbuilding, scrapping, registration, seafaring, port operations, etc.)
		Maritime transport	
		Ports and related services	
	Coastal development	National planning ministries and departments, private sector	Coastal urbanization, national regulations
	Tourism and recreation	National tourism authorities, private sector, other relevant sectors	Global growth of tourism
Indirect contribution to economic activities and environments	Carbon sequestration	Blue carbon	Climate mitigation
	Coastal Protection	Habitat protection, restoration	Resilient growth
	Waste Disposal for land-based industry	Assimilation of nutrients, solid waste	Wastewater Management

	Existence of biodiversity	Protection of species, habitats	Conservation

Source: World Bank, The Potential of Blue Economy, 2017

1.2.2 Approach in Japan

Japan does not have a legally defined definition of the "blue economy", and there is no commonly accepted definition used domestically. The Fourth Basic Plan on Ocean Policy (2023**)**, which underpins Japan's blue economy agenda, sets out as a basic policy "Sustainable use and development of the ocean". Under this policy, the various measures aim to include broad economic activities in the ocean with the sustainable use of marine resources through initiatives related to decarbonization, resource management, and the conservation, restoration, and maintenance of the marine environment.

1.2.3 Defeinition in the Philippines

This study follows the definition of the Blue Economy in the Philippines as outlined in the Blue Economy Bill, which was under deliberation in Congress as of January 2026.

The Blue Economy Bill (Senate Bill No. 1993), the blue economy is defined as "a practical ocean-based economic model using green infrastructure and technologies, innovative financing mechanisms, and proactive institutional arrangements for meeting the twin goals of protecting our oceans and coasts and enhancing its potential contribution to sustainable development, including improving human well-being, and reducing environmental risks and ecological scarcities".

On the other hand, House Bill No. 3819, introduced in the 20th Congress in August 2025 by Representatives Ralph Wendel P. Tulfo and Jocelyn P. Tulfo, defines the Blue Economy as " the integrated, holistic, cross-sectorial, and crossstakeholder approach for the sustainable resilient and inclusive use, governance, management and conservation of oceans, seas as well as marine and coastal resources and ecosystem for economic growth leveraging green infrastructure and technologies innovative financing mechanisms and proactive institutional mechanisms, and improving human well-being and social equity and reducing environmental risks and ecological scarcities". After being approved by the House of Representatives in December 2025, it is currently under deliberation in the Senate.

Although the definitions of the two are different, with the former being an "economic model" and the latter a "cross-sectoral approach," the basic direction remains the same. In other words, the blue economy in the Philippines consists of the following elements.

(1) An approach for inclusive and cross-sectoral economic development,
(2) Requires the "appropriate use" and "management" of marine areas and resources for economic growth,
(3) Employing three key methods: "infrastructure and technology", "innovative financing mechanisms", and "institutional arrangements."

In other words, it aims for economic development while conserving the marine environment using three tools: "infrastructure and technology", "innovative financing mechanisms", and "institutional arrangements.". This study analyzes challenges for promoting the Blue Economy and examines cooperation programs based

on this definition.

Chapter2 Overview of the Blue Economy in the Philippines

2.1 Blue Economy Act

2.1.1 Act Overview

This act recognizes that climate change is beginning to have a serious impact on the lives of citizens and the future of the nation. In the modern era, a more coherent "Blue Economy" approach, transcending existing fragmented laws, is essential. It aims to integrate individual government interventions based on scientific evidence, establishing a comprehensive framework that harmonizes economic, social and environment.
This act consists of 13 chapters. An overview of each chapter is provided below.

Table 2.1-1 Structure of the Blue Economy Act

Chapter Title	Overview
Chapter 1 "General Provisions"	Declares the basic policy of establishing the equitable and sustainable development and safe utilization of marine assets as a pillar of the national economy. It defines the Blue Economy as an integrated approach for the sustainable use and governance of marine resources, clarifies key terms such as Blue Carbon and maritime spatial planning, and establishes the scope of the law to cover all marine zones from territorial waters to the Exclusive Economic Zone (EEZ) and the continental shelf.
Chapter 2: "National Maritime Surveillance System"	It stipulates renaming the existing "National Coastal Surveillance System" to the "National Maritime Surveillance System" and establishing/reorganizing the National Maritime Council (NMC) as its core agency. Chaired by the Executive Secretary, this council comprises ministers from diverse sectors including defense, environment, and economy. It will oversee the command of marine resource exploration, coordinate law enforcement, and build surveillance capabilities using digital technology.
Chapter 3: "Blue Economy Policy Framework"	The National Maritime Council is mandated to develop a comprehensive policy framework within six months of implementation. This framework will serve as the basis for maritime spatial planning and investment decisions. It will include a review of existing policies and environmental economic accounts, prioritizing strategic sectors such as fisheries, marine tourism, renewable energy, and marine biotechnology.
Chapter 4: "Compliance with International Maritime Instruments"	It requires the full implementation of international treaties ratified by the Philippines, including the United Nations Convention on the Law of the Sea (UNCLOS). It stipulates that the President has the authority to take countermeasures against foreign vessels in domestic ports or waters that fail to comply with international law.
Chapter 5: Environmental Economic Accounts	To systematically measure the contribution of marine ecosystems to the economy and their environmental impacts, the Philippine Statistics Authority is mandated to incorporate a satellite account[1] for the marine economy into the national system of national accounts.
Chapter 6: Integrated Marine and Coastal Area Management	IMCAM is positioned as a framework to address human impacts on the ocean, mandating the establishment of a national framework within one year of implementation. This includes specific action guidelines such as pollution reduction, habitat protection and restoration, and bycatch reduction.

[1] A supplementary statistical system that independently analyzes and estimates specific sectors such as the environment, tourism, and unpaid labor (e.g., housework) as separate accounts, while maintaining consistency with the basic framework of national economic accounts like GDP for economic analysis and policy formulation.

(IMCAM)	
Chapter 7: "Protection and Conservation of Coastal and Marine Resources"	The National Maritime Council leads efforts to protect endangered species and restore habitats, recommending to the government the designation of specific marine areas as protected zones when necessary. It also plays a role in harmonizing regulations among relevant agencies and coordinating law enforcement to eradicate illegal fishing.
Chapter 8: "Development Plans"	It stipulates the development of a national Maritime Spatial Plan (MSP) to avoid conflicts in ocean use, and the creation of 5-year and 10-year development plans for marine industries. It also includes provisions to convert existing economic zones into "Blue Economic Zones" and provide tax incentives to promote investment.
Chapter 9: "Blue Finance"	This chapter covers the financial aspects to promote funding for sustainable ocean projects. It mandates that the Central Bank of the Philippines (BSP) require banks to adopt sustainable finance principles, encourages the Securities and Exchange Commission (SEC) to promote the issuance of blue bonds, and also stipulates financing by government-owned financial institutions and the prioritization of budget allocations.
Chapter 10: "Marine Science and Technology, Innovation, and Ocean Literacy"	It positions marine science as the foundation of governance and affirms the nation's right to conduct marine scientific research within its maritime zones. Beyond supporting the development of advanced technologies, it aims to introduce "ocean literacy" into educational curricula, enabling citizens to understand the impacts of the ocean and make responsible decisions.
Chapter 11: "Freedom of Navigation"	The President has the authority to designate navigation lanes and airways within the archipelagic waters, in accordance with international law, to enable the swift passage of foreign vessels and aircraft.
Chapter 12: "Role of Local Governments"	Municipalities continue to exercise jurisdiction over coastal waters and act as frontline agencies in formulating and implementing IMCAM at the local level. They are also permitted to cooperate with other local governments to share resources and services.
Chapter 13 "Final Provisions"	This chapter sets forth practical procedures to ensure the law's implementation, including the establishment of a Joint Monitoring Committee by Congress, the allocation of initial budgetary provisions by the Office of the President, and the schedule for developing the Implementing Rules and Regulations (IRR).

Source: Prepared by the JICA Study Team referenced the Blue Economy Act

The Blue Economy Act is characterized by its integrated approach across multiple sectors: "Economy and Industry," "Environment," "Finance," "Science," "Education," and "Governance and Security." All these sectors are integrated and directed by the National Maritime Council (NMC).The NMC, chaired by the Executive Secretary and comprising the heads of 17 ministries and agencies including Environment, National Defense, Economy, Agriculture, Transportation, Energy, Finance, and Science, is tasked with eliminating siloed administration and formulating and executing an integrated strategy (the Blue Economy Policy Framework).

Regarding "Economy and Industry," the following activities are specifically listed and explained as priority and strategic economic activities:

- Fisheries
- Aquaculture
- Tourism
- Maritime Transport and Logistics
- Shipbuilding and Ship Repair

- Energy (production of renewable energy from marine sources),
- Infrastructure (installation of submarine cables and pipelines)
- Advanced Technology and Resources (Marine Biotechnology, Biological Resource Exploration, Seawater Desalination)

In particular, the fisheries sector is the foundation of food security and livelihoods, serving as the most fundamental sector directly linked to the survival and well-being of the Filipino people. The act prioritizes subsistence fisheries as a constitutional right, emphasizing their importance from the perspectives of poverty reduction and social equity. This is referenced in the following sections of the bill:

- Chapter I, Section 3 (Definitions): Detailed definitions are provided for fisheries-related terms such as "aquaculture," "aquaforestry," "fisheries resources," "bycatch," "commercial fisheries," and "fisheries industry."
- Chapter 2, Article 7: The Director-General of the Bureau of Fisheries and Aquatic Resources (BFAR) is included among the members of the National Maritime Council (NMC) .
- Chapter 3, Section 12 (Policy Framework): "Fisheries (prioritizing subsistence fishing in accordance with the Constitution)" and "Aquaculture, marine aquaculture, and related processing industries" are listed as top priority economic activities.
- Chapter 6, Section 18 (Elements of IMCAM): It stipulates the establishment of closed areas and seasons based on the Philippine Fisheries Act (RA 8550) and the reduction of bycatch.
- Chapter 12, Section 34 (Role of Local Government Units): Municipalities shall continue to exercise jurisdiction over municipal waters.

Relevant relationships with other sectors include the following:

- Environment: To prevent overfishing, establish no-take zones and closed seasons through Integrated Coastal and Marine Area Management (ICMAM), and reduce bycatch to promote resource recovery.
- Science: Scientific and technological research and development (R&D), such as artificial intelligence (AI) and biomass estimation, is essential for predicting fish stock levels.

Maritime transport is also critical infrastructure for the archipelagic nation of the Philippines, physically connecting islands and supporting economic activity. It is positioned as a pillar supporting tourism and trade, and a sector significantly contributing to economic growth, including shipbuilding/repair industries and seafarer employment. The act references this in the following sections:

- Explanatory Note: The value of "marine transport" and "seafarers" is emphasized as important sectors contributing to the Philippines' economic growth.
- Chapter 1, Section 3 (Definitions): "Maritime transport and shipping" is included among ocean-based activities, while "shipbuilding and repair" and "ports" are included among ocean-related activities.
- Chapter 3, Article 12 (Policy Framework): "Maritime Transport, Logistics, and Shipping" and "Shipbuilding and Ship Repair" are designated as strategic priority areas.
- Chapter 4, Articles 13 and 14 (International Maritime Instruments): Mandates the application of international conventions such as the Safety of Life at Sea (SOLAS), the International Convention for the Prevention of Pollution from Ships (MARPOL), and the International Convention on

Standards of Training, Certification and Watchkeeping for Seafarers (STCW) to all Philippine-flagged vessels and foreign vessels.

- Chapter 11, Section 33 (Freedom of Navigation): The President may designate navigation zones to enable the swift passage of foreign vessels.

Relevant connections to other sectors include the following:

- International Law/Environment: Ensures compliance with international treaties like SOLAS (safety) and MARPOL (pollution prevention) for both Philippine-flagged and foreign vessels, preventing marine pollution and thereby aligning with the environmental sector.
- Security: By designating archipelagic sea lanes, the President ensures freedom of navigation while maintaining national security and maritime order.

Finance serves as a funding mechanism to support sustainable activities and is detailed in a separate chapter (Chapter 9). It aims to channel funds toward sustainable projects through blue bonds and financing from government-affiliated financial institutions. References within the bill include:

- Chapter 3, Article 12 (Policy Framework): "Promotion of Blue Finance" is listed as one strategy to advance the Blue Economy.
- Chapter 8, Article 25 (Blue Economic Special Zones): Permits the provision of tax incentives under the Internal Revenue Code to enterprises engaged in Blue Economic Special Zones.
- Chapter 9, Section 26 (Introduction of Financial Principles): The Bangko Sentral ng Pilipinas (BSP) shall require banks and other financial institutions to adopt the United Nations Principles for Sustainable Blue Economy Finance as the basis for their governance and risk management.
- Chapter 9, Section 27 (Blue Bonds): The Securities and Exchange Commission (SEC) is mandated to promote the issuance of "Blue Bonds," which are restricted to funding projects contributing to ocean health.
- Chapter 9, Section 28 (Role of Policy-based Financial Institutions): The Land Bank of the Philippines and the Philippine Development Bank are mandated to provide financing to strategic marine-related enterprises.
- Chapter 9, Section 29 (Budget Allocation): This section addresses budget allocation for the Blue Economy Program by the Department of Budget and Management.

Furthermore, by providing funding only for projects contributing to ocean health (e.g., sustainable fisheries, clean vessels, ecotourism), it financially incentivizes all industries to transition toward environmentally conscious projects, establishing a relationship with the entire industrial sector.

2.1.2 Prospects for the Passage of the Act

The Blue Economy Act was passed by the House of Representatives in December 2023 during the 19th Congress of the Philippine Congress[2] and by the Senate in August 2024[3] . However, the Congress adjourned

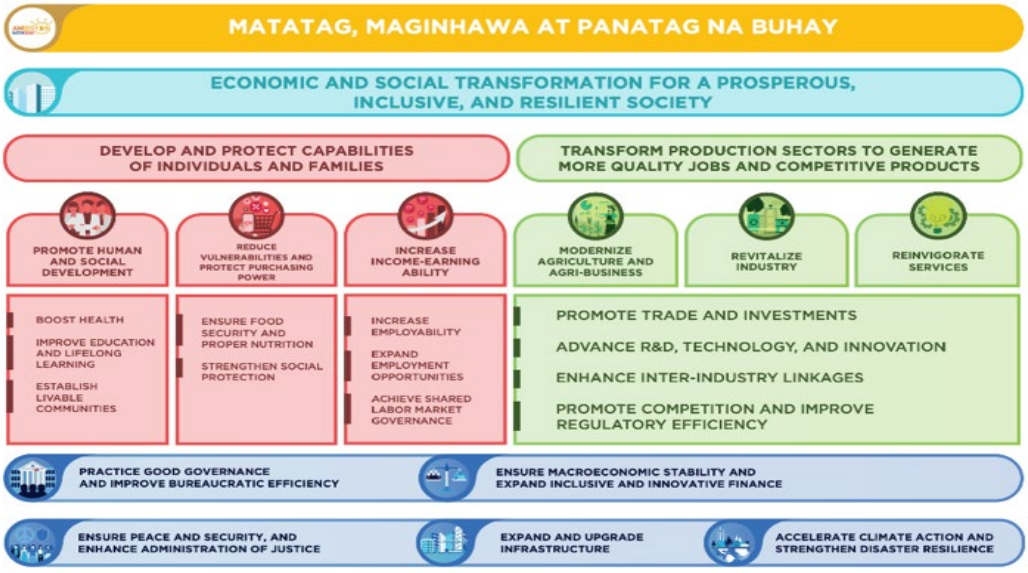
[2] https://legacy.senate.gov.ph/lis/bill_res.aspx?congress=19&q=HBN-9662
[3] https://legacy.senate.gov.ph/lis/bill_res.aspx?congress=19&q=SBN-2450

in June 2025 without the Conference Committee finalizing the bill[4] .Deliberations continued into the 20th Congress. As of December 2025, the bill passed the House of Representatives[5] but only reached its First Reading in the Senate[6] . Currently, there is no clear timeline for the law's detailed implementation date. According to multiple sources in this investigation, including interviews and media reports, it is expected to remain a high-priority bill under consideration. Meanwhile, while various ministries and agencies are formulating policies related to the blue economy without waiting for the bill's passage, inter-agency coordination is limited, and there is a lack of consistency in policy direction. As a result, inconsistencies remain between marine conservation and the utilization of water resources between DENR and BFAR, and the lead agency responsible for the design and operation of carbon credit systems remains unclear between DENR and DOF—both of which constitute obstacles to promoting the blue economy.

Therefore, in order to more effectively accelerate momentum for advancing the blue economy, it is considered necessary for the bill to be enacted and for the establishment of the NMC as an inter-ministerial committee, thereby clarifying the lead institution for its promotion.

2.2 Guideline on the Blue Economy in the Philippine Development Plan 2023–2028

The Philippines Development Plan (PDP) 2023–2028 is a medium-term development plan formulated under the leadership of the Department of Economy, Planning and Development (DEPDev). Building on the “Eight-Point Socioeconomic Agenda” set forth by the Marcos administration, the PDP comprehensively presents the fundamental policy direction for economic development aimed at realizing the long-term vision articulated by the previous Duterte administration, AmBisyon Natin 2040 (“Matatag, Maginhawa at Panatag na Buhay”, meaning “A Stable, Comfortable, and Secure Life”).



Source：Philippine Development Plan 2023-2028

Figure 2.2-1 Framework of PDP 2023-2028

[4] https://ledac.depdev.gov.ph/resources-2/19th-congress/
[5] https://businessmirror.com.ph/2025/12/17/house-approves-blue-economy-bill/
[6] https://legacy.senate.gov.ph/lis/bill_res.aspx?congress=20&q=SBN-1537

The structure of the PDP is shown in Figure 2.2-1With the "Economic and social transformation for a proseperous, inclusive and reilisent society" as its overarching goal, the plan focuses primarily on transforming the economic and social sectors. In addition, as fundamental policy pillars supporting this overarching goal, the plan consists of "Develop and Protect Capabilities of Individuals and Families (middle left in the figure)," "Transform Production Sectors to Generate More Quality Jobs and Competitive Products (middle right in the figure)," and "Enabling Environment (bottom of the figure)."

The blue economy is positioned under the direction "Transform Production Sectors to Generate More Quality Jobs and Competitive Products", specifically within Chapter 5, "Modernize Agriculture and Agribusiness," under the Outcome 2 "Access to markets and AFF-based enterprises expanded" which states that the government will "Develop the blue economy." Specifically, this involves steadily implementing the development plan under the FMA plans, while also developing and upgrading facilities such as technology extension centers and national technical centers.

Furthermore, under the direction "Enabling Environment", Chapter 15, "Accelerate Climate Action and Strengthen Disaster Resilience," indicates under Outcome 2 "Ecosystem resilience enhanced" that policies to promote the blue economy and the green economy will be advanced in the context of "Promote and expand natural resource-based industries and enterprises". This policy is also intended to enhance resilience in areas that are vulnerable to natural disasters and climate change. In addition, it calls for establishing market-based mechanisms to promote resource protection and ecosystem conservation, such as Payments for Ecosystem Services (PES).

Moreover, the preface to the same chapter states that the blue economy and the green economy will be developed and promoted to optimize livelihood improvement and job creation while advancing environmental improvement and social welfare.

In Chapter 5 of the PDP, the blue economy is primarily centered on measures that contribute to promoting the fisheries sector, and the policy direction is organized around achieving this through the promotion of sustainable resource use and the facilitation of investment in marine industries through infrastructure development and other initiatives. Chapter 15, meanwhile, positions the promotion of the blue economy and the green economy as a concept for improving the resilience of communities, such as those in coastal areas, that are vulnerable to disasters, while balancing environmental improvement and economic growth. In this study, the information will be used as basic reference material for selecting priority issues for the relevant stakeholders in the focus areas.

Blue economy, related sections presented in the strategies of Chapter 5 and Chapter 15 are shown in the following table.

Table 2.2-1 Policy Directions Related to the Blue Economy in the PDP

Chapter	Policy Directions
Chapter 5 Modernize Agriculture and Agribusiness	Full implementation of FMA plans and establishment of reference points and harvest control rules and measures for priority fish species
	Promotion of viable livelihood options for coastal communities to address the seasonality of fisheries, including adaptive, integrated, and multi-species aquaculture, engagement in agri-tourism activities, and other supplemental livelihood programs for fisherfolk and coastal communities (e.g., salt production)
	Establishment of electronic catch documentation and traceability for sustainable fisheries

	(e.g., tuna)
	Upgrading of Technology Outreach Stations and National Technology Centers and greater investments in hatcheries, mariculture parks, and feed mills
	Addressing the lack of modern ship and port facilities and other barriers to efficient inter-island transport and shipping
	Adoption of measures to secure the access of local fisherfolk to the country's fishing grounds
Chapter 15 Accelerate Climate Action and Strengthen Disaster Resilience	Strengthening collaboration among diverse stakeholders (government, private sector, academe, civil society, women, youth, indigenous peoples, etc.) to secure sustainable production, accelerate rehabilitation and conservation efforts, strengthen enforcement of environmental rules and regulations, and boost the contribution of ecosystems in climate change adaptation and mitigation.
	Increasing investments in activities that foster the sustainable management of natural resources, such as forest and coastal protection and rehabilitation, to generate more jobs and livelihoods.
	Promoting and developing more biodiversity-friendly enterprises and ecotourism sites within and outside protected areas.
	Revitalizing forestry investments by establishing more commercial forest plantations for timber and non-timber forest products, fuelwood, and high-value crops (e.g., coffee, cacao, and rubber).
	Scaling up marine-based industries and enterprises, such as mudcrab fattening, blue swimming crab culture, seaweed farming, and salt production, to provide employment opportunities and income for coastal communities.
	Establishing market-based mechanisms, such as payments for ecosystem services (PES).
	Ensuring increased compliance with mandatory regulations by government agencies and encouraging the private sector to adopt flexible methods to offset and compensate the ecological and social impacts of their operations and production, while improving social and environmental standards to fulfill corporate responsibility.

Source: Prepared by the survey team based on the Philippine Development Plan 2023–2028.

2.3 Institutional Frameworks and Plans for the Blue Economy in BARMM

In BARMM, laws and plans defining the blue economy have not yet been developed. However, the Bangsamoro Planning and Development Authority (BPDA) is currently conducting a mid-term review of the 2nd Bangsamoro Development Plan 2023–2028 (BDP 2023–2028), and intends to incorporate the concept of a "blue, green, and circular economy roadmap" going forward. The roadmap is envisioned to cover a six-year period (2026–2031). Although completion had originally been envisaged in 2026, progress has been delayed due to budget constraints. BPDA is currently drafting the Terms of Reference (TOR) and has indicated that it is seeking a partner that can support the formal launch of the framework.

Details for each sector are as follows (quoted from the TOR):

(1) Blue: Sustainable management and utilization of marine and freshwater resources, including fisheries, coastal tourism and biotechnology (sustainable management and utilization of marine and inland water resources, including applications to fisheries, coastal tourism, and biotechnology)

(2) Green: Strategies for environmental conservation, renewable energy deployment, sustainable

agriculture and biodiversity protection (strategy formulation for environmental conservation, social deployment of renewable energy, sustainable agriculture, and biodiversity conservation)

(3) Circular: Waste minimization, recycling, resource recovery, and promotion of eco-innovation across key industries (waste reduction, recycling, resource recovery, and promotion of cross-cutting eco-innovation across priority industries

In addition, a Bangsamoro Blue Economy Bill is reportedly being prepared by a member of the autonomous government's parliament (name unknown). The bill is currently under drafting, with the aim of deliberation in parliament in March 2026. It is envisaged that the bill will cover four sectors: tourism, transport, energy, and fisheries.

2.4 Key Stakeholder Institutions in Priority Blue Economy Sectors

2.4.1 National Government Agencies

(1) Department of Environment and Natural Resources (DENR)

DENR is the national government department responsible for the conservation, management, development, and utilization of the environment and natural resources. Through permitting and regulatory functions related to forests, minerals, public lands, water resources, and other areas, it is responsible for promoting sustainable industrial use and ensuring equitable allocation. The department is composed of six bureaus; among those particularly relevant to the blue economy, the Biodiversity Management Bureau (BMB) oversees biodiversity conservation and management, while the Environmental Management Bureau (EMB) is responsible for implementing environmental laws and policies.

(2) Bureau of Fisheries and Aquatic Resources (BFAR)

BFAR is an agency under the Department of Agriculture (DA) responsible for the development, improvement, management, and conservation of fisheries and aquatic resources. Under the Philippine Fisheries Code, BFAR is positioned as the primary implementing agency for fisheries administration. Its mandates include the formulation and implementation of the Comprehensive National Fisheries Industry Development Plan (CNFIDP), resource management, addressing IUUF (Illegal, Unreported, and Unregulated Fisheries), and fisheries technology extension and outreach.

(3) Philippine Fisheries Development Agency (PFDA)

PFDA is a government-owned and controlled corporation attached to the DA. With the aim of improving efficiency and quality in fish handling and distribution, PFDA is responsible for the development and operation of post-harvest infrastructure such as fish ports and fish markets, as well as freezing, cold storage, and ice-making facilities.

(4) National Fisheries Resarch and Development Institution (NFRDI)

NFRDI is a research institute under the DA and serves as BFAR's principal fisheries research arm. In addition to operating research centers, it provides information on fisheries research and conducts training and capacity-building activities.

(5) Department of Science and Technology (DOST)

DOST is the national government department that oversees science and technology policy formulation and program implementation. DOST is responsible for preparing national technology development plans and for allocating and managing research funding and implementation through sectoral councils covering agriculture, aquatic and natural resources (PCAARRD), health (PCHRD), and industry, energy, and emerging technologies (PCIEERD). It also promotes the social application of research outputs and public awareness and dissemination activities.

(6) Department of Transportation (DOTr)・Marine Industry Authority (MARINA)

The DOTr is the central government agency responsible for the promotion, development, and regulation of the transportation network, and has jurisdiction over securing transportation services. Additionally, MARINA is an agency under the DOTr that formulates and implements the Maritime Industry Development Plan (MIDP), and has jurisdiction over various permits and licenses related to maritime transport (such as vessel registration, route franchising, and issuance of certificates), as well as safety standards

(7) Philippine Coast Guard (PCG)

It is one of the attached agencies of the Department of Transportation (DOTr) and is responsible for maritime security, including search and rescue, law enforcement, maritime safety, and marine environmental protection

(8) Department of Finance (DOF) (Climate Finance Policy Group)

This ministry oversees fiscal policy. It formulates revenue policies with the aim of securing the financial resources necessary for implementing government programs that contribute to improving public welfare and promoting economic growth and stability.

(9) Bangko Sentral ng Pilipinas (BSP) (ESG Supervision and Surveillance Group)

The central bank was established under the 1987 Constitution and the New Central Bank Act of 1993. Its primary mandate is to maintain price stability conducive to growth and employment. It is responsible for conducting monetary policy, managing currency and credit, ensuring the soundness of the financial system, and supervising banks.

(10) Department of Economic Planning and Development (DEPDev) (Agriculture, Natural Resources, and Environment)

The Department of Economy and Development (DED) is the government's economic planning agency, reorganized in 2025 from the former National Economic and Development Authority (NEDA). Under the Economy and Development (ED) Council, it formulates continuous and integrated policies, plans, and programs for national development, ensuring alignment between national and local development plans. It also coordinates public investment and Overseas Development Assitance (ODA) programs, and monitors and evaluates plan implementation.

2.4.2 BARMM Government Agencies

(1) Bangsamoro Development Authority（BPDA）

BPDA is the BARMM government body that oversees planning and evaluation. Serving as the technical secretariat of the Bangsamoro Economic Development Council (BEDC), it coordinates and integrates the government’s development directions with plans formulated by each ministry, supports budget allocation, and conducts post-implementation monitoring and evaluation. It also provides technical support for policy formulation and coordinates development cooperation targeting BARMM.

(2) Ministry of Agriculture, Fisheries, and Agrarian Reform（MAFAR）

MAFAR is the BARMM ministry responsible for administration related to agriculture, fisheries, and agrarian reform. It formulates and implements the Integrated and Sustainable Development for Aquaculture / Capture (ISDA), a core program for the fisheries sector. ISDA is a development plan aimed at improving productivity and achieving sustainable development in aquaculture and capture fisheries, and it promotes measures such as technology extension, infrastructure development, resource management, and distribution/marketing support.

(3) Ministry of Environment, Natural Resources, and Energy（MENRE）

MENRE is the BARMM ministry responsible for the environment, natural resources, and potential energy resources. It leads efforts in the exploration, utilization, management, conservation, protection, and sustainable development of resources within the BARMM region. As implementing units, seven offices/divisions are established; among them, the Biodiversity, Ecosystems, Research and Development Services (BERDS) is responsible for biodiversity and ecosystem management as well as research and development.

(4) Ministry of Trade, Investment and Tourism (MTIT)

MTIT is the ministry responsible for comprehensively promoting BARMM’s economic development, investment promotion, and tourism development, and it plays a major role in the region’s growth strategy following the establishment of the autonomous government. In the blue economy context, it is closely related

to the tourism sector and leads initiatives such as blue tourism in Tawi-Tawi. Under the Bangsamoro Tourism Development Plan 2024–2023, BARMM is positioned as a Muslim-friendly destination, and tourism development policies are being advanced accordingly.

(5) Ministry of Transportation and Communications (MOTC)

MOTC is the ministry that oversees transport and communications infrastructure and supports the region's economy and development through the development of ports, airports, land transport, and communications networks. Following the establishment of BARMM, it was formed through the reorganization of the regional offices of the national transport and communications sector (DOTr) from the former ARMM period. It is also strongly relevant to the promotion of fisheries logistics and tourism through the development of transport infrastructure.

(6) Bangsamoro Port Management Authority (BPMA)

BPMA, an agency under MOTC, is responsible for the development, operation, and management of ports in BARMM. It inherited port-related functions from the former ARMM period. In 2025, Cotabato Port was transferred from the Philippine Ports Authority (PPA) to BPMA's management.

(7) Bangsamoro Economic Zone Authority (BEZA)

BEZA is a core agency under MTIT for promoting trade and investment within and outside BARMM, and is responsible for the development and promotion of economic zones. In particular, it is tasked with attracting export-oriented industries. Currently, the only operational economic zone is in Polloc, which includes a port and processing area (40 ha) and a development area (190 ha). A feasibility study was conducted with a view to attracting a seaweed processing plant to the zone; however, the actual investment has not yet been determined.

(8) Bangsamoro Agriculture and Fisheries Training Institute (BAFTI)

As an agency under MAFAR, BAFTI is a training institution established to provide specialized technical training across the agriculture and fisheries sectors. It was established in 2024 to enhance productivity and strengthen food security. Its main activities include: (1) technical training aimed at developing producers and trainers; (2) capacity development training for relevant organizations; and (3) extension activities to improve the skills and productivity of producers and cooperatives. BAFTI also provides training related to seaweed farming, which is expected to be further strengthened going forward. In addition, it offers training to enhance marketing functions.

2.5 Support by Other Donors

2.5.1 Support from Donor Countries

(1) United Kingdom

The UK government is implementing multiple projects related to the Blue Economy. Specific elements of these initiatives include developing infrastructure for small-scale fisheries and aquaculture, and studying the conservation and restoration of habitats related to marine resources and ecosystems. As a concrete support measure for coastal communities, the COAST Programme was launched in 2025. This program is implemented by ZSL (Zoological Society of London) and aims to support the Philippine government in achieving sustainable development of small-scale fisheries and community aquaculture, improving livelihoods for local communities, protecting critical ecosystems, and promoting sustainable growth of the local blue economy. As part of the program, a call for proposals for several million PHP grants for projects promoting sustainable fisheries and nature-based coastal solutions, known as the COAST Facility, commenced in September 2025.

On the policy front, in collaboration with the DENR, efforts are underway to develop a comprehensive national framework, including blue carbon. Specifically, support is being provided for the development and institutionalization of a roadmap through the National Blue Carbon Action Partnership (NBCAP), led by the Bureau of Biodiversity (BMB) under the DENR, with the goal of finalizing it by 2026. This framework is positioned as a key objective essential for the Philippine government to achieve its domestic goals in the blue economy sector. Simultaneously, while ensuring alignment with the country's emission reduction targets, discussions are advancing toward the introduction of blue carbon credits, leveraging NBCAP and the global initiative BCAP (Blue Carbon Action Partnership)[7] .

To deepen practical cooperation going forward, we plan to establish a technical working group with the Philippine government to address technical issues such as blue carbon. In doing so, we plan to collaborate with the Inter-Agency Technical Working Group on Sustainable Finance (ITSF, commonly known as the Green Force), led by the Philippine Department of Finance (DOF) and the Central Bank (BSP), with a view to incorporating blue carbon into the Philippine Sustainable Finance Taxonomy Guidelines (SFTG) to attract private investment.

(2) France

Agence Française de Développement (AFD) participated, together with Germany's Kreditanstalt für Wiederaufbau (KfW), in co-financing the Asian Development Bank (ADB)'s policy-based lending program entitled "Marine Ecosystems for Blue Economy Development Program (MEBED)," contributing EUR 200 million. For details of the program, see "2.4.2 (3) ADB" below. As technical assistance to MEBED, AFD is currently supporting the formulation of a joint administrative order between DENR and BFAR on the utilization and management of mangrove forests and is conducting a baseline study for blue carbon assessment of seagrass beds.

[7] The Blue Carbon Action Partnership (BCAP) is an international initiative supporting the conservation and restoration of blue carbon ecosystems. The National Blue Carbon Action Partnership (NBCAP) is the version optimized and implemented for the specific country of the Philippines.

In addition to the above program, AFD is undertaking other blue economy–related activities, including a pilot project on Vessel Monitoring System (VMS) technology, as well as ongoing work on sustainable aquaculture technology development in collaboration with the French Agricultural Research Centre for International Development (CIRAD) and the Southeast Asian Fisheries Development Center (SEAFDEC). Furthermore, with AFD support, the international NGO Rare conducted in 2024 a study on blue carbon ecosystems in the Philippines entitled "Landscape Analysis and Opportunity Study on Marine Biodiversity and Blue Carbon Ecosystems in the Philippines".

(3) Other Countries

In addition, several donor countries are providing support related to the blue economy.

Germany, as noted above, is co-financing the MEBED program through KfW together with AFD. Germany is also participating as one of the supporting agencies in the Wildlife Conservation Society (WCS) project "Marine Biodiversity and Support of Coral Fisheries in the Coral Triangle" (2020–2026), which is implemented with funding support from the European Union. This project aims to conserve the coral reef region known as the Coral Triangle, which extends from Southeast Asia to the Pacific.

The United States, through the United States Agency for International Development (USAID), has implemented the USAID Fish Right Program for BFAR and other relevant institutions, and in 2021 prepared the "IUUF Fishing Assessment Report." The report developed the Philippine IUU Fishing Index and Threat Assessment Tool (I-FIT) and provides recommendations for understanding the actual situation of IUUF and for designing effective countermeasures.

The EU is providing support to the BARMM regional government and is currently formulating the Bangsamoro Fisheries Industry Development Roadmap with the Ministry of Agriculture, Fisheries and Agrarian Reform (MAFAR) as the counterpart (C/P) agency. In addition, the EU has provided financing for the project "The Renewable Energy Technology for Seaweed Value-Added in Tawi-Tawi (RETS)." Through this project, hybrid power generation facilities (solar photovoltaic (PV) and diesel power generation) for seaweed farmers were constructed in Sitangkai and Sibutu in the Province of Tawi-Tawi.

2.5.2 Support by International Organizations

(1) Food and Agriculture Organization of the United Nations (FAO)

FAO supported the formulation of BFAR's small-scale fisheries guideline document, "National Plan of Action on the Implementation of the Small-scale Fisheries Guidelines in the Philippines (2025–2035)."

In addition, FAO is implementing the project "Development of Sustainable Fishery Value Chain in the Bangsamoro Autonomous Region in Muslim Mindanao (BARMM)," which aims to strengthen fisheries productivity in BARMM, increase fisherfolk incomes, and enhance sustainability. The project is funded by a contribution from Japan, amounting to approximately USD 4.74 million. The project is projected to be implemented for two years, from 2025. The specific objectives are as follows:

- Enhancing the efficiency and sustainability of the local fisheries value chain, and strengthening market linkages

- Strengthening the capacity of small-scale producers to increase income through entrepreneurship, the introduction of alternative species, and value addition through processing
- Building the capacity of small-scale fishers and their organizations in improved aquaculture and fishing technologies, as well as appropriate post-harvest handling practices
- Improving the knowledge and skills of MAFAR and LGU fisheries officers with respect to the monitoring and management of fishery resources

Planned activities include: (1) aquaculture development activities such as the introduction of new aquaculture species (e.g., sea cucumber and abalone), establishment of a seed production system, and pilot initiatives for the production of halal feed; (2) capture fisheries activities such as surveys and assessments of coastal fishery resources, introduction of ice-making machines and cooler boxes to improve quality, training on quality management, and development of processed products to increase value addition; and (3) fishery product quality management activities such as training on food safety, establishment of central and satellite laboratories, and training related to food safety and halal certification.

In addition, FAO supported BFAR in formulating the small-scale fisheries guideline, "National Plan of Action on the Implementation of the Small-scale Fisheries Guidelines in the Philippines (2025–2035)."

(2) World Bank (WB)

1) FishCoRe

The World Bank (WB) is supporting "The Philippine Fisheries and Coastal Resiliency (FishCoRe) Project" with the objective of strengthening the resilience of fisheries and coastal areas in Philippines. The project is financed through a loan of approximately USD 176 million, and is implemented by BFAR, Philippine Fisheries Development Authority (PFDA), and National Fisheries Research and Development Institute (NFRDI).

Target areas are Fisheries Management Area (FMA) 6 and FMA 9, within the national FMA framework that divides the country into 12 marine areas. The project is implemented over the period 2023–2029 and consists of the following three components:

① FishCRRM (Fisheries and Coastal-Resilient Resource Planning and Management)
Appropriate management of fisheries and aquaculture (including formulation and implementation of fisheries management plans, and strengthening Monitoring, Control and Surveillance (MCS) to reduce Illegal, Unreported and Unregulated (IUU) fishing, among others).

② MARLIN (Modern and Resilient Livelihood Investment)
Value chain and infrastructure support (e.g., improvements to landing sites and development of ice-making facilities).

③ SuPrIM（Support to Project Implementation and Management）
Project management (including establishment of offices in Metro Manila and in local/field locations).

2) Piloting Decarbonized Inter-Island Ferry Services in the Philippines

WB is conducting a project titled "Piloting Decarbonized Inter-Island Ferry Services in the Philippines" as

part of the Global Facility to Decarbonize Transport program (GFDT), which is a multi-donor trust fund that provides financial and technical assistance to the World Bank teams promoting transport decarbonization in low and middle-income countries.

- Commencement date: May 2025
- GFDT grant amount: USD 100,000
- Activities:
  - To support the development of a business plan and financial model for a decarbonized inter-island ferry pilot project
  - To conduct a feasibility study, develop a financing strategy and explore viable clean fuel and vessel technologies for selected pilot routes
  - To develop a flexible financial model to assess investment risks, operating costs, and potential public-private partnerships

3) The Offshore Wind Roadmap for the Philippines

WB supported the development of a roadmap for offshore wind the Philippines under the joint Energy Sector Management Assistance Program-International Finance Corporation (ESMAP-IFC)'s Offshore Wind Development Program. The Offshore Wind Roadmap for the Philippines was published by DOE and WB in 2022. The roadmap shows that with the right long-term vision, infrastructure development, investment and policies, the Philippines has the potential to install 21GW of offshore wind power.

(3) Asia Development Bank (ADB)

ADB is currently implementing a policy-based loan, the Marine Ecosystems for Blue Economy Development Program (MEBED), as its primary form of support. MEBED consists of three areas: (1) integrated coastal management, (2) wastewater management and measures to address plastic waste, and (3) natural capital accounting8. It will be implemented in stages over two phases: Subprogram 1 (May 2023 to July 2025) and Subprogram 2 (August 2025 to August 2027). The budget for each phase is USD 500 million. In addition, Subprogram 1 is co-financed by AFD and KfW, with EUR 400 million provided. The agency responsible for implementing the program is the Department of Finance (DOF), and participating agencies include the Department of Environment and Natural Resources (DENR), the Bureau of Fisheries and Aquatic Resources (BFAR), and the Philippine Statistics Authority (PSA), among others.

(4) United Nations Development Programme (UNDP)

The UNDP has set out an overarching strategy for ocean and blue economy support called "Ocean Promise," targeting more than 100 coastal countries including the Philippines, with the aim of realizing a sustainable

[8] A government statistical system that systematically measures the value and condition of a country's or region's natural assets ("natural capital") and records them in numerical form through accounting.

ocean economy by 2030. In line with this approach, UNDP is supporting the Government of the Philippines, together with the UK government, to strengthen its sustainable finance framework, and is also cooperating with the Partnerships in Environmental Management for the Seas of East Asia (PEMSEA), as described later. In addition, in January 2025, UNDP, ASEAN, and the Government of Japan launched the "ASEAN Blue Carbon Finance Profiling (ABCF) Project." The project leverages the latest scientific knowledge, satellite technology, and field surveys to identify, map, and assess carbon stored in marine and freshwater ecosystems. It aims to develop innovative financing approaches that promote climate resilience and inclusive economic growth across all ASEAN member states and Timor-Leste.

(5) Partnerships in Environmental Management for the Seas of East Asia (PEMSEA)

PEMSEA is an international organization based in the Philippines, established in 1994. It serves as the coordinating mechanism for the Sustainable Development Strategy for the Seas of East Asia (SDS-SEA). Its main activity is the promotion of Integrated Coastal Management (ICM), and in 2011 it issued the "Dongying Declaration" on promoting the blue economy through ICM. In recent years, it has implemented programs such as the "PEMSEA Blue Carbon Program," which aims to develop a blue carbon certification scheme in the East Asian region; "ASEAN ENMAPS (Effectively Managing Networks of Marine Protected Areas in Large Marine Ecosystems in the ASEAN Region)" concerning networks of marine protected areas (MPAs); and "Reducing Plastics in the East Asian Seas Region," a program to reduce marine plastic litter.
With regard to its governance structure, PEMSEA is composed of broad-based cooperation among 11 government partners (including Japan) and 22 non-government partners (Japanese institutions include the Sasakawa Peace Foundation Ocean Policy Research Institute and the International EMEX Center, among others), as well as the Partnership Network of Local Capacity Development Centers (PNLC) and the Partnership Network of Local Governments (PNLG). Japan has participated in PEMSEA's activities since 2002, with the Ministry of Land, Infrastructure, Transport and Tourism serving as the responsible ministry.

Also, PEMSEA supported the implementation of the project "Ship Waste Management in Philippine Ports."

Duration: December 2020 – June 2022
Location: Batangas Port (in partnership with PPA)
Objective: To sustainably reduce the discharge of ship wastes and cargo residues into Philippine seas and coastal areas and improving the availability and utilization of port reception facilities and handling of ship waste, while ensuring the smooth operation of maritime traffic.
Outcomes:

- Mandatory advanced online waste notification system: Implemented through the Philippine Ports Authority's (PPA) Internet-based Port Operations and Terminal Receipt System (IPORTS)
- Incentivizing cost recovery system: For short-distance vessels (such as domestic ferries) that call multiple times per day, payment terms (such as lump-sum deferred payment) based on negotiations with onshore reception facilities have been introduced, rather than waste fee settlement for each port call.

- Ship waste management manual: Developed and implemented at the Port of Batangas in 2022. PPA is currently considering incorporating this manual into the "PPA Orange Book on Safety, Health, Environmental Management and Handling of Dangerous Goods in Ports."
- Capacity development on ship waste management: Implemented in collaboration with the PPA Training Institute. In May 2022, seminars were held in Batangas and Manila for stakeholders from the Port of Batangas, Manila North Port, and Manila South Port. In September 2022, a seminar was held in Davao for stakeholders from nine ports under the jurisdiction of the PPA in Mindanao and Bohol, as well as the Port of Cebu.
- Legal and policy assessment and recommendations for improving the current regulatory framework on ship waste management: A review of existing policies, laws, and guidelines was conducted. Based on the results of the assessment, it was recommended that domestic legislation be enacted to implement MARPOL 73/78 (International Convention for the Prevention of Pollution from Ships) domestically.

(6) Southeast Asian Fisheries Development Center (SEAFDEC)

SEAFDEC (Southeast Asian Fisheries Development Center) is an international organization whose mission is “to promote and facilitate coordinated actions among member countries to ensure the sustainability of fisheries and aquaculture in Southeast Asia.” Its 11 member countries are Brunei, Cambodia, Indonesia, Japan, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam. The headquarters of its Aquaculture Department (AQD) is in Iloilo City on Panay Island in the Philippines.

The main activities of AQD include research, technology development, training and technical guidance, and information dissemination in the aquaculture sector, such as broodstock development and seed production, promotion of environmentally responsible aquaculture, and diagnosis and control of fish diseases. Part of its research funding is provided by the Japan Trust Fund (JTF), and for initiatives such as sea cucumber seed production it has formed a research partnership with the Japan International Research Center for Agricultural Sciences (JIRCAS).

Chapter3 Japan's Initiatives on the Blue Economy

3.1 Trends in the Blue Economy in Japan

3.1.1 Relevant Laws and Policies

(1) The Basic Plan on Ocean Policy

In Japan, there is no dedicated legislative instrument specifically designated as a "Blue Economy Act." However, on the Third Basic Plan on Ocean Policy (2018), under the policy pillar of "promoting industrial use of the ocean," identifies as a basic policy the promotion of economic activities in a manner that ensures consistency with the conservation of the marine environment. Furthermore, the Fourth Basic Plan on Ocean Policy (2023) explicitly sets forth "building a sustainable ocean" as a basic policy. Measures implemented under the Plan, including initiatives toward decarbonization, are intended to achieve compatibility between ocean-based economic activities and the sustainable use of the marine environment; in this broad sense, the Plan may be positioned as a national framework that incorporates the principles of the blue economy.
The specific basic policy directions under the Fourth Basic Plan on Ocean Policy with respect to "building a sustainable ocean" are as follows:

① Contribution to carbon neutrality
- Utilization of ocean-derived clean energy
- Decarbonization of supply chains
- Promotion of CO_2 capture and storage

② Conservation, restoration, and maintenance of the marine environment
- Conservation of the marine environment based on international initiatives such as the SDGs
- Promotion of initiatives for the creation of productive and healthy seas
- Promotion of integrated management in coastal areas

③ Appropriate management of fisheries resources
- Promotion of new resource management grounded in scientific knowledge
- Establishment of information provision systems for fishing operations through smart fisheries utilizing ICT
- Strengthening of monitoring frameworks and enforcement against illegal operations by foreign fishing vessels, among others

④ Enhancement and utilization of the knowledge base underpinning these initiatives
Implementation of global-scale observations, including in the Arctic and the Antarctic
- Promotion and strengthening of research on marine ecosystem understanding, among other area
- Contribution to global frameworks at the worldwide level

(2) Basic Plan for Fisheries

The New Basic Plan for Fisheries (2022) aims to promote the fisheries sector as a growth industry under the principles of sustainability and to revitalize fishing communities. The Plan is structured around the following

three pillars:

① Steady implementation of resource management, considering adaptation to changes in the marine environment

- MSY-based stock assessments[9]
- Expansion of TAC and introduction of IQ
- Measures to address IUU, among others

② Realization of the fisheries sector as a growth industry, considering increasing risks surrounding the sector

- Promotion of large-scale offshore aquaculture systems and land-based aquaculture
- Diversification of target species and fishing methods, among other measures

③ Promotion of revitalization of fishing communities that support local regions

- Revitalization of fishing communities through the incorporation of industries other than fisheries, including “Umigyo” (marine-based businesses), among other measures

3.1.2 Examples of Activities Related to the Blue Economy in Japan

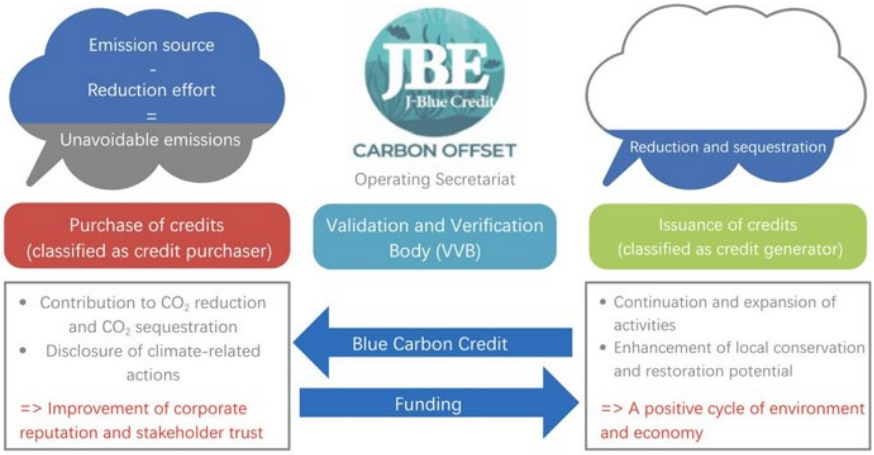
(1) Blue Carbon Credits

Japan has the "J-Blue Credit" system, as shown in Figure 3.1-1. This system quantifies blue carbon absorbed and stored by marine ecosystems[10] and utilizes it as tradable credits. Trading occurs through a matching format facilitated by JBE. Several times a year, JBE publicly solicits companies wishing to purchase certified credits. Interested buyers submit bids specifying their desired price and quantity. JBE then matches the conditions of sellers (project developers) with buyers (credit purchasers) to determine the optimal pairing. Once a match is confirmed, a sales contract is concluded under JBE's mediation.

J-Blue Credit trading commenced in 2020, with the Japan Blue Economy Technology Research Association (hereinafter "JBE") handling the certification, issuance, and management of J-Blue Credits. Eligible projects involve activities such as creating, restoring, maintaining, and mitigating degradation of ecosystems in Japanese seaweed beds, mangroves, salt marshes (tidal flats), and artificial substrates (structures, aquaculture facilities, etc.). In addition to carbon sequestration and storage, these projects contribute to diverse environmental values, including water purification and increasing fish numbers and species diversity (ensuring biodiversity).

[9] MSY : Maximum Sustainable Yield, A concept for fisheries management whereby fishery resources are managed on the basis of biological information.
TAC : Total allowable catch, A species-specific numerical limit established for the purpose of resource management.
IQ : Individual Quota, An annual catch allocation assigned to each fisher or fishing vessel.

[10] This system is certified through rigorous review by an independent third-party committee. Aligned with international carbon market standards, it evaluates "long-term storage exceeding 100 years." By ensuring "permanence of removal" based on scientific objectivity, it guarantees high credibility for credits in the market.



Source: JBE

Figure 3.1-1 J-Blue Credit System

As shown in Table 3.1-1, as of March 2025, there are 61 J-Blue Carbon Credit projects in total. Among these, fishermen are the most common credit creators (52 projects), followed by local governments (42 projects), private companies (32 projects), local associations, etc. (18 projects), and universities (6 projects). In the creation of J-Blue Carbon Credits, the involvement of locally rooted fishermen and municipalities plays a particularly important role.

Table 3.1-1 Credit Generators and Proportion

Credit Creator	Percentage
Fishermen	85% (52 out of 61 cases)
Local Government	69% (42 out of 61)
Private Companies	52% (32 out of 61)
Regional unions, etc.	30% (18 out of 61)
Universities	10% (6 out of 61)

Note: Multiple stakeholders may be involved in a single project
Source: Prepared by JICA Study Team based on Sasakawa Peace Foundation materials

Notably, in its April 2024 report to the United Nations on greenhouse gas emissions and removals, the Japanese government included removals from seagrass beds and kelp beds—both blue carbon ecosystems—for the first time globally. The estimation methodology was developed by the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) and the Ministry of the Environment (MOE), demonstrating Japan's technological leadership in the blue carbon credit field.

(2) Blue Bonds

To date, six Blue Bonds have been issued in Japan: three by private companies and three by local governments. The amounts and uses of the issued Blue Bonds are shown in Table 3.1-2.

Table 3.1-2 Blue Bond Issuance Record in Japan

Company/Municipality Name	Amount	Purpose
Maruha Nichiro Corporation	5 years / 5 billion yen	To be allocated to the salmon land-based aquaculture project.
MetaWater Co., Ltd.	5 years / 10 billion yen	To be allocated to concession projects such as the Miyagi Prefecture Integrated Water and Sewage Public-Private Partnership Operation Project and the Kumamoto Prefecture Ariake-Yatsushiro Industrial Water Supply Operation Project.[11]
Mitsui O.S.K. Lines, Ltd.	5 years / 10 billion yen	To be allocated for investments in equipment and R&D related to marine renewable energy projects, GHG emission reduction in shipping, pollution control, underwater noise reduction, etc.
Iwate Prefecture	5 years / 5 billion yen	To be used for green projects that contribute to climate change mitigation or adaptation, and projects that contribute to the conservation of marine resources and ecosystems.
Chiba City	10 years / 3 billion yen	Allocated to marine conservation and water quality improvement projects.
Tokyo City	5 years / 70 million yen	Allocated to the Tokyo Port Blue Carbon Development Project and Blue Infrastructure Development Project.

Source: JICA Study Team

Maruha Nichiro became the first Japanese company to issue a blue bond in 2022. For this issuance, the company developed the issuance scheme with support from Mizuho Securities. At the time, there was no prior issuance of blue bonds within Japan. Therefore, Mizuho Securities researched and verified precedents in other countries and blue finance guidelines established by international organizations. While regularly confirming the opinions of third-party evaluators, they achieved a product design recognized by investors as a "blue bond." This example of private companies and financial institutions collaborating to build the blue bond issuance process could serve as an effective model even in the Philippines, where institutional frameworks are still developing. Furthermore, to promote blue bond issuance by private companies in the Philippines, the role of financial institutions is critically important. Therefore, capacity building on the financial institution side must proceed in parallel, including the development of the necessary expertise and systems for issuance support and product design.

As the first Blue Bond issued by a local government, Iwate Prefecture issued a "Green/Blue Bond" (issued amount: 5 billion yen, green projects contributing to climate change mitigation or adaptation, and blue projects contributing to the conservation of marine resources and ecosystems) in July 2023. Furthermore, in

[11] Concession projects (public facility operation projects) refer to projects where a public entity retains ownership of a public facility that charges usage fees, while granting the operational rights to a private operator.

October 2023, Chiba City issued the first blue bond among local governments in Japan, with all proceeds allocated to blue-eligible projects (3 billion yen for blue-eligible projects such as a purification center development project). Subsequently, in 2023, the Ministry of the Environment began considering the disclosure of nature-related financial information. In addition, activities involving both the public and private sectors are becoming more active, such as the conclusion of Japan's first "Blue Sustainability Loan" (8.8 billion yen, for the development of a land-based recirculating aquaculture system for Atlantic salmon), led by Mizuho Bank, Shizuoka Bank, and the Development Bank of Japan.

(3) Umigyo and Satoumi

"Umigyo" refers to a concept that generate local vibrancy and income by utilizing regional resources related to the sea and fisheries. In the Fisheries Basic Plan, it is defined as "projects that utilize the value and attractiveness of the local resources of the sea and fishing communities." Its objective is to create new opportunities for exchange and consumption that respond to domestic and international demand by maximizing the use of local resources and existing fishing port facilities, while ensuring harmony with fisheries, thereby contributing to local vibrancy and the creation of income and employment. Specific initiatives include the sale of fishery products and the operation of eateries, experiential tours such as recreational fishing and angling programs, and fisheries-experience activities, among others, that utilize local natural resources and assets of fishing communities. Concrete examples nationwide are presented in Table 3.1-3.

Table 3.1-3 Examples of Umigyo Initiatives

Prefecture	Fish Port・Agency	Activity	Description
Kanagawa Prefecture, Miura City	Misaki Fishing Port; Miura Umigyo Public Corporation Co., Ltd.	Comprehensive umigyo initiatives promoted by Miura City, which advocated "umigyo"	• Providing experiential opportunities from the sea, including sightseeing boats, with the fishing port as a hub • Development of "showcasing fisheries" elements through activities such as observing tuna transactions at the fish market • Creation of multiple stay-and-consumption opportunities by combining an offshore fishing pond and a fisheries cooperative-operated diner • Enhancement of circulation among the port, market, dining, and experiential components, thereby creating vibrancy and expanding local consumption
Chiba Prefecture	Hota Fishing Port	Development of a cooperative-operated diner and collaboration with a roadside station	• Implementation of direct provision (sales and dining) by the fisheries cooperative, centered on a cooperative-operated diner • Handling small volumes of diverse seafood products in menus, etc., to expand utilization

			(broadening sales channels and consumption opportunities) • Formation of visitor purchasing flow lines through collaboration with visitor-attractor facilities such as roadside stations
Hyogo Prefecture	Mega Fishing Port	Establishment of a direct sales outlet and related facilities, and fisheries observation initiatives by a remote-island fisheries cooperative	• Establishment of JF Boze / Himeji Maedore Market within Mega Fishing Port • Promotion of proximity between the landing area and consumption through the development of a direct sales outlet and diner (highlighting the value of freshness) • Consolidation of observation, purchasing, and dining functions within the same area, aiming to increase dwell time and consumption opportunities
Osaka Prefecture	Tajiri Fishing Port	Expansion from a Sunday morning market to a portfolio of integrated businesses	• Establishment of an early-morning market utilizing the fishing port, creating regular opportunities for visitor attraction • Development of fisheries experience programs and seafood barbecues, diversifying reasons to visit through the combination of "food" and "experience" • Addition of water-surface utilization services such as a marina and personal watercraft storage facilities, promoting multifunctional use of port functions
Wakayama Prefecture	Minoshima Fishing Port	Establishment of a direct sales outlet and development of barbecue facilities in collaboration with private companies	• Establishment of a port-operated direct sales outlet, expanding sales opportunities for local seafood products • Handling of agricultural, forestry, and livestock products as well as local specialties, aiming for one-stop provision of regional products • Providing meals using local seafood at a diner, forming mutual customer flows between direct sales and dining • Promotion of added value for on-site consumption through the development of barbecue facilities in collaboration with private companies, among other measures
Fukui Prefecture	Takahama Fishing Port	Development of a direct sales outlet and diner in coordination with town development	• Development of a multifunctional facility comprising a seafood direct sales outlet and diner, strengthening the function as an exchange hub • Renovation of a fisheries-owned processing plant to improve the foundation for processing and provision • Promotion of added value for local seafood through integrated operation of processing,

			sales, and dining
Miyagi Prefecture	Kesennuma Fishing Port	Diverse initiatives aimed at integrating fisheries and tourism	• Planning of restoration and development of fishing port facilities with the objective of integrating fisheries and tourism • Pursuit of recovery of landing functions and reconstruction of visitor-acceptance functions (e.g., observation and circulation) • Orientation toward utilization of port space that contributes to reconstruction and reactivation of the local economy
Shizuoka Prefecture	Tago Fishing Port; Nishina Fishing Port	Establishment of a direct sales outlet and promotion of anglers' use of fishing ports through an application	• Establishment of an agricultural and marine products direct sales outlet within the fishing port, providing purchasing opportunities at the port • Sale of low-value and underutilized fish that cannot be shipped, promoting utilization of underutilized resources • Promotion of visits by anglers and increased fishing port use through application demonstration testing
Mie Prefecture	Owase City (Sugari Town); Kumano City	Corporate entry into fisheries and umigyo initiatives	• Corporate entry into set-net fisheries and seafood processing within the region • Aim to circulate value added within the region by developing activities from harvesting to processing locally • Promotion of organizational arrangements that contribute to business continuity and employment retention through the introduction of external human resources and capital
Fukui Prefecture	Naikai Fishing Port	Development of fisheries experience facilities for the implementation of educational trips	• Development of fisheries experience facilities intended to host educational trips, enhancing experiential exchange functions • Creation of visiting/exchange populations through the formulation of experiential programs aligned with learning needs • Orientation toward fostering regional understanding through experiences and promoting local consumption and the formation of long-term relational engagement
Wakayama Prefecture	Taiji Fishing Port	Collaboration with tourism centered on whales	• Utilization of sea-surface enclosures and the bay to conduct holding and release operations for small cetaceans • Development of a diner utilizing local seafood products such as whale meat, promoting linkage with tourism • Providing value through a combination of observation, learning, and food centered on

			a regional resource (whales)
Nagasaki Prefecture	Miura Bay Fishing Port	Provision of learning opportunities about the sea through boat tours led by fishers	• Providing learning opportunities through boat tours and related activities led by fishers • Promotion of on-site understanding of environmental issues through observation of stranded litter, typhoon damage, the condition of breakwaters, etc. • Implementation of programs including comparisons between seaweed beds and areas affected by isoyake (loss of seaweed beds), contributing to environmental education and awareness-raising

Source：Fisheries Agency

Satoumi is defined as “a coastal area where biological productivity and biodiversity has increased through human interaction” (Source: Ministry of the Environment (MOE), “Satoumi Net”). The concept of achieving both environmental conservation and improved livelihoods can be regarded as one of Japan’s representative initiatives in the blue economy. In the context of the Basic Plan on Ocean Policy, Satoumi is positioned as an approach that, under integrated coastal management based on the linkages among forests, villages, rivers, and the sea, seeks to improve the marine environment through human–nature relationships while comprehensively promoting biodiversity conservation, marine litter countermeasures, and other measures. In addition, Satoumi creation activities are classified into the seven types shown in Table 3.1-4.

Table 3.1-4 Types of Satoumi Creation Activities

Type	Overview
Integrated watershed type	Activities that view forests, rivers, rural areas, and the sea as an integrated system and, through actions in mountain forests, rivers, urban areas, and other parts of the watershed, aim to restore water environments in coastal areas to the formerly rich condition and to create spaces where citizens can interact with the water environment.
Mitigation type	Activities in which project proponents take the lead in creating environmental value to mitigate and/or compensate for environmental impacts associated with urban development and similar projects.
Fishing community type	Activities led primarily by fishers and related stakeholders to improve fishing-ground environments, including through the restoration and creation of seagrass beds (e.g., eelgrass) and the collection of seabed litter.
“Chinju-no-umi” (sacred/guardian sea) type	Activities that conserve natural productivity and biodiversity by restricting human access and fishing in specified islands or sea areas for a certain period and designating them as sacred areas, thereby maintaining conditions with minimal human intervention.
Experiential learning type	Activities that provide hands-on, experience-based learning using the marine environment and living organisms at environmental education facilities near urban areas, fishing communities, and other sites, with the objective of enabling many citizens to learn about and engage with the sea and nature.
Urban type	Citizen-participatory activities that utilize remaining natural environments such as tidal flats and seaweed beds, with the objective of restoring marine natural environments that have been lost due to land reclamation and other developments in urbanized areas.
Composite type	Wide-area activities targeting part of a region or an extensive area, in which multiple stakeholders collaborate to undertake cleanup and beautification

	initiatives for the purpose of regional environmental conservation.

Source: Ministry of Environment

In addition, specific examples of Satoumi initiatives include activities such as those presented in the following table.

Table 3.1-5 Practical Examples of Satoumi Creation Activities

Location	Title (Implementing Body)	Initiative Example	Type
Aomori Prefecture	Beach Seine-Net Fishing Experience (Hiranai Town Fisheries Cooperative Moura Branch)	Provision of beach seine-net fishing experiences for children from local elementary schools and welfare facilities, with the aims of stimulating interest in the sea and fisheries and utilizing the program as an opportunity for community exchange.	Experiential learning type Fishing community type
Miyagi Prefecture	NPO Mori wa Umi no Koibito (Forest Is a Lover of the Sea) (NPO Mori wa Umi no Koibito)	In response to issues such as red-tide impacts, continuation of tree-planting activities in the upper reaches of the watershed with environmental experiential learning programs for elementary and junior high school students were held.	Integrated watershed type
Osaka Prefecture	Creation of Seaweed Beds Using the Seawall of Kansai International Airport (Kansai International Airport Co., Ltd.; Kansai International Airport Land Development Co., Ltd.)	For the creation of habitats for marine organisms in Osaka Bay, seaweed beds were created on gently sloped seawalls using structures such as small-wave blocks for seaweed attachment and seaweed-reef blocks.	Mitigation type
Chiba Prefecture	Chiba Prefecture Sanbanze Restoration Plan (Chiba Prefectural Government)	Integrated implementation of measures, including pilot projects and studies, countermeasures for sewage and industrial wastewater, environmental education and events, and surveys of the natural environment and database development, with the objectives of restoring the natural environment and restoring a "sea that people can enjoy and feel close to."	Urban type
Okayama Prefecture	Considering the watershed through marine litter: "Polishing the Jewel of the World – the Seto Inland Sea" (NPO Green Partner Okayama)	In addition to establishing a system for the collection and treatment of marine litter, the initiative focuses on source prevention and, in collaboration with watershed residents, promotes conservation and restoration across the watershed, including efforts such as "not polluting rivers" and "nurturing forests."	Composite type
Oita Prefecture	Resource management through traditional fishing restrictions, etc. (Oita Prefecture Fisheries Cooperative Association Himeshima Branch)	For the promotion of fisheries as a core local industry, initiatives are undertaken including the development of fishing port infrastructure, placement of artificial reefs, and release of juvenile fish, in addition to traditional fishing restrictions and related resource management measures.	Chinju-no-umi (sacred/guardian sea) type
Okinawa Prefecture	Mozuku Aquaculture and Coral Reef Conservation	To achieve both the growth of cultured mozuku and the health of coral reefs, the	Fishing community type

	(Onna Village Fisheries Cooperative)	initiative undertakes coral reef conservation measures, including efforts to prevent red-soil runoff.	

Source: Ministry of Environment

(4) Shipping and Ports

1) Initiatives in the Marine Sector

Internationally, the 2015 Paris Agreement (COP21) established the international goal of limiting global temperature rise to "below 1.5 to 2 degrees Celsius" above pre-industrial levels, requiring all countries to submit and update greenhouse gas (GHG) reduction plans. The International Maritime Organization (IMO) adopted the "GHG Reduction Strategy" in 2023, calling for net-zero greenhouse gas emissions by 2050, putting into effect regulations requiring reduction in vessel emissions. Furthermore, in Japan, then-Prime Minister Suga's policy speech at the Diet session in October 2020 included "Carbon Neutral Declaration", calling for total GHG emissions to be reduced to zero by 2050. In response, the Ministry of Economy, Trade and Industry (METI), the Ministry of Land, Infrastructure, Transport and Tourism (MLIT), and the Ministry of Environment (MOE) have collaborated to formulate the "Green Growth Strategy". The Strategy includes action plans for 14 key sectors expected to grow from the perspective of industrial and energy policy. The following are key initiatives in the maritime industry, which is one of the priority sectors.

- Promoting technological development towards the deployment of zero-emission ships
- Establishing a framework to promote the adoption and proliferation of energy-saving, low-CO2 emission ships
- Promoting technological development to improve the efficiency of LNG-fueled ships

Furthermore, the Maritime Bureau of MLIT maintains that Japan, as a global leader in shipping and shipbuilding, should play a proactive role in international climate change mitigation. This involves contributing to international efforts in addressing global warming while promoting the sustainable growth of maritime trade. To this end, the Maritime Bureau launched the "International Shipping GHG Zero Emissions Project" in 2018, which is a collaboration spanning industry, academia and public sector. The initiatives are currently being carried out by the Japan Ship Technology Research Association, co-hosted by MLIT, and with the support of the Nippon Foundation.

Utilizing the New Energy and Industrial Technology Development Organization (NEDO)'s Green Innovation Fund, "Development of Next-Generation Ships" is being promoted. Major initiatives include the development of hydrogen-fueled ships (FY2021-FY2030), ammonia-fueled ships (FY2021-FY2027), and methane slip reduction technology for LNG-fueled ships (FY2021-FY2027). In addition, methanol-fueled ships and diesel-fueled (bio- and synthetic fuel) ships, as well as building a fuel supply chain are under development.

2) Initiatives in the Port Sector

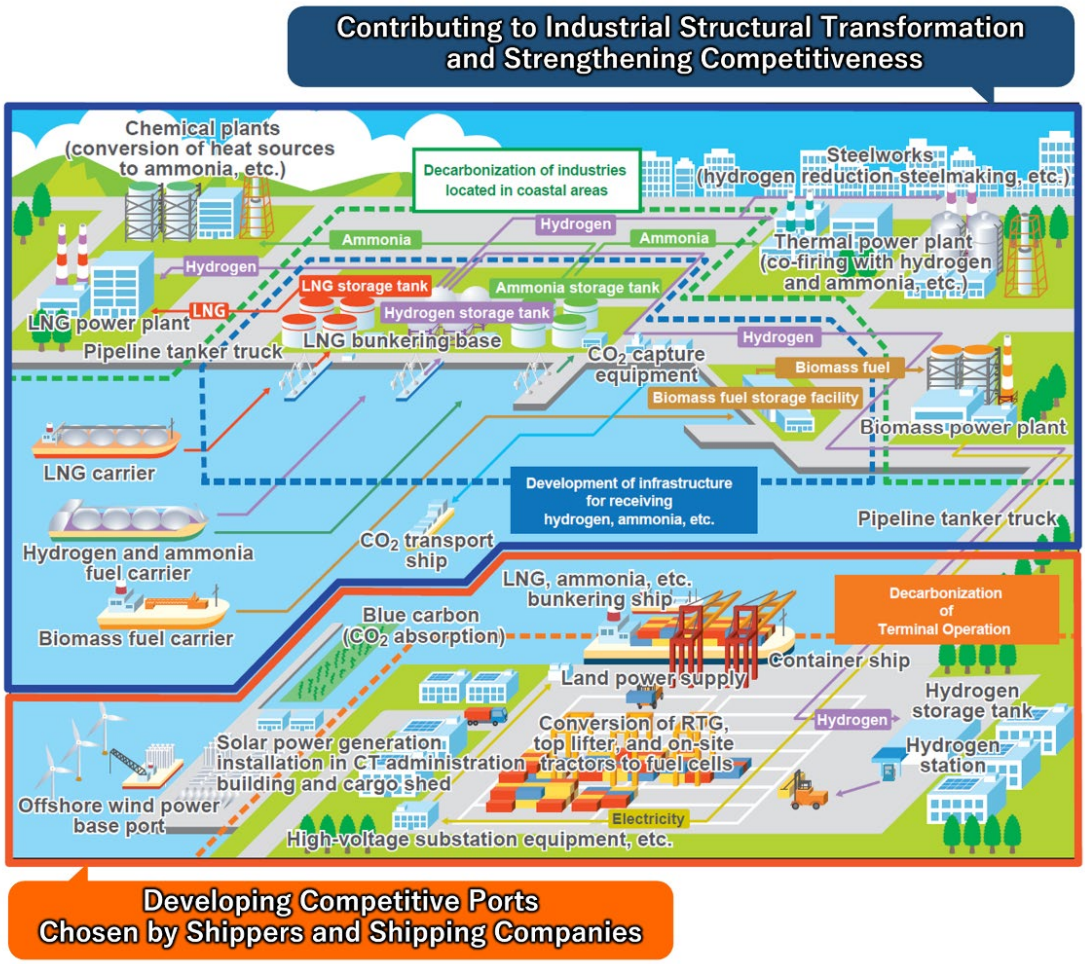
As mentioned above, amidst accelerating global efforts to address climate change, then-Prime Minister

Suga's "2050 Carbon Neutrality Declaration" has prompted the government, local governments and the business community to proactively implement measures to reduce GHG emissions.

Ports, despite being logistics hubs, are a major source of GHG emissions as they are home to multiple sources of GHG emissions. Specifically, CO2 is emitted by ships (at anchor and underway), cargo handling equipment, truck transport and other sources. Industrial facilities surrounding ports such as refineries, warehouses and power plants, are also sources of emissions. Since ports are the hubs of energy, logistics and industry, they are the ideal spaces to implement decarbonization measures and are also expected to play as renewable energy or alternative fuel supply bases and supply chain hubs for hydrogen and ammonia.

In ports, it is necessary to develop competitive ports that are chosen by shippers and shipping companies by promoting initiatives such as decarbonization of port facilities in response to the needs of shippers and others who are working on decarbonization of the entire supply chain. Furthermore, industries that emit large amounts of greenhouse gases are gathered in ports and coastal areas. It is important to contribute to the transformation of industrial structures and the strengthening of competitiveness by developing the necessary environment in ports for the supply of hydrogen, ammonia, etc. required for the energy transition of industries. Therefore, to contribute to the strengthening of the competitiveness of Japan's ports and industries and the realization of a decarbonized society, the Ports and Harbours Bureau of MLIT is promoting the establishment of "Carbon Neutral Ports (CNP)" initiatives that aim to enhance decarbonize terminal operations and develop an environment for receiving next-generation fuels such as hydrogen, ammonia, etc.

As part of the initiatives to promote the development of CNP, the Ports and Harbours Bureau of MLIT established the "Study Group for the Formation of Carbon Neutral Ports (CNP) in June 2021, bringing together port administrators, shipping companies, local businesses and local governments to launch a regional initiative aimed at achieving net-zero GHG emissions at ports. Subsequently in 2022, the Port and Harbor Act was amended to require port administrators to establish "Port Decarbonization Promotion Council" with public and private sector stakeholders and to develop "Port Decarbonization Promotion Plan"" to implement decarbonization initiatives. As of 2025, 99 ports have established the Port Decarbonization Promotion Councils, and 52 of them have already formulated their Port Decarbonization Promotion Plans.



Source：MLIT, Ports and Harbours Bureau, WEB Site

Figure 3.1-2 Image of Carbon Newtral Port (CNP)

Additionally, the “CNP Certification (Container Terminal)” system was launched in March 2025 with the aim of promoting CNP efforts by making decarbonization efforts at terminals more transparent and objectively evaluating them.

As of the time of creation of this report, the following terminals have obtained “CNP Certification (Container Terminal)”

Table 3.1-6 List of ports and terminals that have obtained CNP Certification

Port Terminal	Certification Level	Initiatives
Island City Container Terminal, Hakata Port	Level 5+	• Formulation of the Hakata Port Decarbonization Initiative • Introduction of 6 STS Cranes with Inverter Control Systems • Conversion of 10 Yard Lighting Units to LED • Introduction of 26 eRTG Cranes • Implementation of the HiTS Gate Processing System
Kawasaki Container Terminal, Kawasaki	Level 4+	• Formulation of Port Decarbonization Promotion Plan

Port		• LED conversion of on-site lighting • Introduction of inverter-type gantry cranes • Introduction of CO_2-free electricity • Introduction of hydrogen-converted transfer cranes
Nabeta Pier Container Terminal, Nagoya Port	Level 3++	• Formulation of the Nagoya Port Decarbonization Promotion Plan • Provision of incentives to reduce port dues for vessels with superior environmental performance • Electrification and remote controlled RTG • Conversion of yard lighting to LED • Introduction of inverter-controlled gantry cranes
Dream Island Container Terminal C10, C11, C12, Osaka Port	Level 2++	• Introduction of hybrid RTGs • Conversion of container yard lighting to LED • Introduction of STS with inverter system • Implementing measures to prevent congestion in front of the gate and backlogs in the yard (Introduction of CONPAS)
Nanko Container Terminal C-1/4, Osaka Port	Level 2+	• Formulation of Decarbonization Promotion Plan for the Ports of Osaka, Sakai-senboku, and Hannan (Formulated by Osaka City and Osaka Prefecture)) • Introduction of hybrid RTG • Conversion of container yard lighting to LED • Introduction of STS with inverter system
Container Terminal, Port of Takamatsu	Level 1	• Creation of Decarbonization Promotion in the Port of Takamatsu • Introduction of gantry crane with inverter control system
Multipurpose International Logistics Terminal, Hachinohe Port	Level 1	• Formulation of the Port Decarbonization Promotion Plan • Introduction of gantry cranes with inverter control systems • LED conversion of yard lighting and gantry crane lighting

Source: MLIT Website

In addition, the evaluation criteria for the CNP certification (container terminal) are shown in Table 3.1-7.

Table 3.1-7 CNP Certification Evaluation

Category		Evaluation Items		Evaluation Indicators	Certification Level				
		Major Category	Medium and Small Category		1	2	3	4	5
Terminal	Common	Commitment	Terminal Decarbonization Plan	Development of n Effective Plan for Terminal Decarbonization Calculation of CO2 Emissions Per Unit Associated with Cargo Handling at the Terminal	○	○	○	○	○

Category		Evaluation Items			Evaluation Indicators	Certification Level				
		Major Category	Medium and Small Category			1	2	3	4	5
	Facilities	Cargo handling equipment	Loading and unloading of containers between ships and yards	Gantry cranes	Introduction of inverter-controlled gantry cranes	−	○	○	○	○
			Container handling and transportation within the yard	① Transfer cranes	Improving fuel efficiency through the introduction of low- and decarbonized equipment such as electric and hybrid systems, as well as automation	−	○	○	○	○
				② Straddle carrier	Improving fuel efficiency through the introduction of low- and decarbonized equipment such as electric and hybrid systems, as well as automation	−	○	○	○	○
				③ Yard tractors (including AGVs) and other cargo handling equipment	Improving fuel efficiency through the introduction of low- and decarbonized equipment such as electric and hybrid systems	+	+	+	+	+
		Facilities in the yard	Yard lighting		Introduction of LED lighting etc.	−	○	○	○	○
			Reefer facilities and other facilities		Energy savings and temperature rise suppression by installing pavement and roofs that reduce reflected heat at reefer facilities, energy conservation in the administration building, etc.	+	+	+	+	+

Category		Evaluation Items		Evaluation Indicators	Certification Level				
		Major Category	Medium and Small Category		1	2	3	4	5
Vessels and vehicles	Vessels	Supply of ship power sources (electricity, low-carbon/low-carbon fuels, etc.)	Vessels at berth	Reduction of CO2 emissions through the introduction of onshore power supply facilities, etc	+	+	+	+	+
			Low-carbon fuel bunkering	Availability of a supply system for low-carbon fuels such as LNG or low-carbon fuels such as hydrogen and ammonia to ships berthed at the terminal	+	+	+	+	+
		Usage promotion	Incentives for environmentally friendly ships to enter port	Incentives for low-carbon fuel ships, etc., or penalties for fossil-fuel ships	−	−	−	○	○
	Vehicles	Efficiency	Reduction of congestion in front of the yard and within the yard.	Implementation of gate reservation systems and systems to streamline cargo pickup and delivery, and extension of gate opening hours to alleviate congestion.	−	−	−	○	○
		Usage promotion	Incentives for the adoption of large commercial EVs and FCVs	Incentives such as the installation of priority gates and lanes, or penalties for fossil-fuel-powered vehicles	+	+	+	+	+
Others		Low-carbon and decarbonization initiatives other than those listed above (1) and (2)		Introduction of low-carbon and decarbonized electricity and fuels, introduction of environmentally friendly tugboats, introduction of urea and other	+	+	+	+	+

Category	Evaluation Items		Evaluation Indicators	Certification Level				
	Major Category	Medium and Small Category		1	2	3	4	5
			exhaust gas reduction technologies, initiatives to help eliminate offshore waiting, promotion of inland port use, blue carbon, carbon offsetting, etc.					

Source: Translated by JICA Stduy Team based on MLIT

3.2 Initiatives of JICA

3.2.1 JICA Global Agenda

To address global common challenges, including climate change and environmental issues, the global spread of infectious diseases, and the increasing frequency of conflicts, JICA has established 20 cooperation strategies referred to as the "JICA Global Agenda" (issue-specific cooperation strategies). Within these strategies, the only item that explicitly refers to the blue economy is the cluster strategy titled "Promoting the Fisheries-Centered Blue Economy," which is positioned under "No. 5 Agricultural and Rural Development (Sustainable Food Systems)." However, many Global Agenda areas may be considered relevant to the blue economy, including No. 2 Transportation, No. 3 Energy and Mining, No. 4 Private Sector Development, No. 7 Nutrition, No. 11 Peacebuilding, No. 12 Public Finance and Financial System, No. 16 Climate Change, No. 17 Natural Environment Conservation, and No. 18 Environmental Management. JICA's initiatives under the Global Agenda relevant to each sector covered by this study can be organized as follows.

(1) Fisheries Sector

The term "Blue Economy" itself is mainly clustered under the fisheries component of Agenda "5. Agriculture and Rural Development (Sustainable Food Systems)." Within the Blue Economy concept defined in this study, the only item that explicitly refers to reconciling "the use of marine areas and resources for economic growth" with "the appropriate management of marine areas, resources, and ecosystems" is "Promoting the Fisheries-Centered Blue Economy." An overview of this cluster strategy is as follows (quoted from a document prepared by JICA's Economic Development Department, December 2024).

<Cluster Strategy "Promoting the Fisheries-Centered Blue Economy">

- Objective

For developing countries that depend heavily on marine fishery resources and coastal ecosystem services, JICA promotes "Promoting the Fisheries-Centered Blue Economy," with the aim of improving livelihoods

and reducing poverty through the sustainable use of fisheries resources, as well as revitalizing coastal economies, thereby contributing to the achievement of SDG Goal 14, "Life Below Water."

- Development Scenario

While the blue economy generally covers a broad range of activities, this cluster strategy focuses on the fisheries sector in coastal areas. Based on the concept of a fisheries-centered blue economy, it encourages both government officials in developing countries and coastal communities to shift toward an approach that promotes fisheries while ensuring the sustainability of resources and the environment. By enabling governments and residents to undertake resource management and economic activities jointly, including through co-management arrangements, the strategy seeks to increase sustainable economic benefits for local societies. Given that fisheries are highly context-specific due to their dependence on the natural environment, there is no universally applicable model approach. Accordingly, the strategy consolidates and categorizes, into a "toolbox," measures whose effectiveness has been demonstrated through field-level activities, and establishes a mechanism through which stakeholders in each country strengthen the capacities of public authorities and coastal communities by selecting, examining, and applying tools suited to national and local conditions, while referring to relevant cases.

(2) Marine Transportation Sector

In the "No.2. Transport and Traffic Sector" section related to the maritime transport sector of this study, the key pillars are considered to be the ensuring of maritime connectivity (port development) and maritime safety (coast guard and navigation security). These can be specifically summarized as follows:

Table 3.2-1 Initiatives Related to the Blue Economy (Maritime Sector) in the Global Agenda

Priority Area under Cluster	Key Initiatives
1. Development of Maritime Transport Networks (Maritime Connectivity)	Improving logistics efficiency, which is essential for economic growth, and strengthening networks, including those connecting island countries.
• Global Network Development	Aiming to establish a society where world capitals and urban areas with populations over 3 million are smoothly connected through maritime and air networks.
• Development of International Ports	Development of deep-water berths (e.g., depths over 14 m) at ports handling more than 1 million TEU of container cargo, to accommodate larger vessels. Primarily promoted through concessional finance (yen loans).
• Support to Island Nations	Implementation of port and logistics hub development in Pacific and Indian Ocean island countries to improve connectivity, mainly through grant aid.
• Reduction of Logistics Costs	Reducing high import/export costs in developing countries, which are 43–54% higher than in developed countries, caused by inefficient port operations and inadequate infrastructure.
2. Maritime Safety and Environmental Protection (Strengthening Maritime Security Capacity)	Ensuring safe and sustainable use of the oceans from the perspective of a "Free and Open Indo-Pacific (FOIP)."
• Strengthening Maritime Law Enforcement	Support for capacity-building of coastal nations' maritime security agencies, mainly in Southeast Asia and areas extending to the waters off Somalia and the Gulf of Aden.

• Response to Environmental Pollution and Illegal Activities	Strengthening maritime security organizations to improve capabilities not only against piracy but also to address environmental pollution (e.g., oil spills) and illegal activities such as illegal fishing.
• Human Resource Development	Implementation of the "Maritime Security Policy Program" in collaboration with the Japan Coast Guard and the National Graduate Institute for Policy Studies (GRIPS), providing advanced education on international law, search and rescue, disaster prevention, and maritime policing, and fostering international human networks for senior officer candidates.
3. Environmental and Climate Change Measures	In the transport sector, reducing CO_2 emissions and promoting low- and decarbonized infrastructure are key priorities.
• Environmentally Friendly Infrastructure (Eco-Ports)	Development of environmentally low-impact ports using Japanese technical expertise, including eco-port technologies promoting low carbon and resource circulation, and environmentally considerate construction methods for "high-quality infrastructure development."
4. Public-Private Partnership in Port Management	Beyond hard infrastructure development, support for Japanese companies' participation in port operations (soft infrastructure) through overseas investment and financing.
• Promotion of Operational Participation	In Sihanoukville Port, Cambodia, a successful public-private partnership model has been established, where Japanese companies participate in port operations in addition to development supported by yen loans.

Source: Prepared by the JICA Study Team based on information from the JICA website

(3) Finance Secrtor

In JICA's Global Agenda, references to financial-sector support specifically dedicated to the blue economy are limited. However, improvements in the investment climate and support for startups in line with Cluster Strategy (3) "Promotion of Investment and Industrial Development in Asia" under Agenda "No.4 Private Sector Development", as well as financial market development and the strengthening of financial infrastructure such as payment systems in line with the policy of "appropriate monetary policy management and development of the financial system" under Agenda "No.13 Public Finance and Financial Systems", can be considered relevant.

In addition, albeit indirectly, contributions to adaptation measures aligned with the "Co-benefit Climate Change Measures" cluster under Agenda "No.16 Climate Change" are also related to promoting the blue economy in the financial sector.

Specific examples are summarized in the table below.

Table 3.2-2 Initiatives Related to the Blue Economy (Financial Sector) in the Global Agenda

Support Measure	Overview
Issuance of Sustainability Bonds	Provide financing for projects that address social and environmental challenges through the issuance of JICA sustainability bonds.
Promotion of Impact Investment	Surveys and feasibility studies are conducted to establish an ecosystem that promotes impact investment, balancing social problem-solving with economic returns. This is expected to provide funding to Blue Economy-related startups, such as those tackling marine plastic pollution or developing fisheries technology.
Startup Support (Project NINJA)	Support entrepreneurship to foster business innovation and facilitate fundraising for companies and technologies that contribute to the blue economy, including through collaboration with venture capital and other investors.
Financial Inclusion and Improved	Improve access to finance for SMEs and individuals (including fishers) by

Access	strengthening financial institutions' credit appraisal capacity and developing credit information systems.
Utilization of Fintech	Support the adoption of new technologies, such as mobile payments, to improve financial access in remote islands and coastal areas with limited bank branches.
Contribution to adaptation measures (promotion of carbon credit issuance)	Contribute to reducing the amount of GHGs in the atmosphere by supporting the creation and issuance of blue carbon credits and the development of related markets.

Source: Prepared by the JICA Study Team based on information from the JICA website

3.2.2 JICA Cooperation Cases Related to the Blue Economy

(1) Fisheries Sector

1) Blue Economy Cooperation

Among the JICA projects related to the above Cluster Strategy "Promoting a Fisheries-Centered Blue Economy," a total of 63 projects were identified for 2023–2024 alone. The breakdown is shown in the table below.

Table 3.2-3 JICA Projects Related to "Promoting a Fisheries-Centered Blue Economy" (2023–2024)

Scheme	Number of Cases
Technical Assistance	28
Individual Dispatch	8
Country-Focused Training Program	11
Thematic Training Programs	8
Official Development Assitance Grants	8
Total	63

Source: Prepared by JICA, Economic Development Department, Dec. 2024

2) Fisheries Cooperation for the Philippines

In addition, although the term "blue economy" is not explicitly used, fisheries-sector projects that have been implemented for the Philippines to date and that are closely related to the blue economy include the following.

Table 3.2-4 JICA Fisheries-Related Projects in the Philippines

Project Title	Year	Scheme
The Fishing Ports Project（Package 1）[1]	1978	Grant Aid
Basic Design Study on the Fisheries Research and Training Vessel Project[2]	1979	Basic Design Study
Preliminary Study on the Fishery Products Distribution System Improvement Plan[3]	1982	Development Study

Development Study on the Fishery Products Distribution System Improvement Plan[5]	1985	Development Study
The Nationwide Ice Plants and Cold Storages Network System (Master Plan Study)[6]	1985	Development Study
The Feasibility Study on Fish Transport System[7]	1989	Development Study
Fishing Ports Development Project（II）[8]	1992	Grant Aid
Fisheries Resource Management Project[9]	1998	Grant Aid
Comprehensive Outreach and Fish Breeding Project[10]	2006	Technical Assistance
Capacity Enhancement Program of Metropolitan Iloilo-Guimaras Development Council (MIDC) and Banate Bay Resource Management Council Inc. (BBRMCI)[11]	2007	Technical Assistance
Project on Integrated Coastal Ecosystem Conservation and Adaptive Management under Local and Global Environmental Impacts in the Philippines[12]	2010	Technical Assistance
The Preparatory Survey (Stage 2) for the Nationwide Fish Ports Project (Package III)[13]	2010	Preparatory Survey

Source：ODA Loan Project Data (1,8), JICAReport PDF (2, 3, 6, 7 , 13), JICA ODA Project WebSite (9, 10, 11, 12)

(2) Ocean Transport Sector Projects

Although not explicitly positioned within the JICA Global Agenda, JICA has, in the past, implemented cooperation initiatives related to the Blue Economy, including natural environment conservation, disaster risk reduction, and support for port and maritime-related activities.

1) The Project for Capacity Development in Coastal Engineering for Disaster Resiliency

This project is a capacity-building technical cooperation project aimed at strengthening the coastal engineering and disaster prevention planning capabilities of the Department of Public Works and Highways (DPWH) since the Philippines is prone to coastal disasters such as typhoons, storm surges and erosion. It will run from April 2022 to April 2027. This project focuses not primarily on the construction of large-scale structures but on improving institutional and human capacity.

The components of the project include human resource development in the field of coastal engineering, the formulation of technical guidelines adapted to the natural conditions of the Philippines, the implementation of local case studies and pilot activities, and the establishment of a medium- to long-term development framework with a view to sustainable capacity development.

2) Port and Maritime-Related Projects in the Philippines

JICA has implemented various cooperation initiatives in the Philippines, including the development of major ports such as Batangas Port, Subic Port, and the Mindanao Container Terminal, as well as surveys related to the nationwide Ro-Ro ferry network, which forms the foundation of the Nautical Highway System.

Table 3.2-5 JICA Port and Maritime Related Projects in the Philippines

Project Title	Year	Scheme
Batangas Pport Develoment Project	1991	Yen Loan
Maritime Safety Improvement Project B	1995	Yen Loan
Social Reform Related Feeder Ports Development Project	1997	Yen Loan
Domestic Shipping Modernization Program II	1998	Yen Loan
Batangas Port Development Project （Phase II）	1998	Yen Loan
Subic Bay Port Development Project	2000	Yen Loan
Mindanao Container Terminal Project	2000	Yen Loan
The Study on the Nationwide Port Development Strategy in the Republic of the Philippines[1]	2003	Development Study
Feasibility Study on the Development of Road RO-RO Terminal System for Mobility Enhancement in the Republic of the Philippines[2]	2006	Development Study
Maritime Safety Capability Improvement Project for the Philippine Coast Guard	2013	Yen Loan
Maritime Safety Capability Improvement Project for the Philippine Coast Guard II	2016	Yen Loan

Source：JICAReport PDF (1, 2), JICA ODA Project WebSite (other then 1 and 2)

(3) Other sectors Projects

1) Data Collection Survey on Blue Economy in the Republic of Kenya

The Survey, which was completed in June 2018, was a data collection survey to support future policy and investment formulation. It focused on Nairobi, Mombasa and Lake Victoria, and analyzed the then status and challenges of blue economy-related policies, institutions and sectors.

The study clarified the concept of blue economy, including fisheries, shipping and maritime affairs, port infrastructure, tourism, and the environment. It revealed that while some progress has been made in the inland waters sector, challenges remain in coastal resource utilization, port and logistics infrastructure, institutional coordination, and human resource capacity. The study proposed several cooperation programs for blue economy development and implementation from the perspectives of planning, capacity development, institutional strengthening, and the formulation of policies, standards, and guidelines.

2) Data Collection Survey for the Promotion of Islamic Finance and Halal Industry in the Bangsamoro Autonomous Region in Muslim Mindanao

This survey is a data collection and confirmation survey to support the dissemination of Islamic finance and the promotion of the halal industry in the BARMM. The survey conducted fieldwork targeting local government agencies and financial institutions, users of financial services including Islamic finance, producers of halal products (agricultural and fishery products and processed products), farmers and cooperatives, distribution-related businesses, and halal accreditation and certification bodies. Based on the results, the survey primarily proposed the potential formulation of new cooperation projects under the schemes of loan assistance and technical cooperation.

3.3 Potential Japanese Cooperation Resources for Blue Economy Cooperation

3.3.1 Fisheries Sector

To support the implementation of blue economy cooperation in the Philippines, potential resources in Japan are organized below, including domestic organizations and examples of relevant activities that can be drawn upon through future collaboration and as reference cases.Interviews were conducted with the following organizations and companies: the Japan Blue Economy Association (JBE), the Hayama Marine Science Laboratory of Kajima Corporation, Yokosuka City, Kochi University, Okayama University of Science, Marine Science Co., Ltd., UMITRON K.K., and Asia Air Survey Co., Ltd

(1) Academic institutions

In recent years, co-creation initiatives have been implemented in the fisheries sector, led mainly by fisheries-related universities and undertaken through collaboration among industry, government, and academia. Major examples are summarized inTable 3.3-1. The basic concept is that multiple stakeholders participate in a project with the aim of promoting regional development, with revitalization of fisheries and aquaculture positioned as the core focus. Taking Kochi University's "Shimanoba Project" as an example, participating institutions include Kochi University (lead organization), Kyoto University, Riken Foods Co., Ltd., Kochi Prefecture, Shimanto City, and fisheries cooperatives, among others.

Table 3.3-1 Blue Economy–related Projects Led by Fisheries-related Universities

University	Project Title	Main Funding Source / Institutional Framewwork	Project Period	Project Overview
Hokkaido University	Assessing Carbon Uptake in Blue Carbon Ecosystems and Designing an Institutional Framework	MOE; Japan Science and Technology Agency "Program on Open Innovation Platforms for Industry-Academia Co-creation (COI-NEXT)"	FY2022–FY2031 (up to 10 years)	Targeting natural kelp fishing grounds along the coast of Erimo Town, Hokkaido. ·Mapping the distribution of seaweed beds using drones and AI-based image analysis ·Developing a quantitative model to estimate CO_2 uptake ·Preparing baseline data for institutional design (blue carbon crediting) ·Building a co-creation research framework with local fishers and local government
Tokyo University of Marine Science and Technology	Project to Build a Local Resource-Circulating Society through	NEDO "Biomass Energy Technology Development"; Ministry of Education, Culture,	FY2022–FY2027 (estimated)	Utilizing marine biomass resources (e.g., algae/seaweeds) in coastal areas to: ·Develop technologies for conversion and use (biofuels,

	Utilization of Marine Biomass	Sports, Science and Technology "Program for Forming Japan's Peak Research Universities (J-PEAKS)"; JST "Future Society Creation Project"; etc.		feed, fertilizer, etc.) ·Build a local resource circulation model (energy, food, environment) ·Revitalize local economies through linkages with fisheries, agriculture, and tourism ·Propose policy/institutional measures toward decarbonization and a circular society
Ehime University	Ehime Fisheries Innovation Ecosystem: Smart Fishing Village Initiative	Ministry of Internal Affairs and Communications, Japan "Regional IoT Implementation Promotion"; Cabinet Office regional revitalization grants; MEXT "Regional Innovation Ecosystem Formation Program"	FY2022–FY2025 (estimated)	Centered on the coastal area of the Uwa Sea to advance a locally rooted "smart fishing village" model through: ·Fishery-ground/environment monitoring using IoT/ICT (ocean conditions information systems) ·Early detection and control technologies for red tides and fish diseases ·Labor-saving and improved profitability via smart feeding and fish-farm management ·Regional revitalization linked with tourism and education ·Support for training and retention of young fishers
Kochi University	Shimanto Seaweed Eco-Innovation Co-Creation Hub (a.k.a. "Shimanoba Project")	JST COI-NEXT (Regional Co-Creation domain; incubation-type); Cabinet Office subsidy for regional universities and industries	FY2021–End of March 2026 (COI-NEXT incubation-type: up to 5 years)	Focusing on restoring seaweed resources (e.g., hitoegusa, sujiaonori) that are at risk of disappearing near the Shimanto River estuary. ·Developing land-based aquaculture technologies ·R&D on seaweed-derived products (feed, cosmetics, industrial materials) ·Creating local industries and developing human resources ·Building a smart seaweed aquaculture system ·A multi-stakeholder industry–academia–government–community project aimed at a carbon-neutral local society

Nagasaki University	"Nagasaki Blue Economy": Co-creation Hub for Industrializing Aquaculture to Sustain Marine Food Production	JST COI-NEXT (full-scale type; up to 10 years); MAFF/Fisheries Agency programs for promoting smart fisheries (etc.)	FY2023–Up to FY2033 (planned)	A project aiming to develop and implement a smart aquaculture model, including: ·Promoting aquaculture DX using AI/IoT and underwater robots ·Reducing dependence on wild resources through full-cycle aquaculture (hatchery-produced juveniles) ·Enhancing the attractiveness of the fisheries sector to retain young workers and create local jobs ·Branding and strengthening export systems for "JAPAN Buri (yellowtail)"
Kagoshima University	Regional Collaboration Project on Value-added Greater Amberjack Aquaculture and Export Promotion	Cabinet Office regional revitalization grants; MAFF export expansion strategy programs; Fisheries Agency smart fisheries programs (etc.)	FY2020–FY2025 (estimated)	In Kagoshima Prefecture, Japan's leading production area for yellowtail and greater amberjack; ·Developing countermeasures against parasitesand advancing control technologies ·Upgrading full-cycle aquaculture and stabilizing seed/juvenile supply ·Developing high-freshness logistics and processing technologies ·Enhancing HACCP[12] compliance and traceability aligned with importing-country requirements ·Building branding strategies for overseas markets

Source：Hokkaido University and Hokkaido Regional Development Bureau (March 2024), Erimo Town Blue Carbon Survey Report; Tokyo University of Marine Science and Technology (2024), Research Strategy Management Office webpage; Ehime University (2023–2025), Ehime Fisheries Innovation Ecosystem; Kochi University (August 2025), materials from the 25th regular press conference; Nagasaki University (May 2023), official webpage of "Nagasaki BLUE Economy"; Kagoshima University (2023–2025), Faculty of Fisheries research introduction and the Parasite Countermeasure Study Group

(2) Potential resources related to blue carbon

In recent years in Japan, initiatives to generate blue carbon through measures such as the creation and

[12] HACCP：Hazard Analysis and Critical Control Point, a quality control standard for food manufacturing processes that originated in the United States.

restoration of seaweed beds have increasingly been implemented by a wide range of organizations, including private companies, local governments, fisheries cooperatives, and NGOs. With a view to promoting blue carbon, Table 3.3-2 summarizes initiatives by companies and organizations that utilize seaweed aquaculture and/or related technologies.

Table 3.3-2 Promoting Blue Carbon through Utilization of Seaweed Aquaculture

Organization	Starting Year	Summary of Activities / Initiatives
Hokkaido Electric Power Co., Inc. [1]	2023	In April 2023, signed a joint research agreement with the Hokkaido Research Organization. Aims to commercialize blue carbon across Hokkaido's coastal waters by establishing seaweed-bed block designs and aquaculture techniques suited to each coastal area. Activities include manufacturing algal-reef/fertilizer blocks; technology development (reef/fertilization methods, blocks, drone-based surveys, land-based seaweed cultivation); fisheries resource enhancement R&D leveraging offshore wind facilities; and studies on CO_2 absorption and storage by blue-carbon ecosystems in ports/harbors.
City of Yokohama[2]	2014	After the Yokohama City Fisheries Cooperative obtained credits from cultivated seaweeds, revenues were used for costs such as seaweed-bed monitoring. In collaboration with partners, the city held awareness-raising events for citizens and businesses. Credits were applied to initiatives including LNG-fueled tugboat operations by maritime-related companies and seawater heat-pump HVAC by an amusement company, among others. The city's own blue-carbon offset scheme ended in FY2022.
Kajima Cooperation[3]	2006	Utilized seedling production technology developed at the Kajima Hayama Marine Environmental Experimental Station. Implemented seaweed-bed restoration activities with diverse participants (Hayama Town Fisheries Cooperative, private companies, and Isshiki Elementary School in Hayama), along with environmental education and morning-market activities, creating blue carbon while also advancing education and local economic revitalization.
Ainan Town[4]	2018	As part of efforts to improve fisheries environments through reef-barren countermeasures, conducted actions such as introducing seaweed seedlings and broodstock algae, installing seaweed-bed reefs, removing grazing organisms

		(e.g., sea urchins), and monitoring surveys. Also explored effective use of underutilized resources for regional revitalization: fattened and commercialized the herbivorous long-spined sea urchin using discarded parts of local specialty broccoli and Kawachi Bankan citrus as feed and worked on cultivating seaweed.
VENTUNO Co., Ltd.[5]	2022	In June 2021, under cooperation from Itoshima City, Itoshima Fisheries Cooperative and VENTUNO signed a "regional contribution agreement for promoting blue carbon." Under a five-year plan, VENTUNO continuously purchases mekabu (previously partly discarded) from the cooperative and uses it as a cosmetic ingredient, helping stabilize wakame farmers' income. The company also sought to improve production efficiency by increasing wakame unit prices and expanding sales channels. VENTUNO owns a marine farm on Ishigaki Island (Okinawa) and cultivates Okinawa mozuku, a raw material for fucoidan.
Karatsu City[6]	2022	At Sashi Elementary School, where marine education is active, students, with support from local fisheries stakeholders, carried out a wakame aquaculture experience program and received classes on SDGs and carbon neutrality from companies and universities. Specifically, they conducted wakame seeding (Nov. 2022) and harvesting (Feb. 2023), along with talks/lectures and coastal cleanup activities.
INFLUX Inc.[7]	2008	Conducted demonstration projects to create seaweed beds using algal-reef blocks that leverage fulvic-acid iron. Around Kabe Island (Karatsu City), the company is considering a "MOBA farm business model" via establishing a seaweed-bed subdivision company. In parallel with reef-barren countermeasures, it also works on job creation, development of local specialty products, and enhancing regional brand value. Additionally, it conducts seaweed-bed technology development and ROV development in collaboration with universities.

Source：Ministry of the Environment, Case Study on Blue Carbon Initiatives in Japan, 2023 (P18-24[1], P50-55[2], P56-61[3], P188-P191[4], P208-211[5], P224-P228[6], P232-P238[7])

(3) Other Individuals and Organizations

In addition to the above, the following table presents individuals and organizations that are expected to constitute important resources related to the blue economy.

Table 3.3-3 Other Domestic Resources

Potential Resources	Type of Key Information
Vice President, Tokyo University of Marine Science and Technology: Xiaobo Lou	Domestic case studies on the blue economy and Umigyo in the fisheries sector.
Specially Appointed Professor, Saga University: Shinichiro Kakuma	Research cases on Satoumi in Japan and overseas.
Japan Blue Economy Association: Atsushi Watanabe	Domestic cases on the blue economy, comprehensive analytical methodologies, and initiatives related to blue carbon credits.
Onna Village Fisheries Cooperative, Okinawa Prefecture; Hinase-cho Fisheries Cooperative Association, Okayama Prefecture; etc.	Case studies of collaboration between fisheries, environmental conservation, and the tourism industry.
Fisheries Infrastructure Department, Fisheries Agency: Yasushi Nakazato	Application of blue carbon in the development and operation of fishing ports.
Associate Professor, Kochi University: Takushi Namba	Challenges in scaling up seaweed aquaculture.
Marine Science Co., Ltd.	Advanced processing and commercialization of seaweed, and requirements for international markets.
Okayama University of Science: Toshimasa Yamamoto	Technologies for land-based aquaculture that reduce environmental impacts.
Asia Air Survey Co., Ltd.	Applicability of monitoring technologies for created seaweed beds.
UMITRON K.K.	Use cases of IoT, AI, and satellite remote sensing technologies, and blue carbon assessment.
Yokosuka City Hall	Public–private partnership cases on blue carbon.

Source: Survey by JICA Team

3.3.2 Ocean Transport Sector

Table 3.3-4 shows Japanese companies that are working towards becoming carbon-neutral ports and decarbonization. Among them, interviews were conducted with the following six companies: Mitsui E&S Co., Ltd., Fuji Electric C., Ltd., JPNH$_2$YDRO Co., Ltd., Tsuneishi Shipbuilding Co., Ltd., Asahi Tanker Co., Ltd., and Mitsui O.S.K. Lines, Lt.d.

Table 3.3-4 Japanese companies working towards decarbonization

Company	Major initiatives towards decarbonization	Examples (Products or Technology)
Mitsui E&S Co., Ltd.	Mitsui E&S develops and supplies electric cranes, hybrid RTGs, and low-carbon RTGs that contribute to the decarbonization of port cargo handling. Through these, Mitsuie E&S is actively working to reduce fossil fuel consumption in the cargo handling process and decarbonize port terminals.	• Electric cranes • Hybrid RTG • Low-carbon RTG
Fuji Electric Co. Ltd.	Fuji Electric deals in electric propulsion systems that support the electrification of ships, and shore power supply systems that supply electricity from land to ships at anchor. The introduction of shore power supply systems makes it possible to stop (cold ironing) auxiliary engines that are operating to generate electricity while ships are anchored in port, thereby working to reduce carbon dioxide emissions and noise.	• Electric propulsion system • Onshore power supply system
Terasaki Electric Co., Ltd.	Based on its ship power distribution system technology, Terasaki Electric provides shore-based power supply systems. By switching onboard power from on-board power generation to shore-based power supply while at anchor, it is possible to contribute to reducing carbon dioxide and nitrogen oxide (NOx) emissions.	• Onshore power supply system
JPNH$_2$YDRO Co., Ltd.	Japan Hydro is developing hydrogen engine generators and hydrogen/diesel co-fuel engines. Specifically, Japan Hydro is working to decarbonize the maritime industry through next-generation fuels, such as tugboats and offshore wind power support vessels (Crew Transfer Vessels (CTVs)) equipped with hydrogen co-fuel engines.	• Hydrogen enegine generator • Hydrogen/Diesel co-fuel engine development • Tugboats with hydrogen co-fuel engines • CTVs with hydrogen co-fuel engines
Iwatani Corporation	To promote the use of hydrogen energy, Iwatani is developing a hydrogen supply and refueling infrastructure. Iwatani is promoting the use of hydrogen through the establishment of a hydrogen supply chain, including supplying hydrogen fuel to cargo handling equipment in ports that use hydrogen (fuel cells) and hydrogen-fueled ships.	• Hydrogen supply and refueling • Fuel cell conversion of cargo handling equipment
Kawaski Heavy Industries. Ltd.	Kawaski Heavy Industries is actively engaged in clean energy-related projects, including the construction of the world's first liquefied hydrogen carrier, "Suiso Frontier," the development of a liquefied hydrogen storage facility, and the construction of an LPG/ammonia carrier.	• Liquefied hydrogen storage facility • The World’s first liquefied hydrogen carrier “Suiso Frontier” • LPG/Ammonia carrier (LPG fuel-propelled)
Mitsubishi Heavy Industries. Ltd.	Mitsubishi Heavy Industries is actively working to decarbonize existing facilities through hybrid RTGs and carbon capture technology that directly captures CO2 emitted by ships.	• Hybrid RTGs that can be retrofitted with hydrogen fuel cells • CO2 capture system • Offshore CO2 capture technology
Toyota L&F	Toyota L&F is working to achieve zero-emission logistics by developing, manufacturing, and selling hydrogen fuel cell forklifts and electric forklifts with the aim of reducing the environmental impact of logistics sites.	• Hydrogen fuel cell forklift • Electric forklift
Sumitomo Nacco Forklift Co., Ltd.	Sumitomo Nacco Forklift is working on electrifying forklifts using lithium-ion batteries. By switching from conventional internal combustion engines to highly efficient electric vehicles, we are working to reduce the environmental impact at logistics bases.	• Forklifts: Promoting electrification through the use of lithium batteries

Tsuneishi Shipbuilding Co., Ltd.	Tsuneishi Shipbuilding has built the world's first methanol-powered dual-fuel ship and Japan's first hydrogen-powered tugboat, and they are also working on building environmentally friendly next-generation fuel ships.	• World's first methanol-powered dual-fuel ship • Japan's first hydrogen-powered tugboat
Asahi Tanker Co., Ltd.	Asahi Tanker has introduced and is operating the world's first electric tanker and hybrid bulk carrier. Powered by large-capacity lithium-ion batteries, Asahi Tanker is actively working toward decarbonization, achieving zero carbon dioxide emissions.	• EV tanker • Hybrid bulk carrier
Mitsui O.S.K. Lines, Ltd.	MOL operates next-generation fuel ships, including the LNG-fueled cargo ship "Ise Mirai" and Japan's first hydrogen/biofuel hybrid passenger ship "HANARIA." It is also actively working on ship operation using next-generation fuels, such as developing ammonia-fueled ships and conducting demonstration experiments on biodiesel fuel.	• LNG-fueled cargo ship "Ise Mirai" • LNG-fueled ferry "Sunflower Kurenai" • Hybrid passenger ship • Ammonia-fueled ship under development • Japan's first hydrogen/biofuel hybrid passenger ship "HANARIA" • Domestic methanol-fueled ship "Daiichi Meta Maru...etc." • Japan's first biodiesel-fueled large ferry "Sunflower Ashire Toko"
NYK Line	NYK is actively working to operate ships using next-generation fuels, including the introduction and operation of environmentally friendly LNG-fueled ships (such as car carriers and the cruise ship "Asuka III") and demonstration experiments of ammonia-fueled ships using the tugboat "Sakigake."	• LNG-fueled tugboat "Sakigake" • Ammonia-fueled tugboat "Sakigake" • LNG-fueled car carriers • Japan's first LNG-fueled cruise ship "Asuka III" • Biofueled tugboat "Tahara Maru"
Kawasaki Kisen Kaisha, Ltd.	K-Line is committed to implementing emissions reduction technologies, including the world's first installation of the shipboard CO2 capture system "CORONA UTILITY." K-Line is also promoting decarbonization through fuel conversion by operating car carriers and tugboats using bio-LNG and biodiesel fuel.	• World's first onboard CO2 capture system "CORONA UTILITY" • Bio-LNG-fueled car carrier "OCEANUS HIGHWAY" • Bio-diesel-fueled tugboat "Aiho Maru"
Nippon Steel Corporation	Through the development of technology to create shallow areas and seaweed beds using steel slag generated during the steel manufacturing process, Nippon Steel is working to restore marine ecosystems and create "blue carbon" (carbon sequestration by marine ecosystems), thereby contributing to biodiversity and combating climate change.	• Technology to create shallow areas and seaweed beds using steel slag

Source: Prepared by Survey Team (based on Web information)

3.3.3 Financial Sector

Domestic stakeholders in the financial sector were categorized into three areas: blue finance, subsidies, and blue carbon credits, as shown in Table 3.3-5. Interviews were conducted with Fisherman Japan Marketing Co., Ltd., Sumitomo Mitsui Banking Corporation (SMBC), Chubu Electric Power Miraiz, Chubu Electric Power, and Mitsui Sumitomo Insurance. Interview results are detailed in Section 3.4.3.

Table 3.3-5 Japanese stakeholders in the financial sector

Field	Company / Organization Name	Initiatives
Blue Finance	Fisherman Japan General Incorporated Association Fisherman Japan Marketing Co., Ltd.	Undertakes projects such as human resource development, improving the distribution of marine products, and marine environmental conservation. Also established the Fisherman Japan Blue Fund, investing in a wide range of marine-related companies and businesses.
	Sumitomo Mitsui Banking Corporation (SMBC)	Provides sustainability finance products in the APAC region. Has a track record of executing blue loans in India and Thailand.
	Mizuho Financial Group	Provided comprehensive support for Maruha Nichiro Corporation's issuance of Japan's first blue bond, from determining the use of funds to establishing the framework and completing the issuance. Also has a track record of executing blue loans.
	Iwate Prefecture	Has a track record of issuing green/blue bonds for blue projects that contribute to the conservation of marine resources and ecosystems.
	Chiba City	Issued a 3-billion-yen blue bond for marine conservation and water quality improvement projects (standalone "blue bond" label).
	Tokyo City	Has a track record of issuing green/blue bonds for blue projects such as the Tokyo Port Blue Carbon Development Project.
Subsidy	MaOI Institute	Provides subsidies at each stage of the value chain, from research to create seeds that contribute to solving marine-related issues to commercialization in the early stages.
	Nippon Foundation	Provides subsidies related to the blue economy (such as funds for low-carbon and decarbonized shipbuilding).
Blue Carbon Credit	JBE	J-Blue Credit System management and operation.
	Chubu Electric Power Miraiz, Chubu Electric Power, Mitsui Sumitomo Insurance	Chubu Electric Power's research institute studies and establishes evaluation methods, while TCC (an environmental assessment company and Chubu Electric Power group company) handles measurement. Chubu Electric Power Miraiz sells credits to corporate customers and aims to reinvest the profits into supporting aquaculture maintenance and seaweed bed restoration by returning them to fishery stakeholders, thereby driving the Blue Economy cycle. Additionally, Mitsui Sumitomo Insurance plans to provide insurance products for credit issuance.
	Fukuoka City	Fukuoka City has introduced the Hakata Bay Blue Carbon Offset System. It measures and certifies CO_2 absorbed and sequestered by seagrass beds, such as eelgrass in Hakata Bay, as credits and sells them to companies and others.
	Yokohama City	Has implemented the Yokohama Blue Carbon Offset System (completed in fiscal year 2022).

Source: JICA Study Team

3.4 Trends and Potential Needs of Private Companies and Other Stakeholders

In this section, a survey was conducted of some of the domestic potential resources identified in the previous section, and information that may be useful as a reference for supporting blue economy–related assistance to the Philippines has been compiled.

3.4.1 Fisheries Sector

Based on the potential Japanese resources for cooperation with the Philippines identified above, interviews were conducted with the following eight organizations and companies: the Japan Blue Economy Association, the Hayama Marine Science Laboratory of Kajima Corporation, Yokosuka City, Kochi University, Okayama University of Science, Marine Science Co., Ltd., Umitron K. K.., and Asia Air Survey Co., Ltd. The findings from these interviews are summarized below by the technology fields confirmed, as set out in the following sections.

(1) Seaweed Aquaculture Technology

Technical research on seaweed farming is being advanced at several universities and research institutions in Japan. Among them, the "Shimanto Seaweed Eco-Innovation Co-Creation Hub,"[13] led by Kochi University, aims to realize sustainable seaweed farming using the Shimanto River as a model area, establish a new seaweed farming model, and disseminate the outcomes both domestically and internationally. This initiative was selected under the Japan Science and Technology Agency (JST)'s FY2024 "Co-Creation Field Formation Support Program (COI-NEXT)," in the Regional Co-Creation Track (Incubation Type), and research is being conducted over the period from 2024 to 2026. The hub is working to resume the cultivation of Sujiaonori and Aosanori at the mouth of the Shimanto River, which ceased in 2011, by applying land-based aquaculture technologies and developing new techniques, while also promoting sustainable local industries and communities based on seaweed farming. In addition, comprehensive seaweed-centered initiatives are being undertaken, including blue carbon related to seaweed beds such as Kajime, revitalization of local resources through marine cultivation of Hitoegusa, business creation (land-based seaweed farming, advanced processing of seaweed extracts, development of livestock feed containing seaweed-derived methane-reduction additives), and human resource development. The hub also has an interest in overseas expansion and could potentially serve as a resource for technical cooperation in research on seaweed farming technologies.

The main seaweed produced in the Philippines is Eucheuma and Kappaphycus, which is a raw material for carrageenan used as a thickening agent in foods and other products. The Philippines is the world's second-largest carrageenan-producing country, and its factories are concentrated in Cebu. While a substantial amount of carrageenan produced in the Philippines is imported into Japan, raw seaweed is not imported into Japan for processing into carrageenan domestically. There is one carrageenan manufacturer in Japan that uses domestically produced raw materials, but it is scheduled to withdraw in 2025 (as of August 2025), and dependence on Philippine carrageenan, and by extension on seaweed farming in the Philippines, is expected

[13] https://www.kochi-u.ac.jp/seawheat/index.html

to increase further.

(2) Blue Carbon Effects of Seaweeds and Related Resources

Seaweed beds and mangrove forests have blue carbon functions[14] that enable proactive absorption and sequestration of greenhouse gases, and Japan has advanced initiatives in areas such as the assessment of sequestration volumes. The Japan Blue Economy Association (JBE) is an organization established "to promote research and development of technologies aimed at invigorating Blue Economy businesses, including the conservation, restoration, and utilization of the ocean, through close collaboration among researchers, engineers, and practitioners from different fields and positions,"[15] and it conducts surveys and certification processes for the issuance of blue carbon credits. Blue carbon sequestration is calculated as the amount of CO2 absorbed and stored over one year through the creation, restoration, or maintenance of the target ecosystem, minus the amount of CO2 that would have been absorbed and stored if such actions had not been undertaken. The items eligible for blue carbon assessment are as shown in Table 3.4-1. In addition, methodologies for assessing blue carbon credits may have the potential to be developed into international standards, and JBE has strong interest in this area.

Table 3.4-1 Scope of Blue Carbon Application by JBE

Type	Example
(1) Installation of substrate for attachment (e.g. seaweed beds or artificial reefs)	Use of natural stones, concrete blocks, aquaculture structures, etc.
(2) Sand capping	Application of marine sand, dredged sediment, terrestrial soil, modified soil (marine-derived and industrial by-products), etc.
(3) Adjustment of water depth	Gently sloping surfaces of seawalls and breakwaters to increase sunlight exposure, creating step zones on sloped revetments, raising seabed height using stone placement (also includes (2) sand capping)
(4) Adjustment of external forces (waves and currents)	Creating channels by seabed excavation, installation of physical structures
(5) Improvement of seabed conditions	Application of soil conditioners, fertilization, tilling, etc. (also includes (2) sand capping)
(6) Transplanting and seeding	Transplantation of eelgrass seeds, provision of seedbearing seaweed, rope seeding for cultivation, etc.
(7) Removal of herbivorous species	Removal of sea urchins, herbivorous fish, etc.
(8) Substrate and vegetation	Cleaning rocky areas, thinning, removal of residual biomass

[14] According to JBE, in the case of seaweed aquaculture, the harvested biomass is not eligible for blue carbon credits. However, seaweed that is lost from farms and not recovered, as well as unharvested parts such as holdfasts, is considered to contribute to greenhouse gas sequestration because it may be converted into recalcitrant organic matter or sink into the deep sea. (JBE, J-Blue Credit Certification Application Guidelines, Ver. 2.5)

[15] https://www.blueeconomy.jp/

management	
(9) Regulation of activities in the area	Measures to prevent illegal harvesting, reduction of vegetation loss due to fishing activities
(10) Change in operational framework	Establishment of coordination bodies for climate change mitigation objectives, etc.

Source: J Blue Credit Certification Application Guidelines Ver 2.5[16]

Yokosuka City has published the "Zero Carbon City Yokosuka 2050 Action Plan"[17] and is a local government that actively promotes decarbonization measures. The action plan identifies initiatives that the city will prioritize as "Priority Projects," one of which is the "Blue Carbon Expansion Project as a CO2 Sink." Yokosuka's blue carbon initiatives are centered on the conservation and restoration of seaweed beds, including the creation of kajime seaweed beds and the removal of grazing organisms, and also include carbon offsetting through utilization of JBE's blue credit scheme (FY2023: 1.6 tons; FY2024: application for 2 tons), as well as awareness-raising and environmental education activities such as eelgrass planting experiences. With respect to on-the-ground implementation of these blue carbon initiatives, the city has succeeded in gaining the understanding and cooperation of fishers to avoid conflicts with fisheries and to encourage proactive participation by the fisheries sector. On the other hand, the city is also promoting tourism as a "marine city," including activities such as windsurfing, and it has been reported that some tourism users have expressed views that "seaweed beds are an obstacle," indicating cases where trade-off management is necessary.

There are also cases in which private companies are engaged in blue carbon creation. Kajima Corporation is implementing activities related to environmental conservation and blue carbon creation at the Hayama Aquatic Environment Experimental Field and is working on technology development for measures against coastal "isoyake" (barren ground conditions), restoration of eelgrass beds (including short-term seedling production through seed germination enhancement and provision of transplanting substrates), and restoration of seaweed beds and underwater forests. With respect to seaweed bed creation, the need for collaborative efforts involving a wide range of coastal stakeholders, including fishers, local governments, research institutions, private companies, and civil society groups, has been confirmed. Through this initiative, the "Hayama Eelgrass Council" was established in 2006, and eelgrass bed restoration activities have been implemented under a cooperative framework involving local elementary schools, fisheries cooperatives, and private companies. In addition, at this experimental field, Kajima has also been working on a coral reef restoration project on Panay Island in the Philippines under the InCORE project, which is a program of the ADB.

(3) Remote Sensing Technologies

Remote sensing technologies using satellites and aircraft are highly effective for monitoring coastal environments, including the extent of seaweed beds and mangrove forests. In Japan, there are many relevant resources, ranging from major aerial surveying companies to startup firms. Asia Air Survey Co., Ltd.

[16] https://www.blueeconomy.jp/wp-content/uploads/jbc2025/20250331_J-BlueCredit_Guidline_v.2.5.pdf
[17] https://www.env.go.jp/policy/local_keikaku/sakutei2/14/14201.html

possesses Airborne LiDAR Bathymetry (ALB) technology, which measures underwater topography by emitting laser pulses from helicopters or aircraft, and provides services to collect and supply data on seabed topography and the distribution of seaweed beds. Using ALB technology, the company has conducted coastal seabed mapping, surveys of seaweed bed conditions, and coral reef distribution surveys. In the Philippines, this technology could potentially be applied to site selection for seaweed farming and to improving the efficiency of aquaculture environment monitoring.

UMITRON K.K. is a startup company that aims to address food and environmental challenges through the development of IoT technologies for the fisheries and aquaculture sector. Using remote sensing technologies such as satellites and drones, the company provides services including (1) a cloud-based service for production and cost management at aquaculture sites, (2) a satellite imagery information service, and (3) automatic feeders for aquaculture utilizing IoT technology. In recent years, it has also expanded into the field of blue carbon assessment technologies, undertaking research, development, and demonstration activities related to the creation of seaweed beds and remote monitoring technologies on Izu Oshima. In addition, the company was selected for the Japan Aerospace Exploration Agency (JAXA) Space Strategy Fund program, "Overseas Demonstration of a Satellite Data Utilization System (Feasibility Study)," under which it is developing technologies such as the preparation of potential maps for analyzing suitable sites for seaweed farming and yield forecasting based on real-time ocean observations. These technologies are considered applicable in the Philippines as well, including for improving the efficiency of finfish aquaculture and for surveys of seaweed farming conditions[18].

3.4.2 Ocean Transport Sector

(1) Efforts by private companies toward decarbonization

Japan's efforts to become a Carbon Neutral Port (CNP) are broadly divided into three categories: efforts related to decarbonization within terminals, efforts to decarbonize ships and vehicles, and efforts outside terminals, including the areas behind ports and waterfront areas. An overview of these is as follows. In addition, examples of efforts being implemented to promote decarbonization in port-related areas based on examples of CNP efforts are organized as shown in Table 3.4-2.

1) Initiatives towards decarbonization within terminals

Decarbonization within port terminals is being achieved by introducing low-carbon, electric, or hybrid cargo handling equipment, and by maximizing work efficiency through the use of remote control and automation technologies to reduce energy consumption. Furthermore, in terms of facilities, efforts are being made to install low-power LED lighting and inverter air conditioners, install solar panels, and switch to electricity derived from renewable energy sources.

[18] https://fund.jaxa.jp/content/uploads/kekka19.pdf

2) Initiatives towards decarbonization of vessels and vehicles

For ships, efforts are being made to reduce emissions by operating ships using next-generation fuels (hydrogen, ammonia, methanol, etc.) and by switching from in-house diesel generators to shore power supply, which supplies electricity from next-generation energy sources from land, when ships are at anchor.
Furthermore, efforts are being made to improve the efficiency of ships entering and leaving port and reduce exhaust gases from ships through participation in digital platforms such as the Blue Visby Consortium.
For land transport, efforts are being made to reduce emissions throughout the entire transport process by introducing EV and FC trucks and easing congestion through gate reservation systems.

3) Initiatives towards decarbonization outside terminals

Warehouses and factories in areas behind ports and along the waterfront are making their facilities more energy-efficient, installing solar power generation facilities, and promoting the conversion of buildings to Zero Emission Buildings (ZEBs).
Large-scale power plants in waterfront areas are also making efforts to switch to power supplies derived from next-generation energy sources, such as by introducing offshore wind power and using hydrogen-ammonia co-firing and mono-fuel combustion technologies in thermal power plants.
Furthermore, the development of "blue infrastructure" that makes use of the natural environment is also important, and efforts are being made to promote carbon fixation in marine ecosystems (blue carbon) through the construction of bio-symbiotic seawalls, the creation of seaweed and algae beds, and the conservation and restoration of tidal flats and mangroves, leading to sustainable port development that balances climate change countermeasures with biodiversity conservation.

Table 3.4-2 Specific Initiatives for Decarbonization Related to CNP

Within terminals	Decarbonization of cargo handling equipment	Electric cranes Hybrid RTG Low-carbon RTG
	Improved cargo handling equipment efficiency	Introduction of remote-controlled RTG Automation of cargo handling equipment
	Energy-saving facilities	LED lighting Introduction of solar panels
	Renewable energy	Introduction of solar power generation Switching to electricity derived from renewable energy sources
Vessels and vehicles	Onshore power supply	Low-voltage and high-voltage onshore power supply facilities
	Low-carbon emission vessels	Next-generation fuel and alternative fuel vessels Bunkering facilities, etc.
	Port entry and exit efficiency	Participation in the Blue Visby Consortium

	Vehicles and decarbonization	Introduction of EV and FC trucks Transportation efficiency (gate reservation system)
Outside terminalsls	Decarbonization of buildings	Conversion to LED lighting Introduction of solar panels
	Decarbonization of warehouses and factories	Introduction of energy-saving equipment Introduction of energy-saving vehicles Solar power generation
	Power plant-scale power supply	Solar power generation Offshore wind power generation Thermal power generation (biomass, hydrogen, ammonia co-firing, natural gas power plants, etc.)
	Utilization of next-generation energy sources	Building supply chains for hydrogen, ammonia, methanol, etc.
	Creation, restoration, and conservation of blue infrastructure	Bio-symbiotic seawalls Seagrass and seaweed beds Wetlands and tidal flats Mangroves Development of green spaces

Source: JICA Study Team

(2) Major port decarbonization technologies

The major port decarbonization technologies implemented as part of the initiatives towards CNP are as follows.

1) Cargo handling equipment

Electric cranes: These cranes are powered by electricity supplied from ground power supply facilities. If the electricity used is derived from next-generation energy sources, it can contribute to decarbonization. While electric power is common for gantry cranes, electrifying RTGs requires infrastructure development.

Low-carbon RTGs: Low-carbon RTGs are already in practical use and are commercially available. There are several approaches to achieving low carbon emissions. These include hybrid types that store regenerative electricity generated during loading and unloading in lithium-ion batteries and reuse it to assist the engine, and types that are equipped with large-capacity batteries and generators and are battery-powered.

The former hybrid type allows for a reduction in engine size, fuel consumption, and CO_2 emissions by approximately 50% compared to conventional models. Technology has also been developed and commercialized that enables zero CO_2 emissions during operation by using hydrogen fuel cells as a power source, but a stable hydrogen supply infrastructure is essential. Currently, due to challenges in hydrogen supply, these vehicles are typically equipped with large batteries and use diesel engines exclusively for battery charging. However, some models can be upgraded to zero emissions in the future by replacing the diesel generator with a hydrogen fuel cell pack.

Japanese-made low-carbon RTGs have already been adopted by major terminal operators in the Philippines and have been installed at the Port of Manila and Subic Bay. Their environmental performance and reliability

have earned them high praise, particularly from customers actively promoting decarbonization.

Potential needs and issues

Price Competitiveness: Currently, Chinese manufacturers account for approximately 70% of the container crane market, exposing the market to fierce price competition. While Japanese products are highly regarded for their performance and low failure rates, high initial investment costs present a barrier to adoption.

Potential for Financial and Export Support: When exporting Japanese decarbonization technology products, strong financial support, such as low-interest loans and subsidies, could be expected to narrow the price gap and promote the adoption of Japanese products.

Establishment of a hydrogen supply system: For the widespread use of cranes powered by hydrogen fuel cells, which are CO_2-free, it is essential to establish a stable and inexpensive hydrogen supply infrastructure at ports. However, hydrogen production costs are still high, and it is thought that it will take time to establish a supply chain, so it is expected that it will take some time before hydrogen becomes widespread.

2) Renewable energy supply (Solar and Wind Powers)

As part of the CNP initiatives, numerous initiatives are being undertaken, including the installation of solar panels to provide part of the electricity for office facilities and for nighttime lighting on roads and container yards, and the use of solar-generated electricity.

Potential needs and issues

The application of solar power to road lighting and indoor lighting in buildings is relatively easy to implement, and so it has become commonplace and widely used. However, a drawback is that large-scale power generation requires a large panel installation area.

3) Onshore power supply

Onshore power supply system allows the vessels when they are berthed to transition from onboard auxiliary diesel engines to receive power directly from the port's power grid. This system, comprised of a transformer, frequency converter, power control device, cable management system, and connection equipment, provides a stable supply of power that conforms to the ship's voltage and frequency specifications.

Potential needs and issues

Initial Investment Costs: The port requires large-scale infrastructure development, including transformers and frequency converters, while the ship incurs costs for retrofitting the power receiving equipment.

Ensuring Grid Capacity and Clean Power: Accommodating the high voltage and power demands of large container ships and cruise ships requires significant investment in expanding the local power grid. Furthermore, because the decarbonization effect of shore-based power supply directly depends on the onshore power generation mix, improvements to the energy mix are also required.

Technical challenges and standardization: In some cases, connector and cable standards are not internationally unified, and it is necessary to build a system that can flexibly accommodate the different voltages (440V to 11kV) and frequencies (50Hz or 60Hz) required by ships on international routes.

4) Energy-saving in port facilities

As part of the CNP initiatives, the following energy-saving measures are being implemented in facilities both inside and outside the terminals:

- Converting indoor lighting to LED (replacing with low-cost, energy-efficient lighting)
- Installation of solar panels

In addition, the following initiatives are being implemented in warehouses and factories adjacent to the port and in its surrounding areas:

- Energy saving in lighting, air conditioning, heat sources, and production equipment
- Utilization of renewable energy
- Installation of solar power generation equipment and storage batteries
- Increasing efficiency of electricity use

Potential needs and issues

Many of these are relatively easy to implement and are commonly used and widely adopted.

5) Decarbonization of vessels and vehicles

To reduce or eliminate CO_2 emissions from vehicles used inside and outside the terminals, the following initiatives are being implemented, including electrification vehicles and adoption of fuel cell vehicles.

- Development and demonstration of fuel cell trucks, etc.
- Introduction of low-carbon emission diesel engine vehicles and biofuels
- Introduction of electric vehicles
- Introduction of EV charging facilities and hydrogen stations
- Introduction of gate reservation systems (to improve vehicle driving efficiency and congestion reduction)

Potential needs and issues

Although there is potential need for low-carbon technologies derived from hydrogen, the reality is that widespread adoption has not progressed. The following challenges exist when it comes to reducing and decarbonizing vehicles.

- It is necessary to ensure a stable operational foundation by expanding the development of electricity and hydrogen refueling infrastructure at terminals (charging stations, hydrogen stations).
- The initial investment required to introduce charging and hydrogen supply equipment is necessary, and coordination among stakeholders is required.
- Due to the high cost of hydrogen production and the lack of progress in fuel prices and supply networks,

there are cost challenges with procuring fuel via hydrogen.

6) Blue infrastructure

Blue carbon ecosystems capable of absorbing and storing CO_2 include seagrass and seaweed, wetlands and tidal flats, and mangroves. Examples of blue infrastructure include bio-symbiotic seawalls and green space development.

Seagrass and seaweed: Measures to create CO_2 sinks are being promoted through the conservation, restoration, and creation of seagrass and seaweed beds. The resulting CO_2 is being institutionalized as a sink measure, labeling it as blue carbon, with the aim of expanding sinks in the future. Demonstration projects for restoring seaweed beds are underway, funded by NEDO's Green Innovation Fund and other organizations.

Wetlands and tidal flats: The conservation and restoration of wetlands and tidal flats in ports and coastal areas is being promoted in conjunction with water quality conservation, while maintaining the functionality of coastal ecosystems and ensuring biodiversity.

Mangroves: Found in areas such as the southwestern part of Japan, mangroves are recognized as blue carbon ecosystems and play a key role in local conservation efforts, with their importance, including their ability to absorb CO_2, being recognized.

Bio-symbiotic revetments: Efforts are being made to achieve both disaster prevention functions and improved biodiversity by using port structures that incorporate biological habitats (such as bio-symbiotic revetments).

Green space development: The development of green spaces in ports and coastal areas and measures to conserve biodiversity are being promoted as policy from the perspective of improving environmental quality and regional coexistence.

Potential needs and issues

By taking appropriate measures during the planning and design stage, it is possible to construct infrastructure facilities such as breakwaters and seawalls necessary for port development as bio-symbiotic facilities. Furthermore, the seagrass and seaweed beds newly created through such infrastructure development can be positioned as blue carbon ecosystems with the function of fixing CO_2, and may be eligible for blue carbon credits.

(3) Next-generation Vessels

In the maritime sector, development and demonstration experiments are underway for ships that use next-generation energy sources as fuel instead of conventional heavy fuel oil. Some of the experiments have already been put into practical use. An overview of these efforts is summarized as follows.

Table 3.4-3 Types of next-generation energy vessels, their current status and challenges

Vessel Type	Current situation and issues
EV Vessel	• They have a proven track record as bunkering ships and tugboats. • They are equipped with large-capacity batteries, making it possible to reduce CO2 emissions to zero during operation. • The installation of shore power supply facilities is a challenge to their

	widespread use.
LNG-fueled Vessel	• Among alternative fuels, it has a relatively long track record of use. • It is used in tugboats, general cargo ships, car carriers, ferries, etc.
Methanol-fueled Vessel	• There is a track record of building dual-fuel ships (heavy oil and methanol), and they are beginning to operate. • There are still issues with fuel procurement, so it will take some time for this to become widespread.
Biodiesel-fueled Vessel	• It has the advantage of being able to be used with conventional engines as is. • Demonstration experiments are being conducted on tugboats, ferries, etc. • The fuel is produced in small quantities, presenting challenges in procurement.
Hydrogen-fueled vessel	• There is a track record of demonstration experiments, introduction, and operation on tugboats and small ships. • There is a track record of demonstration experiments of a hydrogen-diesel co-fuel engine on a small passenger ship. • Hydrogen production costs are high, and there are challenges in spreading the hydrogen production and supply supply chain.
Ammonia-fueled vessel	• Tugboats are currently in the demonstration testing stage. • Ammonia-fueled engines are still in the development stage. • There are few bunkering base ports.

Source: JICA Study Team

Potential needs and issues

Next-generation fuel vessels (biodiesel, methanol, hydrogen, and ammonia) face challenges in fuel production and supply chains, and their widespread adoption is expected to take some time. On the other hand, LNG ships have a relatively long operational track record and are considered to have the potential to become even more widespread. Furthermore, the development and widespread adoption of EV power supply ports remains a challenge for electric vessels, making their application to ocean-going vessels difficult. However, for ferries, tugboats, bunkering vessels, and other vessels with fixed operating routes and base ports, the advantage is that they can be easily introduced in conjunction with power supply ports. From this perspective, there is potential for increased demand.

While biodiesel currently faces the challenge of low production volume and high cost, unlike other next-generation fuels, it has the advantage of being able to be operated directly in existing diesel engines. This eliminates the need for engine replacement or modifications, and the widespread adoption of affordable fuels is likely to promote their use.

3.4.3 Financial Sector

(1) Blue Finance

1) Sumitomo Mitsui Banking Corporation（SMBC）

SMBC Singapore provides sustainability finance products to the APAC region. Among these, blue finance is positioned as a type of green finance that specifies the use of funds for environmental conservation. The

choice between green and blue is determined by the specific needs of the customer and the characteristics of the project.

Blue loans, which specify the use of funds for the protection and sustainable use of marine and water resources, are issued based on the IFC (International Finance Corporation) Blue Finance Guidance[19] , and SMBC determines whether the use of funds falls under a blue project. Examples include sustainable water and wastewater management, ocean-friendly products, transportation and shipping, fisheries and aquaculture, and coastal tourism and recreation.

SMBC has issued two blue loans: The first is a syndicated loan of approximately 404 million USD to HUDCO, an Indian government-owned bank, in September 2019. HUDCO focuses on developing basic infrastructure, such as providing safe drinking water and affordable housing for low-income households. The social loan portion was allocated to housing support for low-income households, while the blue loan portion funded investments in new water pipeline installations in remote areas. The other is a May 2025 loan to Thai Union, a global seafood processing company based in Thailand, with funds earmarked for water resource protection and sustainable use. The total financing of 150 million USD consists of direct financing from the ADB and a syndicated loan from six major Asian banks, including SMBC. The funds will be used to expand the procurement of more environmentally conscious shrimp in shrimp farming, which raises concerns about water pollution.

Challenges include the limited understanding of blue finance concepts among companies and the restricted demand from the customer side. Consequently, proactive engagement from SMBC forms the core of the initiative. Furthermore, the financial benefits specific to blue finance are minimal, with the primary effects being novelty and PR value. Furthermore, the complexity of specifying fund usage and assessing eligibility makes it difficult for financial institutions to ensure profitability unless the project is large-scale, like Thai Union.

Looking ahead, support for SMEs engaged in Blue Economy-related businesses is a potential avenue. While inquiries from SMEs exist, many cases are excluded from financing because they do not meet SMBC's criteria. Collaborative financing with JICA could potentially enable the provision of Blue Loans to SMEs.

2) Mizuho Financial Group

Mizuho Financial Group has established its "Environmental and Social Considerations in Investment and Financing Policy (ES Policy)", implemented by group companies including Mizuho Bank and Mizuho Securities. The ES Policy specifically includes the fisheries and aquaculture sector as one of its designated sectors, setting out the policy approach for companies engaged in fisheries and aquaculture businesses.

As an example of its initiatives, Mizuho Securities provided comprehensive support for Maruha Nichiro Corporation's issuance of Japan's first blue bond in September 2022, from determining the use of funds to establishing the framework and completing the issuance. In March 2023, Mizuho Bank concluded Japan's first blue sustainability loan, worth 8.8 billion yen, with Proximar Seafood through a syndicated loan arrangement. In both cases, the funds will be used for land-based salmon farming operations, expected to contribute to sustainable fisheries and aquaculture. In April 2024, Mizuho Bank announced plans to sign a

[19] The September 2025 revision to this guidance added a requirement for water resources: a 10% efficiency improvement compared to existing facilities. This raises the bar for meeting eligibility.

blue loan agreement with Hoshino Resorts REIT Investment Corporation. This loan targets a project for self-sufficiency in drinking water through seawater desalination.

Beyond providing financing, the bank is also supporting blue economy initiatives through equity investments. In November 2025, Mizuho Bank invested in Verdant Bloom Ltd., the parent company of the Uniomics Group, which operates sea urchin farming businesses domestically and internationally to engage in circular seaweed bed restoration. Furthermore, Mizuho Financial Group actively participates in global frameworks, such as being the first Japanese financial institution to sign the "Business Call to Action" at the UN Ocean Conference in June 2025.

In this way, Mizuho Financial Group focuses on fisheries and aquaculture within the blue economy, employing multifaceted approaches including lending, bond issuance support, and investment.

3) Fisherman Japan Blue Fund

The general incorporated association Fisherman Japan was established in 2014 following the 2011 Great East Japan Earthquake. Based in Ishinomaki, Miyagi Prefecture, it works to nurture fisheries-related businesses and support the next generation of industry leaders. Subsequently, in 2016, it established its affiliated company, Fisherman Japan Marketing, to expand sales channels, develop overseas export businesses, and provide consulting services.

The association and Music Securities Co., Ltd. jointly established the "Fisherman Japan Blue Fund," an impact investment fund aimed at promoting marine conservation and sustainable fisheries. This fund is currently the only confirmed investment in a blue economy-related project within Japan.

The fund has invested in three domestic blue projects to date and plans further fundraising. Music Securities handles fundraising for the fund, while Fisherman Japan is responsible for identifying and selecting investment targets and providing post-investment technical support. Key focus areas for investment include projects contributing to appropriate resource management, projects improving the marine environment and conserving ecosystems, and projects leveraging the power of the ocean to address global environmental issues (including the protection of blue carbon ecosystems).

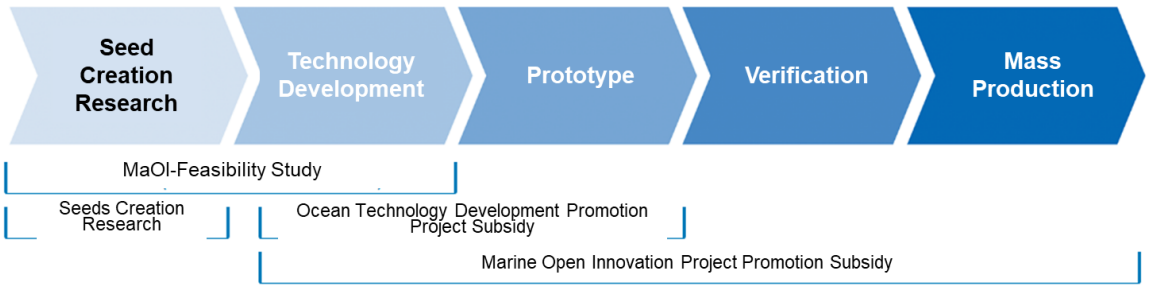
The Fisherman Japan Blue Fund, the only example of blue economy-related investment in Japan, is distinctive in that it provides not only funding but also technical support by leveraging the network and expertise in the fisheries industry cultivated by the organization. It is expected that the expansion of such initiatives will significantly contribute to advancing the blue economy in Japan.

(2) Grant

1) Marine Open Innovation Organization (MaOI) Research and Development Grant Program

Established in 2019, the MaOI Organization serves as the core driving force for Shizuoka Prefecture's Marine Open Innovation Project. It focuses on three main activities related to the "sea": promoting the Blue Economy, establishing and operating marine research and development hubs, and fostering collaboration among maritime-related personnel and organizations. As shown in Figure 3.4-1, MaOI has established a comprehensive support system covering every stage of the value chain, from the initial research phase of

seed creation to full commercialization.



Source: MaOI Organization

Figure 3.4-1 MaOI Organization Grant Programs

The MaOI-FS (Feasibility Study) program, the organization's primary grant scheme, provides subsidies of up to 2 million yen (capped at two-thirds of total project costs) for prototyping, research, and other activities aimed at solving marine-related challenges or creating new businesses.Additionally, the "Seed Creation Research" program promotes R&D centered on marine biotechnology. It provides an annual commission fee of 10 million yen per project to consortia formed by universities, research institutions, companies with legal status, or Shizuoka Prefecture research institutes.

The "Marine Technology Development Promotion Project Subsidy" supports engineering and information-based marine technology development conducted by prefectural companies in collaboration with universities and other institutions. Aimed at promoting industry in fields such as "food," "aquaculture," "drug discovery," and "environment/energy" utilizing marine biotechnology, it provides subsidies at a rate of up to two-thirds, for a period of up to two years, with a maximum subsidy of 20 million yen (annual cap of 10 million yen).

The "Marine Open Innovation Commercialization Promotion Project Subsidy" supports initiatives aimed at commercializing product development utilizing the functions of marine biological resources and innovative aquaculture and seedling production applying biotechnology. This grant targets consortia composed of two or more private entities. It provides subsidies covering necessary expenses for commercialization activities in fields such as fisheries, food, drug discovery, and environment/energy (e.g., raw material costs, machinery/equipment purchases, outsourcing fees), with a subsidy rate of up to 50%, a duration of up to 3 years, and a maximum subsidy of 30 million yen (annual cap of 15 million yen).

A key feature of the MaOI is its provision of a scheme offering consistent support from the R&D stage through to commercialization. This makes it an effective mechanism for progressively promoting the societal implementation of Blue Economy-related technologies. Establishing a similar scheme in the Philippines could similarly promote the development and practical application of Blue Economy-related technologies.

2) The Nippon Foundation

The Nippon Foundation is a private grant-making organization that funds projects by NPOs and private organizations tackling social issues domestically and internationally, using proceeds from boat races hosted by local governments as its primary source of funding. Its activities span six areas: "Ocean," "International," "Children," "Disaster," "Disability," and "Society." For fiscal year 2024, the total grant amount reached

59,361 million yen, with 1,225 projects selected.

Among its programs, the "Sea and Japan Project" grants stand out as a representative initiative related to the Blue Economy. This project aims to create a movement that inspires diverse people, particularly children and young people who will lead the next generation, to develop an interest in and take action for the sea. This is achieved through unique initiatives across Japan that leverage diverse connections with the sea. Eligible projects include: ① Addressing environmental issues, ② Social education projects related to the sea and ships, ③ Activities promoting children's interest in and actions toward the sea, ④ Projects concerning marine lifestyle culture and technology, ⑤ Water safety measures, ⑥ Research on marine issues, ⑦ Other (projects not falling under ①-⑥ but contributing to solving marine-related social issues).The subsidy rate is generally 80%, with 100% applied to pioneering model projects.

Additionally, the "Low-Carbon and Decarbonized Shipbuilding Fund" program provides long-term, low-interest loans to relevant businesses with the aim of promoting the maritime industry and reducing environmental impact. Specifically, it targets the construction of new fuel ships using LNG, ammonia, hydrogen, or other fuels as their main engine fuel, as well as ships certified under the "Specific Ship Introduction Plan" based on the Maritime Industry Strengthening Act (Act No.43 of 2021). Loans are provided for up to 18 years, interest-free, covering up to 80% of the required funding amount, with a maximum of 2 billion yen per ship and an annual maximum of 4 billion yen per business operator.

Furthermore, The Nippon Foundation's "Marine and Shipbuilding Business" supports the development of human resources capable of addressing international challenges, aiming to pass on a rich ocean to future generations. This initiative prioritizes building frameworks for promoting international cooperation and fostering cross-sector collaboration among industry, government, academia, and other fields. It provides grants covering up to 80% of project costs for activities such as marine research, developing human resources to support the oceans, marine safety and environmental conservation, and promoting engagement with the sea. Grants are appropriately set based on project scale and content.

The Nippon Foundation undertakes a wide range of initiatives contributing to the advancement of the Blue Economy from the perspectives of research, education, technological development, human resource development, and financial support. Programs such as the "Sea and Japan Project" and the "Low-Carbon/Decarbonized Shipbuilding Fund" contribute to promoting the Blue Economy within Japan from the viewpoints of sustainable use of marine resources, introduction of environmentally conscious technologies, and nurturing the next generation.

(3) Blue Carbon Credits

1) Japan Blue Economy Technology Research Association (JBE)

JBE was established on July 15, 2020, as a corporation authorized by the Minister of Land, Infrastructure, Transport and Tourism to conduct experimental research on climate change countermeasures utilizing the oceans. JBE aims to bring together and accumulate the latest technologies and knowledge in an interdisciplinary and cross-sectoral manner. It conducts research and studies, as well as social implementation experiments, to put blue economy initiatives into practice. Specifically, it advances the development of new methodologies to address various societal needs related to the ocean by providing scientific and technological

evidence, numerical data, economic value, or feasible implementation methods. It also conducts research and studies, as well as model projects, on climate change mitigation and adaptation measures utilizing the ocean. JBE's primary activity is the management and operation of the J-Blue Credit system, as described in 3.1.2 (1). J-Blue Credit is a unique credit certified, issued, and managed by JBE following deliberation by an independent third-party committee. Eligible projects involve activities to create, restore, maintain, or suppress degradation of ecosystems in Japanese seaweed beds, mangroves, salt marshes (mudflats), and artificial substrates (structures, aquaculture facilities, etc.). Beyond carbon sequestration and storage, these projects also contribute to diverse environmental values such as water purification and increasing fish numbers and species diversity (ensuring biodiversity).

2) Chubu Electric Power Miraiz, Chubu Electric Power, Mitsui Sumitomo Insurance

Chubu Electric Power Miraiz, Chubu Electric Power, and Mitsui Sumitomo Insurance are developing new services utilizing blue carbon. In this service development, Chubu Electric Power's research institute will research and establish blue carbon evaluation methods. TCC (an environmental assessment company and a Chubu Electric Power Group company) will handle measurements. Chubu Electric Power Miraiz plans to build a business model where it sells the generated blue carbon credits to corporate customers. Revenue generated from selling blue carbon credits will be returned to fisheries stakeholders. The aim is to create a virtuous cycle for the blue economy through reinvestment into maintaining aquaculture and supporting seagrass bed restoration. Additionally, Mitsui Sumitomo Insurance is considering developing insurance products to address risks such as reduced blue carbon credit generation, physical damage to seagrass restoration facilities, and sea level changes due to extreme weather events.

(4) Results of Interviews with Japanese Companies

Based on interviews with the companies listed in Table 3.4-4, we gained a concrete understanding of the potential for Japanese companies in the financial sector to expand their business operations in the Philippines and their potential needs.

As shown in Table 3.4-4, the results confirmed that all three organizations interviewed expressed a positive stance toward business expansion into the Philippines, indicating the potential for future cooperation with JICA Assistance Projects.

Table 3.4-4 Potential for Collaboration with JICA

Company / Organization Name	Company Overview	Possibility of Business Collaboration with the Philippines
Fisherman Japan General Incorporated Association Fisherman Japan Marketing Co., Ltd.	Fisherman Japan is an organization based in Ishinomaki City, Miyagi Prefecture, primarily composed of young fishermen. It undertakes projects such as human resource development, improving the distribution of marine products, and marine environmental conservation to propose a future form of the	Given that the Blue Fund was established against the backdrop of marine environmental conservation and promoting sustainable fisheries, if projects addressing similar challenges can be identified in the Philippines, the possibility of

	fisheries industry that will continue into the next generation. Additionally, it established the Fisherman Japan Blue Fund to promote marine conservation and sustainable fisheries, investing in a wide range of marine-related companies and ventures.	expanding (investing) into the Philippines could also be considered.
Sumitomo Mitsui Banking Corporation (SMBC)	Provides sustainability finance products in the APAC region. It has a track record of blue loans in India and Thailand.	SMBC's Blue Loans primarily target large corporations. Through co-financing with JICA, it may be possible to extend Blue Loans to small and medium-sized enterprises (SMEs), which were previously excluded.
Chubu Electric Power Miraiz, Chubu Electric Power, Mitsui Sumitomo Insurance	Chubu Electric Power's research institute studies and establishes carbon credit evaluation methods, while TCC (an environmental assessment company and Chubu Electric Power group affiliate) handles measurement. Chubu Electric Power Miraiz will sell the credits to corporate customers and reinvest the profits into supporting aquaculture maintenance and seagrass bed restoration, thereby aiming to drive the Blue Economy cycle. Mitsui Sumitomo Insurance plans to provide insurance products for credit issuance.	The evaluation methodology we possess should be widely shared and holds potential for international cooperation.

Source: JICA Study Team

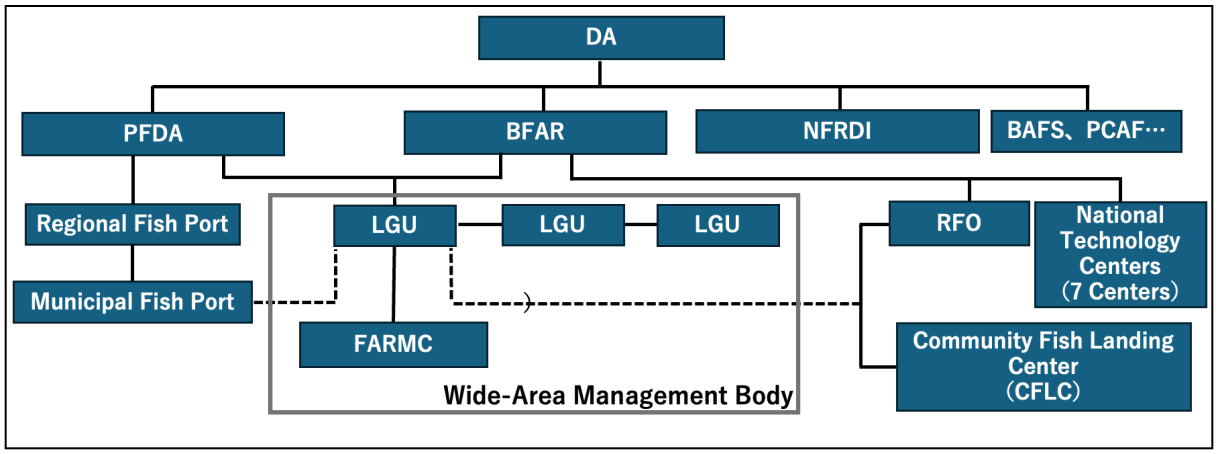
Chapter4 Current Status and Issues in Blue Economy Related Fields in the Philippines

This chapter summarizes the current status of initiatives related to the Blue Economy in the Philippines, as well as related issues and challenges, for the key Blue Economy sectors considered in this study: fisheries, maritime transport, and finance. The cross-sectoral status of the Blue Economy is described in Chapter 2.

4.1 Fisheries Sector

4.1.1 Relevant Institutions

The Philippines' principal institutions involved in the fisheries sector are the Bureau of Fisheries and Aquatic Resources (BFAR), the Philippine Fisheries Development Authority (PFDA), and related research institutions, each operating under the umbrella of the Department of Agriculture (DA). BFAR is responsible for fisheries administration in general, while PFDA is responsible for the construction, management, and operation of fishing ports. In addition, each Local Government Unit (LGU) has the responsibility and authority to manage the coastal waters extending 15 km from its coastline. Fisheries-related agencies under the DA include the following:



Source: JICA Study Team

Figure 4.1-1 Fisheries-Related Agencies under the Department of Agriculture

(1) BFAR

BFAR is an agency under the Department of Agriculture (DA) responsible for fisheries administration nationwide in the Philippines. Centered on the Director, it consists of four functional units: (1) technical services, (2) administrative services, (3) regional offices, and (4) research and extension centers. The technical services include units related to resource management, capture fisheries, aquaculture, and post-harvest, among others. Their main mandates include the conservation and management of fisheries resources, countermeasures against IUU fishing, dissemination of aquaculture technologies, operation of the fisherfolk registration system, support for coordination and collaboration with LGUs, and support for and institutional development of Fisheries and Aquatic Resources Management Councils (FARMCs).

In addition, BFAR has established 15 regional offices nationwide and, in collaboration with LGUs, advances a range of fisheries administrative functions.

Table 4.1-1 Regional Fisheries Offices of the BFAR

Region	Location	Detail
Region I	San Fernando City, La Union	Northern Luzon
Region II	Tuguegarao City, Cagayan	Cagayan Valley
Region III	San Fernando, Pampanga	Central Luzon
Region IV-A	Calapan City, Oriental Mindoro	Calabarzon
Region V	Pili, Camarines Sur	Bicol Region
Region VI	Iloilo City	Western Visayas
Region VII	Cebu City	Central Visayas
Region VIII	Tacloban City	Eastern Visayas
Region IX	Zamboanga City	Western Mindanao
Region X	Cagayan de Oro City	Northern Mindanao
Region XI	Davao City	Davao Region
Region XII	Koronadal City	Soccsksargen
Region XIII	Butuan City	Caraga
NCR	Quezon City	National Capital Region
CAR	Baguio City	Cordillera Administrative Region
BARMM	Cotabato City	Bangsamoro

Source: BFAR Regional Map. BFAR, 2023

(2) PFDA

PFDA is responsible for the construction, management, and operation of large-scale fishing ports nationwide (Regional Fish Port: RFP), as well as for the construction of medium-scale fishing ports at the city/municipal level (Municipal Fish Port: MFP). The large-scale fishing ports are shown in the following table.

Table 4.1-2 Regional Fish Ports Managed by the PFDA

Fish Port	Province	Key Features / Role
Navotas Fish Port Complex	Metro Manila	The largest fish port in the Philippines. A central hub for fisheries logistics in northern Luzon. Includes a 24-hour wholesale market.
Lucena Fish Port Complex	Quezon	A major port in the CALABARZON region. Equipped with cold storage facilities and a processing area.
Sual Fish Port	Pangasinan	A fisheries support hub in northern Luzon. A cluster area for coastal fisheries and aquaculture.
Camaligan Fish Port	Camarines Sur	A port supporting fisheries distribution in the Bicol

		Region. Well-equipped facilities for small-scale fishers.
Iloilo Fish Port Complex	Iloilo	A major port in Western Visayas. Includes freezing and processing facilities for export.
Davao Fish Port Complex	Davao del Sur	A fisheries logistics hub in southern Mindanao. Active tuna trading for export.
Zamboanga Fish Port Complex	Zamboanga del Sur Province	High landings of mackerel and tuna; important as a processing and export hub.
General Santos Fish Port Complex	South Cotabato Province	One of the Philippines' largest tuna-handling ports; a key international export hub.
Bulanao Fish Port Complex	Sorsogon Province	Located near mountainous areas, linking inland and coastal distribution. A relatively new facility.

Source: PFDA Agency Briefer, PFDA, 2025

A total of 138 MFPs has been constructed nationwide. After PFDA completes construction, the facilities are turned over to the respective LGUs, which then become the port administrators. However, in many cases, LGUs do not have sufficient budgets for routine maintenance and upkeep of the ports. As a result, repairs are carried out with PFDA support, prioritized based on applications submitted by LGUs (in order of urgency/priority).

(3) Research and Technology Development

R&D in the fisheries sector is implemented through a collaborative framework involving seven Fisheries Technology Centers under BFAR (Table 4.1.3) and five Research and Development Centers under NFRDI (Table 4.1.4). Although NFRDI is positioned at the same organizational level as BFAR within the DA, it was originally a research unit within BFAR. Reflecting this background, NFRDI's role is largely framed as supporting BFAR's work.

Table 4.1-3 BFAR Fisheries Technology Centers

Facility Name	Location
National Mariculture Center （NMC）	Panabo, Dabao City
National Freshwater Technology Center (NFTC)	Munoz City, Nueva Ecija
National Inland Fisheries Technology Center (NIFTC)	Tanay, Rizal
Marine Fisheries Development & Vessel Operations Center	Sanglay Point, Cavite City
National Brackishwater Fisheries Technology Center (NBFTC)	Pagbilao, Quezon
National Fisheries Development Center (NFDC)	Dagpan City, Pangasinan
National Seaweed Technology Development Center (NSTDC)	Sorsogon City, Sorsogon

Source: BFAR Annual Report 2024, 2025

Table 4.1-4 NFRDI Research and Development Centeres

Facility Name	Location
Freshwater Fisheries R&D Center	Buton, Taal, Batangas
Marine Fisheries R&D Center	Guian, Eastern Samar

Brackishwater Fisheries R&D Center	Lala, Lanao del Norte
Fisheries Biotechnology R&D Center	Munoz City, Nueva Ecija

Source: NFRDI, National Centers

Other research institutions that are not under the DA include the Aquaculture Department of the Southeast Asian Fisheries Development Center (SEAFDEC/AQD) located in Iloilo City on Panay Island, the Marine Science Institute at the University of the Philippines Diliman (UP Diliman Marine Science Institute), the University of the Philippines Visayas (UP Visayas), Mindanao State University, the University of San Carlos; and the Central Luzon State University (CLSU), among others.

In addition, for R&D related to agriculture, forestry, and fisheries, grants from the Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARRD) under the Department of Science and Technology (DOST) play an important role. PCAARRD has 13 divisions, of which the divisions relevant to the fisheries-centered blue economy are the Inland Aquatic Resources Research Division (IARRD) and the Marine Resources Research Division (MRRD). In addition, the Socio Economics Research Division (SERD) and the Technology Transfer and Promotion Division (TTPD) are involved in a cross-cutting manner.

(4) FARMC (Fisheries and Aquatic Resource Management Council)

FARMC is a body formed under the Philippine Fisheries Code (1988) and functions as an advisory council on fisheries administration, which is comparable to Japan's Fisheries Adjustment Commission. FARMCs exist at three levels: the municipal/city LGU level (Municipality/City FARMC: MFARMC), the provincial level (Provincial FARMC: PFARMC), and the national level (National FARMC: NFARMC). Representatives from each barangay participate in the MFARMC, and those representatives in turn become members of the PFARMC and NFARMC. The NFARMC is composed of representatives from PFARMCs nationwide as well as representatives from relevant agencies and researchers, and it provides advice to BFAR.

An MFARMC is composed of: (1) the City/Municipal Planning and Development Officer, (2) the Chair of the Agriculture and Fisheries Committee of the City/Municipal Council, (3) a representative of the City/Municipal Development Council, (4) representatives of accredited NGOs, (5) representatives of the private sector, (6) representatives of the DA, and (7) representatives of fishers (e.g., seven municipal fishers, one fishworker, and three commercial fishers, among others). In principle, MFARMC serves as an advisory body to the LGU. However, its mandated roles are wide, and covers fisheries law enforcement/monitoring, ecosystem conservation, resource management, and initiatives to improve fishers' livelihoods, so it also has an operational character as an implementing platform for on-the-ground activities. In addition, the eight items listed below are operated as subcommittees under FARMC.

(1) Law Enforcement (organization of Bantay Dagat and monitoring/enforcement activities against IUU fishing, maritime search-and-rescue and emergency response activities, etc.)
(2) Rehabilitation and Conservation (ecosystem conservation activities such as mangrove planting, etc.)
(3) Livelihood Opportunities (livelihood improvement activities such as the production and sale of processed fishery products, etc.)

(4) Research, Education and Training (technology dissemination/extension related to the fisheries sector, etc.)
(5) Legislative and Prosecution (support functions for fisheries monitoring and enforcement, etc.)
(6) Pollution Control (monitoring, enforcement, and surveillance related to illegal dumping of waste and discharge of polluted water, etc.)
(7) Land and Water Use (coordination of locations for installing fishing gear and aquaculture facilities, etc.)
(8) Fisherfolks Settlement (activities related to fishers' settlements, such as evacuation and relocation support during disasters, etc.)

MFARMC activities, such as technical training related to the above and the implementation of projects by other donors, are significantly influenced by support from the regional offices of BFAR and DENR. When LGUs and MFARMCs lack their own budgets, they often have little choice but to rely financially as well, for example by receiving operational support through projects implemented by these two agencies.
MFARMCs are classified into five levels according to the degree of activity across the eight items described above. According to interviews with BFAR, as of 2025, a total of 801 MFARMCs have been established nationwide, of which Level 1 accounts for 76% (614 MFARMCs). BFAR, the supervising agency for FARMCs, provides various forms of support in accordance with FARMC levels, including the provision of equipment and materials as well as technical training necessary for their activities, and works to raise the level of each MFARMC. However, only 46 FARMCs (5.7%) have reached Level 4 or above, which is the level at which they are able to mobilize their own operating funds. Funding is reportedly raised through activities such as the production and sale of processed fishery products and mangrove seedlings, and there are no cases of borrowing from banks or similar institutions.

Table 4.1-5 FARMC Level Classification

Level	Achievement Criteria	Description
Level 1	Basic structure of the FARMC	Establishment of the council, including setting up a secretariat, adopting internal rules, and initiating fisherfolk registration, etc.
Level 2	Basic functions of the FARMC	Drafting a fisheries development plan, supporting fisheries monitoring and enforcement activities, opening a FARMC office, holding regular meetings, etc.
Level 3	FARMC fully operational	Approval of the fisheries development plan, implementation of the system by the LGU, functioning as an advisory body, and concrete coordination with the LGU, etc.
Level 4	Sustainability mechanism	Developing a database, independently mobilizing operational funds, implementing activities autonomously, conducting sustained activities, and building networks with stakeholders, etc.
Level 5	Model of excellence	Strong coordination with the LGU and fishers in managing waters under its jurisdiction, recognition or awards for exemplary performance, and publication of success cases

		in printed materials, etc.

Source：BFAR, FARMC Guide Book

4.1.2 Overview of the Fisheries Industry in the Philippines

(1) Fisheries and Aquaculture Production

According to FAO statistics, the Philippines' fisheries and aquaculture production in 2022 was 4.12 million tons, ranking 11th in the world. For reference, Japan recorded 3.91 million tons and ranked 12th. In the latest statistics published by BFAR (2023), total fisheries and aquaculture production was 4.26 million tons. The breakdown was 1.88 million tons from capture fisheries and 2.38 million tons from aquaculture (Table 4.1-6). In other words, in volume terms, the ratio of capture fisheries to aquaculture is 44:56, with aquaculture accounting for a larger share. However, on a value basis, the ratio becomes 62:38, with capture fisheries carrying a higher weight. This is because more than half of aquaculture production consists of low unit-price seaweed.

In addition, capture fisheries in the Philippines can be broadly classified into commercial fisheries, which mainly target offshore species such as skipjack and tunas and sardines, and small-scale municipal (coastal) fisheries. Their definitions are as follows.

(1) Commercial fisheries: fisheries conducted in offshore waters beyond 15 km from the coastline using fishing vessels of 3 gross tons or more. A permit issued at the national level is required.

(2) Municipal fisheries: fisheries conducted within waters up to 15 km from the coastline, referred to as municipal waters (which are under the jurisdiction of municipalities), and using fishing vessels of less than 3 gross tons or non-motorized boats. Permitting and management are handled by the LGU.

Table 4.1-6 Fisheries and Aquaculture Production in the Philippines (2023)

Subsector		Production Volume (MT)	%	Production Value *('000 PhP)*	%
Aquaculture		2,384,023	56.0	124,022,964	37.7
	Fish	757,778	17.8	111,312,964	33.9
	Seaweed	1,626,245	38.2	12,710,000	3.9
Capture Fisheries		1,876,970	44.1	204,717,277	62.3
	Commercial Fisheries	822,427	19.3	77,175,306	23.5
	Municipal Fisheries	1,054,543	24.7	127,541,971	38.8
Total		4,260,994	100.00	328,740,241	100.0

Source: Philippine Fisheries Profile, 2023

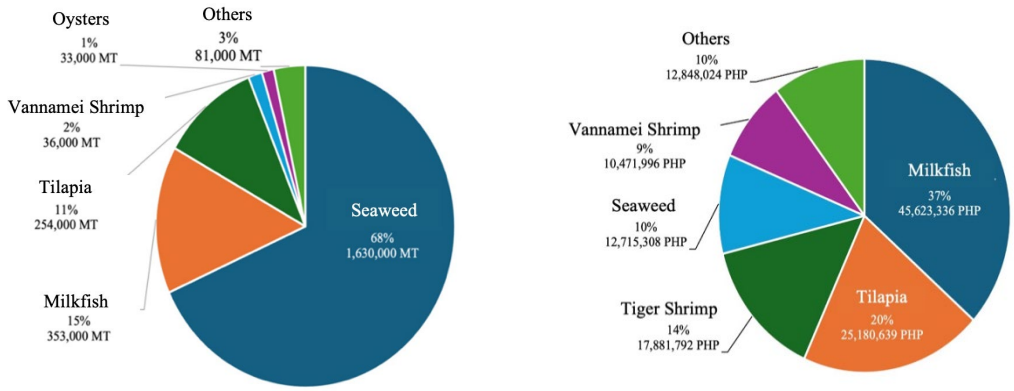
Table 4.1-7 presents fisheries production volume and value by region in 2023. In terms of production volume, BARMM records the largest output, followed by Zamboanga Peninsula, Central Luzon, and Western Visayas. In contrast, in terms of value, Central Luzon ranks first, followed by BARMM, Western Visayas, and Zamboanga Peninsula. This difference is attributable to the high share of seaweed production in BARMM and the Zamboanga Peninsula.

Table 4.1-7 Fisheries and Aquaculture Production Volume in the Philippines by Region (2023)

Region		Volume (MT)	Value(1000 PHP)
National Capital Region	NCR	86,951	6,708,421
Cordillera Administrative Region	CAR	3,513	432,799
Ilocos Region	Region I	192,279	26,688,807
Cagayan Valley	Region II	47,200	7,368,150
Central Luzon	Region III	354,406	54,217,604
CALABARZON	Region IV-A	176,177	19,778,081
MIMAROPA Region	MIMAROPA	434,904	23,036,890
Bicol Region	Region V	105,598	9,638,004
Western Visayas	Region VI	324,519	36,023,129
Central Visayas	Region VII	58,418	7,577,346
Eastern Visayas	Region VIII	98,012	13,421,345
Zamboanga Peninsula	Region IX	505,319	29,289,666
Northern Mindanao	Region X	60,555	8,265,836
Davao Region	Region XI	75,959	10,743,501
SOCCSKSARGEN	Region XII	274,274	29,814,569
Caraga	Region XIII	58,161	9,345,522
Bangsamoro Autonomous Region in Muslim Mindanao	BARMM	1,404,749	36,390,570
Total		4,260,994	328,740,241

Source: Philippines Fisheries Profile, 2023

Figure 4.1-2 shows the breakdown of aquaculture production. In volume terms, seaweed accounts for an overwhelming 68 percent. Excluding seaweed, milkfish ranks first both in volume and in value. Milkfish is often regarded as the Philippines' national fish, and it is widely produced through aquaculture in coastal areas, particularly in ponds developed in mangrove zones and in marine-based cages. After milkfish, the main aquaculture species are tilapia and shrimp, including tiger shrimp and vannamei shrimp.



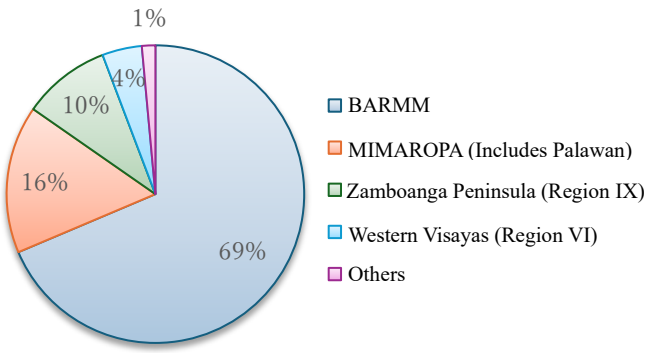
Source: PSA OpenSTAT, 2025

Figure 4.1-2 Breakdown of Aquaculture Production Volume (MT) and Aquaculture Production Value (1,000 PHP) in the Philippines (2023)

In these fisheries activities, IUU fishing and measures for resource management have long been persistent challenges. However, the 2015 amendment to the fisheries law introduced a policy of complying with the Ecosystem Approach to Fisheries Management (EAFM). The country has been divided into 12 Fisheries Management Areas (FMAs), and management is being advanced based on area-specific fisheries resource management plans.

(2) Seaweed Aquaculture

Seaweed aquaculture, which is one of the most distinctive features of the Philippine fisheries sector, is organized and summarized in this section. In the Philippines, the seaweeds cultivated on a commercial scale are the eucheumatoid seaweeds used as raw materials for carrageenan[20]namely the collective group of Kappaphycus and Eucheuma species. Hereafter, unless otherwise noted, the term seaweed refers to these eucheumatoid seaweeds. As noted above, seaweed aquaculture production in 2023 was 1,626,245 tons, accounting for more than 68.2 percent of total aquaculture production volume, while representing 10.3 percent in value terms. By region, BARMM, especially the production from Tawi-Tawi Island, accounts for 69 percent, followed by the MIMAROPA Region at 16 percent with Palawan Province as a major production area, and the Zamboanga Peninsula at 10 percent, among others (Figure 4.1-3).



Source: PSA OpenStat, 2025

Figure 4.1-3 Seaweed Aquaculture Production Volume by Region (2023)

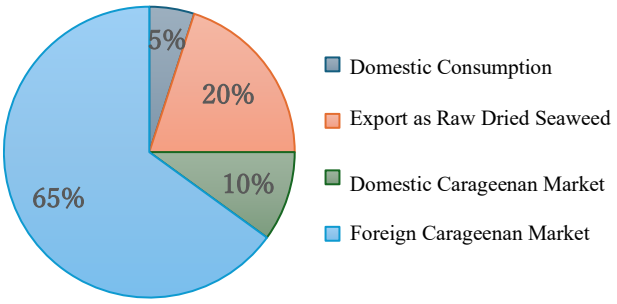
Although there are no official statistics on the number of seaweed farming operations, the Philippines Seaweed Industry Roadmap 2022-2026 estimates about 200,000 households, or 400,000 people. Seaweed is one of the most important fishery commodities in the Philippines, and against the backdrop of growing global demand for carrageenan, the government places a high priority on promoting the sector. At present, many small and medium-scale aquaculture promotion projects are being implemented, led by the EPSDP (Enhanced Philippine Seaweed Development Program) and supported in part by donor assistance.

[20] A substance extracted from seaweed that serves as a raw material for thickening agents added to products such as foods, cosmetics, and toothpaste, which is globally in high demand.

Farmed seaweed is allocated across domestic food consumption, exports as dried seaweed, carrageenan production for domestic distribution, and carrageenan exports (Figure 4.1-4).

Domestic food consumption (fresh seaweed): Seaweed has traditionally been used in salads, soups, and confectionery products. However, the domestic food market is limited, accounting for about 5 percent.

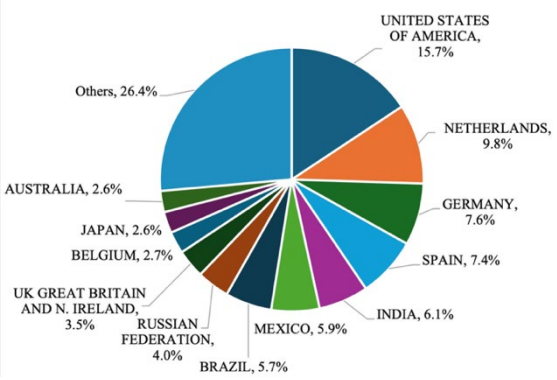
Exports as dried seaweed: The Philippines is one of the world's leading exporters of dried seaweed. In 2023, approximately 320,000 tons (equivalent to 32,000 tons in dry weight) were exported.



Source: BFAR Seaweed Industry Roadmap (2022) (Estimate)

Figure 4.1-4 Distribution and Consumption Breakdown of Farmed Seaweed by End Use (wet-weight equivalent)

- Processing and export as carrageenan: It is estimated that most of the farmed seaweed, approximately 75%, is refined and processed at domestic carrageenan manufacturing plants. Of the carrageenan produced, around 10% is estimated to be supplied to the domestic market, while approximately 65% is estimated to be destined for export.
- Carrageenan exports: Philippines is the world's second-largest exporter of carrageenan, with export value in 2023 estimated at approximately USD 280 million. Major export destinations are as shown in the figure, with substantial shipments to the United States, Europe. Exports to Japan are estimated at approximately 2.6%.



Source: Tradeline Philippines, DTI, 2026

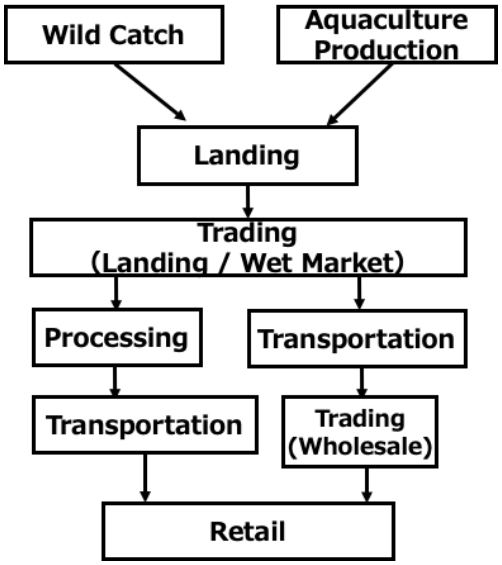
Figure 4.1-5 Share of Carrageenan Exports by Destination (2023)

Globally, demand for carrageenan as a food additive remains stable, but price competition with Indonesia has intensified. Nevertheless, at present, Philippine companies are considered to have a competitive advantage in carrageenan refining and processing technologies, as well as in quality control systems, and they are also highly regarded by Japanese food processing companies.

(3) Fish Distribution

The basic flow of fisheries distribution in the Philippines is shown in Figure 4.1-6. Fishery products produced through capture fisheries or aquaculture are sold, after landing, to middlemen at the landing market. They are then transported to the consumer market, where they are auctioned under intermediaries, and subsequently transported and sold to retailers and other outlets. When processing steps are involved, such as deboning of milkfish, whole fish purchased at the landing market are processed at a plant and then distributed to retailers.

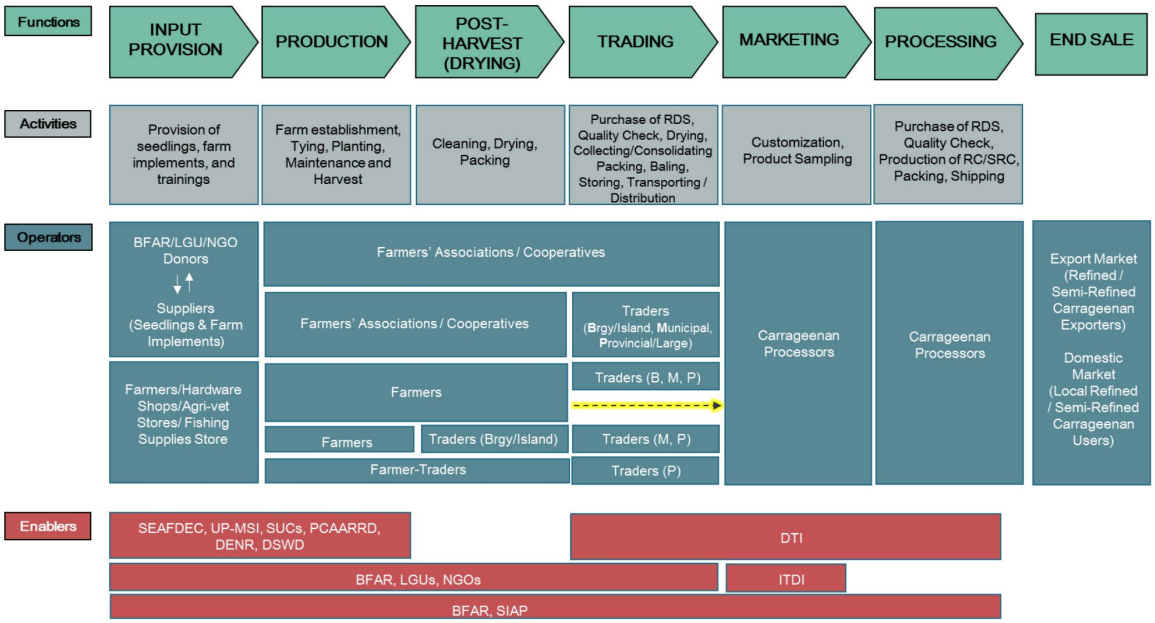
In addition, fishing ports in the Philippines often serve a dual function. They function as landing markets for fish landed directly at the port, and they also function as consumer markets for fresh fish landed at other fishing ports. Transport from landing markets to consumer markets generally relies on trucks, and long-distance shipments from remote islands frequently use both road transport and ferry routes. Fresh fish from Mindanao Island, which has highly productive fishing grounds, is often transported to ports such as Navotas Fish Port in Manila and the Iloilo Fish Port in Panay Island, where it is auctioned. Refrigerated trucks are rarely used for this transport. In many cases, fresh fish is packed in polystyrene foam boxes with a small amount of ice, or loaded directly onto waterproofed truck beds, and transported for extended periods, sometimes taking more than 24 hours. According to interviews with PFDA staff, insufficient use of ice is common, indicating weaknesses in quality management systems and constituting a major factor contributing to post-harvest losses.



Source：JICA Study Team

Figure 4.1-6 Basic Fisheries Distribution Flow in the Philippines

In the case of seaweed destined for carrageenan processing, the distribution flow is somewhat different. Farm households cultivate, harvest, and conduct initial drying of the seaweed, after which local small-scale traders purchase and aggregate the product and transport it to hubs such as Zamboanga. There, large-scale traders purchase the seaweed, carry out secondary drying, and compress it to reduce volume, and the processed product is then transported to carrageenan processing plants in Cebu. In rare cases, large-scale seaweed producers transport the product directly to intermediate consolidation hubs or sell it directly to carrageenan factories.



Source: Seaweed industry Roadmap 2022-2026, 2022

Figure 4.1-7 Distribution Flow for Seaweed Utilized in Carrageenan Processing

(4) Development Plans, Programs, and Related Frameworks

1) Comprehensive National Fisheries Industry Development Plan (CNFIDP)

The DA, based on the Philippine Fisheries Code (RA 8550), has formulated the Comprehensive National Fisheries Industry Development Plan (CNFIDP) as an overarching national fisheries development plan. Through the implementation of projects, roadmaps, and other plans positioned under the CNFIDP, the DA leads fisheries administration overall.

The CNFIDP is a long-term framework covering a 20-year period from 2006 to 2025. Current policy directions are presented in the medium-term plan, CNFIDP 2021-2025.

CNFIDP 2021-2025 is anchored on four baseline concepts: (1) the introduction of 12 FMAs covering all Philippine waters, (2) adoption of the EAFM as a comprehensive, ecosystem-based resource management framework, (3) the Mandanas-Garcia ruling, which brought about substantial transfers of financial resources to LGUs and strengthened their fiscal autonomy, and (4) the OneDA approach, which DA positions as a basic policy for reforming the agriculture and fisheries sectors. The CNFIDP 2021-2025 covers four subsectors: (a) capture fisheries, (b) aquaculture, (c) post-harvest, and (d) trade and marketing. The strategic directions for each subsector are as shown in Table 4.1-8.

Table 4.1-8 Strategic Directions for Each Sector under the CNFIDP

Sector	Overview
Capture Fisheries	Strengthen measures against IUU fishing
	Introduce the EAFM into fisheries management
	Identify, plan, and implement fisheries management tools based on EAFM

	Establish science-based catch reference points for major fishery resources
	Review policies and amend laws and regulations based on scientific evidence
	Ensure compliance with the national management framework and commodity roadmaps
	Strengthen maritime security and enforcement in the West Philippine Sea
	Promote distant-water fishing *
	Promote appropriate fishing technologies *
	Improve the welfare of commercial fishers and their households *
Aquaculture	Expand investments in the aquaculture subsector
	Ensure a stable supply of quality seedstock through coordinated investments in breeding and hatchery facilities
	Institutionalize GAqP for key aquatic products and promote sustainable aquaculture
	Ensure quality and traceability of aquaculture inputs and outputs
	Invest in species with high commercial potential
	Optimize the operation of mariculture parks
	Strengthen aquaculture resilience to climate change and disasters
Post-harvest	Reduce post-harvest losses across value chains
	Develop value-added products from fishery products and processing waste, among others
	Improve industry compliance with quality and safety regulations
	Strengthen livelihood and entrepreneurship support programs in coastal areas
	Enhance the international competitiveness of Philippine fish and fishery products
	Promote the sustainable utilization of Philippine fishery resources
Trade and Marketing	Expand markets for sustainable fish and fishery products (domestic and export)
	Strengthen distribution and promote trade to secure fish supply in areas with supply shortages
	Enhance the capacity and competitiveness of fisheries-related MSMEs for market entry
	Establish a comprehensive market information system
	Strengthen enforcement systems for laws, policies, and regulations related to trading and distribution
	Strengthen the capacities of fisheries institutions, human resources, and professionals specialized in distribution

Source: CNFIDP 2021-2025

（※：Strategy targets commercial fisheries）

Among development plans related to the CNFIDP, the following were identified: National Management Plans for tuna, sardines, and blue swimming crab; the Aquaculture Development and Management Plan (ADMP) 2025-2030; aquaculture commodity roadmaps; and the Comprehensive Post-Harvesting, Marketing and Ancillary Industries Plan (CPHMAIP) 2018-2023, among others.

2) BFAR Fisheries Development Programs and Projects

BFAR promotes four programs, with the primary pillars being livelihood improvement in the fisheries sector, sustainable use of fisheries resources, ensuring compliance with laws and regulations, and strengthening

policy implementation (Table 4.1-9). In addition, among the projects ongoing as of 2024, the major ones are shown in Table 4.1-10. Notably, only the Fisheries and Coastal Resiliency (FishCoRe) Project is implemented with support from an international organization, namely the World Bank, which contributes approximately USD 176 million out of the project's total budget of about USD 237 million[21].

Table 4.1-9 Overview of BFAR's Major Programs

Program Name	Overview
Fisheries Development Program	Provides livelihood-oriented support across four areas: capture fisheries, aquaculture, post-harvest, and marketing. Capture fisheries: Distribution of lambaklad (set nets), payao (fish aggregating devices), longline gear, fish traps, fishing nets, outboard engines, FRP boats, and related items. Aquaculture: Distribution of seedlings/seedstock and aquaculture inputs for seaweed, milkfish, and other species. Post-harvest: Distribution of dryers, marketing facilities/equipment, cold storage units, and processing equipment. Marketing: Market monitoring, credit/loan support, and implementation of events, among others.
Fisheries Regulatory and Law Enforcement Program	Enforces fisheries laws, including monitoring and enforcement against IUU fishing, food safety inspections, permitting and licensing of fisheries enterprises, and fisheries resource management, among others.
Fisheries Extension Program	Strengthens the capacities of fishers and related stakeholders through extension services, training sessions and seminars/lectures, support for FARMC activities, scholarships, and related measures.
Fisheries Policy Program	Supports policy implementation through assistance in formulating fisheries policies and plans and through coordination with relevant agencies, among other functions.

Source: BFAR Annual Report 2024

Table 4.1-10 Overview of BFAR's Major Projects

Program Name	Overview
Special Area for Agriculture Development (SAAD) Project	Consists of Phase 1 (2017–2022) and Phase 2 (2023–2028). Provides input support, extension/technical assistance, marketing support, and related assistance. Targets the 30 poorest provinces in the Philippines. Under Phase 2, support has been provided cumulatively for 517 community organization-building initiatives and 513 livelihood improvement projects, implemented at the fisheries association/cooperative level.
Development of Salt Industry Project	An initiative to revitalize the salt industry by improving productivity as well as quality and safety through research, extension, and human resource development.
Enhanced Seaweed Development Program	A large-scale seaweed aquaculture development program in the Philippines. Implemented nationwide across four areas: (1) research and development, (2) productivity enhancement (including development and construction of seaweed culture facilities and HDPE circular cages, among others), (3)

[21] https://projects.worldbank.org/en/projects-operations/project-detail/P174137

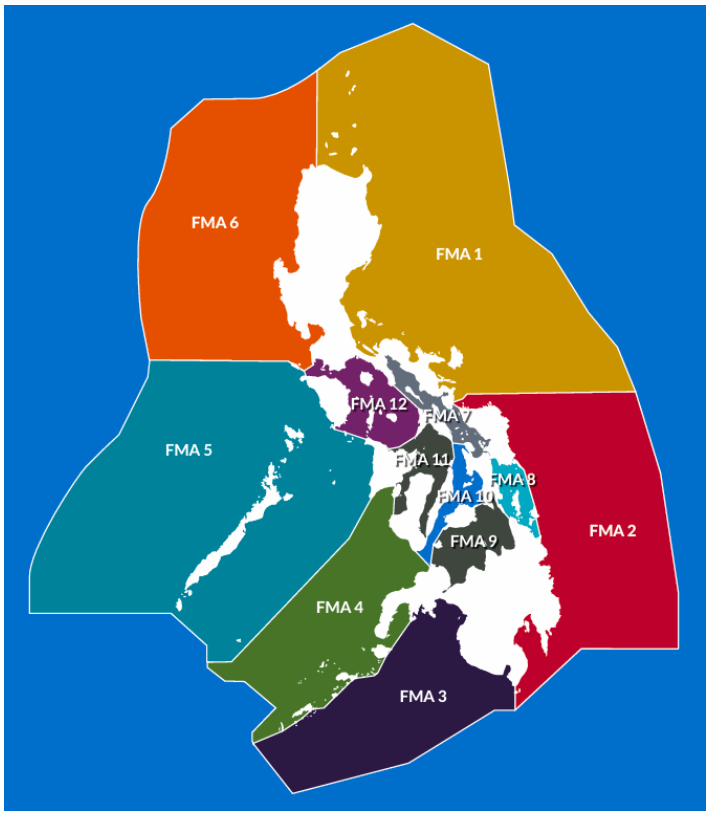
	dissemination of post-harvest technologies, and (4) marketing.
Legislated Hatcheries Project	A project to develop fry/seed production-related facilities at 57 sites nationwide (breakdown: 36 hatcheries, 2 research centers, 1 nursery facility, 1 extension station, 10 aquaculture ponds, and 7 aquaculture training centers). As of October 2024, 27 sites are in operation. The project produces 10 million fry/seed.
LAYAG (Livelihood Activities to Enhance Fisheries Yield and Economic Gains)	A project to support small-scale fishers. Provides inputs and technical assistance for capture fisheries and post-harvest activities in the Ilocos Region, Central Luzon, and MIMAROPA, which face the East China Sea. Items include FRP boats (62-foot class), payao (fish aggregating devices), gill nets, set-net boats, and related equipment. The project also strengthens MCS (monitoring, control, and surveillance) activities, including the provision of fishing gear, fishing vessels, and patrol/monitoring boats.
National Bangus Development Program	A domestic seed production plan for milkfish, implemented through the development of satellite seed production facilities and BFAR extension centers. Activities include broodstock management; production of larvae and fry at the National Fisheries Development Center (NFDC); distribution of fishing gear for collecting wild fry; distribution of aquaculture cages; technical guidance; and demonstrations, among others.
National Seaweed Development Program	Distributes seaweed seedlings/planting materials and farming inputs. Main activities include: (1) development and construction of seaweed nursery facilities (Seaweed Nurseries), and (2) operation of the National Seaweed Technology Development Center (a seaweed culture laboratory). Key achievements through 2024 include nationwide assessments of seaweed culture facilities; introduction of HDPE circular cages (e.g., Cebu—Bantayan Island; Albay—Lapulapu, etc.); development of Natural Seaweed Seedling Pools (Eastern Visayas); establishment of seaweed nurseries (252 sites nationwide); drone surveys and mapping of suitable seaweed farming areas (Bicol); and provision of mobile vending/sales equipment for seaweed.
National Shrimp Production Program	A project to promote shrimp aquaculture. Implements activities such as development of shrimp seed production facilities; operation of the "Shrimp School" at the BFAR-Jiabong Aquaculture Production and Technology Center (JAPTC); distribution of aquaculture inputs; and assessment surveys of the operational status of existing shrimp seed production facilities. Also known as "Hipon langat ang ProduksyON (HIPON)."
Seafood Kadiwa ng Pangulo	A fisheries-sector component of the mobile direct marketing program "Kadiwa ng Pangulo," led by the Department of Agriculture (DA). In addition to promoting consumption of domestically produced fishery products at the barangay level, the program provides educational materials and related support. In Metro Manila, 13 events were held, selling 4,641.53 kg of products with total sales of PHP 809,208.80.
FishCoRe Project	Aims to strengthen resilience in FMA 6 and FMA 9 by improving fisheries management and strengthening fisheries value chains. Consists of three components. (1) Fish CRRM (Fisheries and Coastal-Resilient Resource Planning and Management): Formulation of frameworks for FMAs and strengthening of governance. Sub-components include introduction of the Ecosystem Approach to Fisheries Management (EAFM), aquaculture development and

	management, and strengthening of coastal resource management. (2) MARLIN (Modern and Resilient Livelihood Investment): Promotes investments and marketing support primarily for improving the livelihoods of coastal fishers. Sub-components include livelihood diversification and promotion for fishers, promotion of aquaculture and fisheries enterprises, and infrastructure development. (3) SuPrIM (Support to Project Implementation and Management): A cross-cutting component for project management/coordination/monitoring at national and local levels.

Source: BFAR Annual Report 2024, FishCoRe, National Seaweed Development Program

(5) Fisheries Management Areas

Fisheries Management Areas (FMAs) are defined under Fisheries Administrative Order No. 263 (FAO 263), issued in January 2019 by the BFAR. For clarifying the allocation of fisheries management responsibilities with LGUs and promoting sustainable fisheries, FAO 263 divides the territorial sea and the exclusive economic zone (EEZ) of the Philippines into twelve management areas. This arrangement is based on the amended Philippine Fisheries Code, Republic Act No. 10654 (2016), which declares as national policy the management of fisheries and marine resources in a manner consistent with the EAFM and with the concept of integrated coastal management (ICM) in natural fishery management areas. The FMA divisions are as follows.



Source: OCEANA Philippines “Establish National rules on Fisheries Management Areas / Protect Sardines”

Figure 4.1-8 Fisheries Management Areas (FMA) of the Philippines

The objectives of the Fisheries Management Areas (FMAs) are as follows (OCEANA, Establishment of Fisheries Management Areas (FMA) in the Philippines):

(1) To provide a participatory and transparent governance framework and mechanisms grounded in scientific evidence, and to manage fisheries sustainably.
(2) To implement an ecosystem approach to fisheries management based on food security.
(3) To provide opportunities for supplementary livelihoods for poverty reduction in accordance with the basic policy directions of the amended fisheries law.
(4) To ensure coordination among local government units (LGUs), national-level agencies, and relevant stakeholders.

This policy aims to ensure that LGUs, fishers, civil society organizations, academic institutions, and other key stakeholders work in a harmonized manner toward the conservation and sustainable management of fishery resources. In particular, the core governance actors related to FMAs are the BFAR, the Department of the Interior and Local Government (DILG), and LGUs. The policy also places emphasis on participation by local communities and fishers through FARMCs (Comprehensive National Fisheries Industry Development Plan (2021–2025), DA (Philippines)).

4.1.3 Initiatives and Issues Related to the Blue Economy

This section summarizes the current status of blue economy-related initiatives and the issues identified, primarily based on findings from the field survey, for each of the three production subsectors classified under the DAs CNFIDP, which are capture fisheries, aquaculture, and post-harvest.

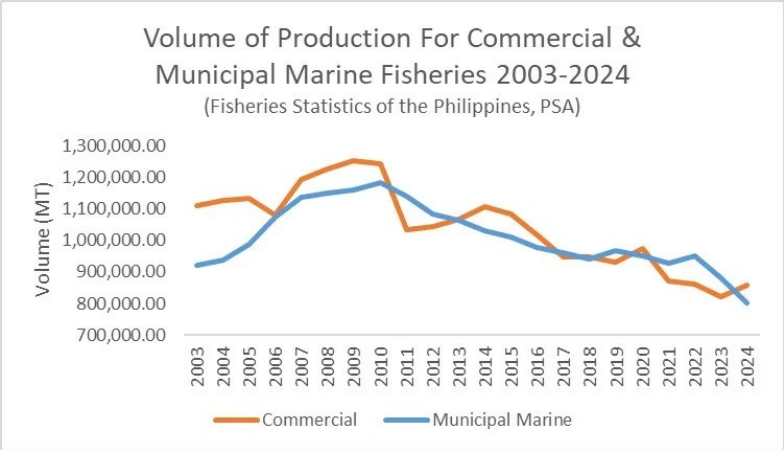
(1) Capture fisheries

1) Measures against IUU fishing

In the Philippines, IUU fishing has become a concern due to operations by Taiwanese fishing vessels in northern waters and by Vietnamese and Chinese fishing vessels in western waters. In addition, cases have been reported in which Philippine-flagged commercial fishing vessels enter municipal waters[22] within 15 km from the coast, and destructive fishing practices such as poison fishing and dynamite fishing remain problematic. In the Philippines, fish catch has continued to decline since peaking in 2010, and IUU fishing is considered one of the contributing factors. Illegal operations by commercial fishing vessels in areas used for municipal fisheries have been increasing, with serious impacts on the livelihoods of small-scale coastal fishers and on food security. BFAR's large offshore enforcement vessels are operated in coordination with the Philippine Coast Guard (PCG). The fleet includes two 50-meter-class vessels, ten 30-meter-class vessels, and four 11-meter-class vessels, which are deployed for operations in offshore waters. These vessels are built in Sual and Pangasinan. In addition, BFAR operates many small FRP patrol boats (believed to be in the 12-meter class) for coastal fisheries surveillance. As detailed information on monitoring and enforcement in

[22] Waters extending up to 15 km from the coastline over which city or municipal LGUs have the responsibility and authority for management. In principle, commercial fishing operations are prohibited in these waters in order to protect municipal (small-scale coastal) fishers. However, because the boundary is not clearly delineated, disputes can arise, including cases involving neighboring LGUs.

offshore fisheries could not be obtained, the discussion here focuses primarily on IUU fishing in municipal fisheries by Filipino fisherfolks.

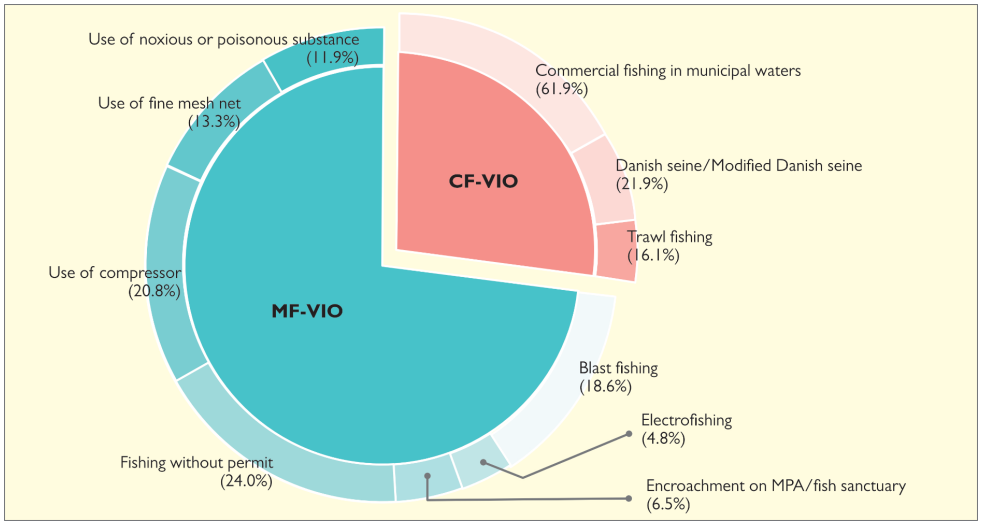


Source: Oceana Philippines, A troubling tide: The problem of illegal fishing and declining catch, July 9, 2025

Figure 4.1-9 Trends in Catch Volume by Commercial and Municipal Marine Fisheries

The waters that BFAR is required to monitor and enforce as part of its law-enforcement mandate are extensive, comprising 171,435 square nautical miles of inland and coastal waters, 32,106 square nautical miles of other territorial waters, and 382,669 square nautical miles of the EEZ. However, monitoring and enforcement capacity remains limited. A total of 363 enforcement officers is assigned to 76 MCS stations nationwide; of these, 228 officers (62.8%) have not received sufficient training, and 171 officers (47.1%) are non-regular personnel. In addition, while 105 coastal fisheries patrol vessels are required nationwide, only 46 are currently operational; 31 require repairs and 28 require replacement (Philippine IUU Fishing Assessment Report 2023).

Despite these constraints, total apprehensions for IUU fishing reached 679 cases in 2023. Moreover, analysis using the Philippine IUU Fishing Index and Threat Assessment Tool suggests that, in some LGUs, as many as 300 illegal fishing incidents may occur annually. In municipal fisheries, the number of IUU fishing violation cases amounts to 4,768 over the nine-year period from 2015 to 2023, considering only the top 10 categories of violations (Fisheries Law Enforcement Profile, BFAR). Of these, violations by commercial fisheries account for more than one quarter of the total. Within commercial-fisheries violations, 61.9% involve operations by commercial fishing vessels in municipal waters, and 21.9% involve the operation of Danish seine net that is authorized only for commercial fisheries. In municipal fisheries, major violation types include unlicensed operations (24.0%) and compressor-assisted diving fisheries (20.8%).



Note: CF-VIO refers to violations committed by commercial fishers, and MF-VIO refers to violations committed by municipal (coastal) fishers.
Source: Philippine IUU Fishing Assessment Report 2023, BFAR

Figure 4.1-10 Breakdown of Identified IUU Fishing Incidents in Coastal Waters

The same source estimates that total catch from IUU fishing amounts to 107,176 tons, with a value of PHP 5,358 million. Of this total, 57,894 tons (PHP 2,894 million) are attributed to commercial fishing, while 49,281 tons (PHP 2,464 million) are attributed to municipal fisheries, meaning that commercial fishing accounts for 54 percent of the IUU catch by volume.

As noted above, IUU fishing in coastal waters is a serious problem. However, BFAR also faces constraints in its monitoring and enforcement capacity. For this reason, the government is also working to strengthen LGU capacity. BFAR supports the establishment of Bantay Dagat, an organization through which LGUs take the lead in conducting voluntary fisheries monitoring. Because Bantay Dagat is a participatory organization centered on fishers and FARMC, many LGUs are unable to operate it effectively due to funding shortfalls. Common gaps include out-of-pocket costs for boat chartering, fuel, and insurance, as well as per diem payments for participating fishers. Shortages of human resources are also a major issue. While 162 LGUs, representing 77 percent of coastal LGUs, have Bantay Dagat units, only eight of these LGUs have units that function adequately. Although LGUs are key actors in addressing IUU fishing, the current situation is that they cannot function sufficiently due to constraints in financial and human resources.

In this situation, BFAR, as the lead agency for IUU fishing countermeasures, is implementing the following measures for addressing IUU fishing in municipal fisheries as planned under the CNFIDP.

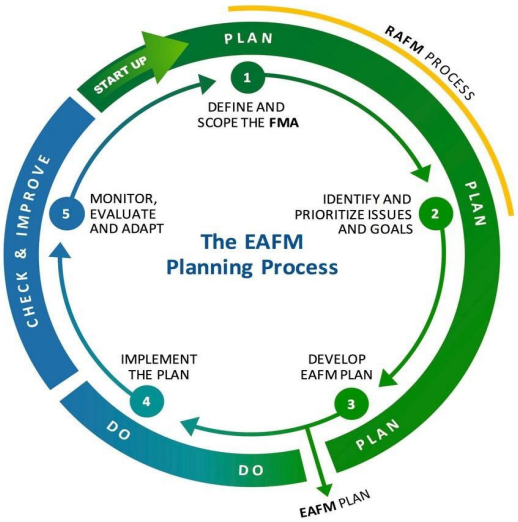
(1) Improve compliance with licensing requirements for vessels and fishing gear, as well as fisherfolk registration.
(2) Ensure strict enforcement of relevant laws and regulations.
(3) Implement sustainable MCS (Monitoring, Control and Surveillance).
(4) Establish Bantay Dagat units with appropriate budget allocations.
(5) Provide law enforcement training for LGUs.

According to interviews with BFAR, BFAR is working to strengthen its capacity to implement the Monitoring, Control and Surveillance (MCS) system aimed at enforcing measures against IUU fishing. However, there

are shortages in the number of patrol vessels, as well as in related equipment such as radar, AIS, radio communications equipment, and GPS plotters, and there is also insufficient training for capacity building of enforcement officers. BFAR noted that the relevant budget is inadequate, confirming the need for support in the provision of equiptments and technical assistance. In addition, while BFAR's Vessel Operation Center is responsible for operating large offshore fisheries enforcement vessels and managing related logistics, BFAR indicated that equipment investments are also needed so that each MCS station can have comparable functions for municipal fisheries enforcement vessels as well.

2) Promotion of the EAFM

The Ecosystem Approach to Fisheries Management (EAFM) is defined as "a practical and effective means of providing tools for more holistic fisheries management, shifting from fisheries management that focuses on specific target species to a system and decision-making process that balances environmental, human, and social well-being within an improved governance framework" (EAFM Learn, 2026). In the Philippines, with support from USAID, efforts are under way to develop guidelines for each FMA. In addition, the CNFIDP defines EAFM as follows.



CNFIDP 2021-2025, DA

Figure 4.1-11 The EAFM Planning Process

Under the Philippine Fisheries Code (1998, amended in 2015), EAFM is positioned as the foundation for fisheries resources management. In addition, BFAR Administrative Order No. 164 (2016) sets out practical guidelines for applying the EAFM concept in the formulation and implementation of BFAR programs and activities and adopts the "mainstreaming of EAFM" as a basic framework. EAFM is also positioned by various organizations, including member countries of SEAFDEC and the Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF), as a practical approach for ensuring the long-term sustainability of ecosystem services provided to fisheries and society, such as food security, livelihoods, economic stability, coastal protection, and human health and well-being. EAFM is an integrated approach applied at ecologically meaningful scales to improve fisheries management and balance diverse societal objectives, considering ecological and socio-economic components and their interactions. Accordingly, it seeks to balance diverse societal objectives while recognizing knowledge and uncertainty regarding biotic, abiotic, and human components and their interactions within a given ecosystem (FAO, 2003).

In other words, EAFM may be understood as an adaptive management approach that aims, in each region, to pursue in an integrated ecosystem conservation for the sustainable use of fisheries resources and the development of the fisheries sector and coastal community economies. In the CNFIDP, the strategies include "introducing EAFM in each Fisheries Management Area (FMA)" and "planning and implementing FMA fisheries management tools consistent with EAFM." The CNFIDP also sets out action plans that include the formulation of fisheries management plans by LGUs, inter-LGU cooperation, capacity-building training,

improving financial access and livelihoods for fishers' associations, promotion of good governance, development of alternative income sources during closed seasons and similar periods, establishment of marine protected areas (MPAs), environmental restoration, setting of closed seasons, measures to address polluted water, and related research.

<Implementing entities for EAFM>
According to interviews with BFAR, EAFM is led by BFAR and supported by DENR, while local government units (LGUs) and the FARMCs under their jurisdiction (see Section 4.1.1) are responsible for planning and implementation. In this context, FARMCs constitute the responsible bodies for implementing EAFM activities in an integrated manner, including fisheries management, ecosystem conservation, and livelihood improvement.
In the case of the Province of Bulacan, FARMCs played a central role in actively undertaking environmental restoration through mangrove planting in areas that had previously been used for aquaculture, livelihood improvement activities such as the production and sale of mangrove seedlings and the development of fisheries processed products, and monitoring and enforcement against IUU fishing by Bantay Dagat. In addition, part of the income generated from the sale of mangrove seedlings was used to finance FARMC activities, enabling operations that were not dependent on support from BFAR or on LGU budgets. As a result, the FARMC's activity level was assessed as Level 4.

Bantay Dagat Patrol Boat

Mangrove Reforestation Site

Source: JICA Survet Team

Figure 4.1-12 Examples of FARMC Activities Related to EAFM in Bulacan Province

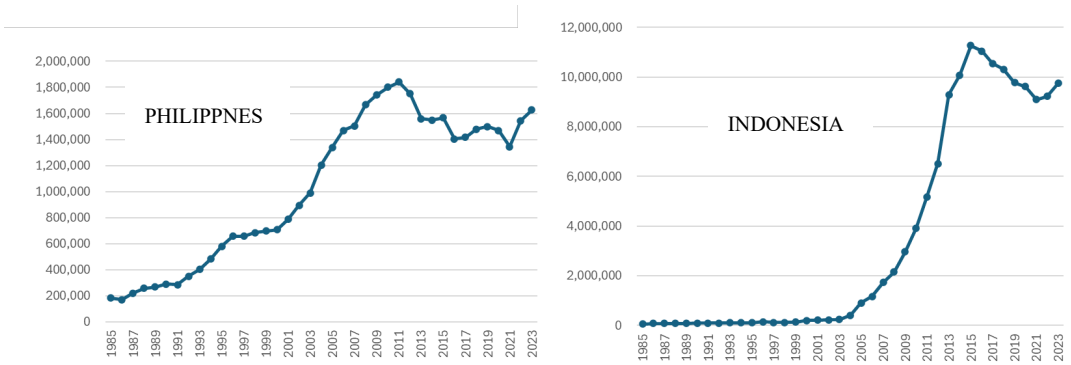
(2) Aquaculture

In the aquaculture sector, BFAR has developed the National Aquaculture Development and Management Plan (Aquaculture Development and Management Plan: ADMP 2025-2030), and roadmaps have also been prepared for major priority species. From the perspective of promoting the blue economy, this study reports field survey findings with a focus on three main themes, namely seaweed aquaculture, mariculture parks centered on milkfish, and issues related to AUU fishponds.

1) Seaweed Aquaculture

Seaweed is one of the Philippines' flagship fishery commodities. It is produced in large volumes in areas such as BARMM, Palawan Island, and Mindanao Island, where it serves as an important source of local income. It is also processed into carrageenan and exported, making it a valuable source of foreign incomes. In addition, seaweed has attracted attention as a sink for greenhouse gases, and, together with cultivation methods that impose limited environmental burdens, it is recognized as contributing to environmental conservation and biodiversity. In other words, seaweed can be regarded as a sustainable aquatic product that can simultaneously deliver high economic benefits and positive blue carbon effects and thus represents the Philippines' blue economy. Furthermore, the BARMM autonomous government is also focusing on its potential as a tourism resource, and initiatives such as study tours to learn about seaweed farming have begun. Tawi-Tawi Island has seen a nationwide increase in visitors, with arrivals increasing by 300 percent during 2024 to 2025, and with more hotels opening and higher investment, the potential for promoting blue tourism centered on seaweed aquaculture is increasing. It is therefore considered one of the most important themes for promoting the blue economy in the region.

On the other hand, declining production has also become a concern. Indonesia, like the Philippines, has a thriving tropical seaweed aquaculture industry, but in recent years production has plateaued in both countries (Figure 4.1-13). Causes that have been pointed out include genetic deterioration from continued use of the same stock, and reduced growth performance and outbreaks of disease due to global warming (see Section 4.1.4).

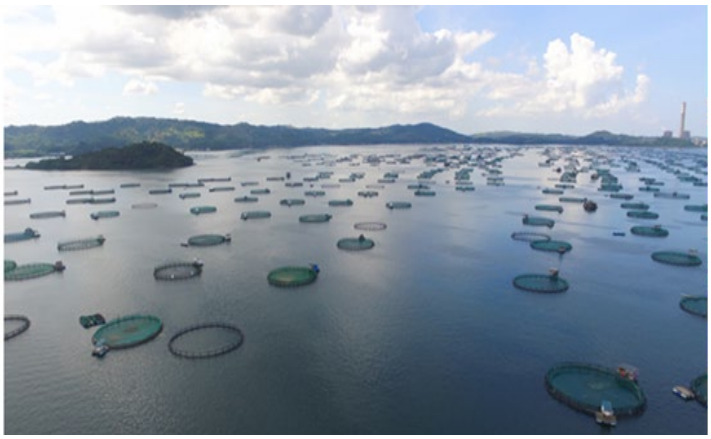


Source: FAO

Figure 4.1-13 Seaweed Aquaculture Production Volume in the Philippines and Indonesia

2) Mariculture Parks Centered on Milkfish Aquaculture

The Mariculture Park initiative promoted by BFAR aims to further increase production and stimulate aquaculture development by shifting milkfish farming, which has traditionally been conducted mainly in fishponds developed in mangrove areas, toward more productive and environmentally preferable marine cage culture. This shift is intended to improve production efficiency while avoiding the need for mangrove deforestation. The concept originated from the "Environmental Monitoring and Modelling Towards Sustainable Aquaculture Development (AquaPark)" project launched in the 2000s with support from the Norwegian Agency for Development Cooperation (NORAD). Under this scheme, the government provides infrastructure, such as mooring facilities, navigation routes, and docking areas, as well as technical assistance, while leasing designated plots to fishers and investors. The objectives are to strengthen food security and improve livelihoods in coastal communities. LGUs take the lead in permitting and management, while central government agencies provide the necessary support. In 2015, BFAR designated the Regional Fisheries Training Center located in Panabo City, Davao del Norte, in southern Mindanao as the National Mariculture Center (NMC) and has been conducting aquaculture technology development there. Each Mariculture Park has an Environment Compliance Committee, and a joint environmental monitoring system is in place involving BFAR, DENR, and the LGU. In addition, NFRDI is currently conducting surveys and analyses of the production capacity of each Mariculture Park.



Source: Growpure Aquaculture Production and Development Project, Microsoft Word – Project Description_Growpure Crop.docx

Figure 4.1-14 Sual Mariculture Park

At present, there are approximately 40 Mariculture Parks designated by LGUs nationwide. Among them, the production status of sites where production is considered particularly active is as follows.

Table 4.1-11 Aquaculture Production Status of Major Mariculture Parks

Name	Estimated Prodcution Volume (2024)	Overview
Sual Mariculture Park (Pangasinan	18,500 MT	The largest mariculture park in the Philippines, with outstanding milkfish production. Approximately 1,000 net cages land about 60 tons per day, which are shipped to Manila and other markets.
Panabo City Mariculture Park (Davao del Norte)	12,000 MT	Hosts BFAR's NMC, with a sustained production expansion plan underway. Species are diverse, including milkfish as well as rabbitfish, groupers, snappers, seaweed, and shellfish.
Tagabuli Bay and Malalag	7,000 MT	Expansion is progressing under SEAFDEC and

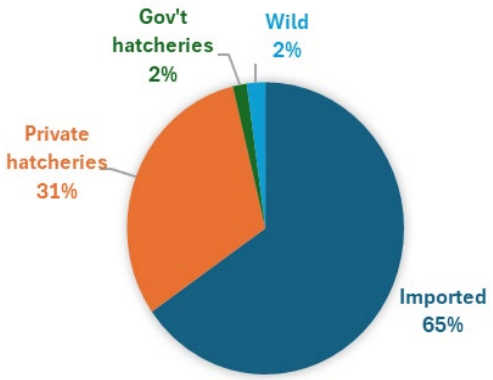
Bay Mariculture Park (Davao del Sur)		DBP's Sustainable Mariculture Investment Program. Primarily milkfish. Cultivation trials of green mussel are also being conducted in Tagabuli Bay.
Davao Oriental Mariculture Park	5,200 MT	In recent years, aquaculture production has been increasing with support from Davao Oriental State University and local government. Mainly milkfish.

Source: BFAR; interviews conducted for this study

Milkfish farming is gradually shifting from traditional extensive or semi-intensive methods in coastal ponds to feed-based cage culture using modern net cages in Mariculture Parks. Going forward, it will be necessary to pursue environmentally responsible production increases by incorporating new technologies such as remote environmental monitoring and automatic feeding systems. From a technical perspective, aquaculture R&D is expected to focus on innovations that enhance sustainability while improving farm profitability. These include diversification of cultured species and restructuring aquaculture systems by applying concepts such as integrated multi trophic aquaculture (IMTA).

In the milkfish value chain, the mainstream distribution and sales model is increasingly shifting toward deboning and selling products either as chilled fresh fish or in frozen form. More recently, products with higher levels of processing, such as fillets and seasoned items, have also been developed.

Milkfish aquaculture is therefore highly important to the Philippine fisheries sector. However, more than 60 percent of its seed supply is imported from Indonesia, which poses a significant challenge from the perspective of food security. While the reasons are likely cost differentials, such as labor and electricity costs, milkfish is an essential culture species, often regarded as the Philippines' national fish. Strengthening domestic seed production capacity is therefore a key issue.



Source: NFDC

Figure 4.1-15 Sources of Milkfish Seed Supply (2024)

To address this, BFAR has a concept to position the National Fisheries Development Center (NFDC) in Dagupan City as a central hatchery that supplies fertilized eggs and early-stage larvae, while developing satellite hatcheries in surrounding areas that would handle the early nursing phase, thereby increasing overall seed production. However, progress has been limited due to issues such as aging facilities, including damaged water intake infrastructure, as well as constraints in training and extension systems.

3) Issues Related to AUU Fishponds

In coastal areas, there are approximately 110,000 ha of fisheries development lands under BFAR's jurisdiction. About half of this area, 58,000 ha, has been leased to the private sector under Fishpond Lease Agreements (FLAs) and has been used as shrimp ponds and milkfish ponds. However, these ponds are generally shallow, and, together with the impacts of recent warming, productivity has declined. As a result, cases of ponds being left unused or abandoned have become increasingly evident. Such ponds are referred to as AUU (Abandoned, Underutilized, Undeveloped) fishponds. The term AUU fishponds was originally used for privately leased ponds on public land under the FLA scheme, but it now appears to be used more broadly to also refer to privately owned ponds that are likewise left in an abandoned or idle state.

Source: JICA Study Team

Figure 4.1-16 Example of AUU Fishponds

Promotion of fishpond development in coastal lowlands through the FLA scheme dates to the shrimp aquaculture boom period beginning in the 1970s. At that time, BFAR was under DENR, and the scheme was implemented in a manner whereby DENR delegated development and management authority to BFAR. Subsequently, shrimp aquaculture declined as fish diseases spread, and attention increased toward the sustainable use of the natural environment, including mangroves. In 2012, an administrative order issued by BFAR, Fisheries Administrative Order (FAO) No. 197-1, Series of 2012, established the institutional design and operational guidelines for schemes such as FLAs, Aquasilviculture Stewardship Contracts (ASCs), and Gratuitous Permits (GPs). An overview is provided in the following table.

Table 4.1-12 Types of Fishpond Schemes in Mangrove Area

Item	FLA	ASC	GP
Primary purpose	Commercial aquaculture	Environmentally friendly aquaculture	Research and education
Contract term	Up to 25 years	10 years (renewable)	5 years (renewable)
Eligible parties	Individuals, corporations, fisherfolk organizations	Fisherfolk organizations, SMEs	Government, universities, research institutions
Land use fee	Fee-based	Fee-based (low)	Free of charge
Mangrove cutting	None (already developed areas)	Prohibited	In principle, prohibited

Source: FAO No. 197-1, Series of 2012

Reactivating AUU fishponds is an important theme from the perspective of the blue economy. Under a 2024 memorandum order issued by DENR, DENR Memorandum Order No. 2024-01, DENR has set out a policy to administratively transfer fishponds that are leased under FLAs but are in an AUU status from DA-BFAR

back to DENR, and to revert them to mangrove forests from the perspectives of climate change mitigation, flood control, and biodiversity conservation. On the other hand, BFAR has an intention, consistent with the original purpose of the FLA scheme, to pursue redevelopment for aquaculture use or to utilize such areas as salt farms. Under the FLA scheme, users are also required to establish mangrove forests as a buffer zone in front of their fishponds.

In response to these issues, a policy loan program, the MEBED Program, implemented through co financing by ADB, AFD, and KfW, is conducting a survey on actual land use conditions for areas not covered by FLAs. Based on the results, an agreement between BFAR and DENR on the future treatment of AUU fishponds is expected to be reached by early 2026. After that, ADB plans to support mangrove rehabilitation and AUU fishpond restoration, with BFAR and DENR serving as counterpart agencies. FAO is also conducting research and deliberations on the classification of AUU fishponds.

(3) Post-harvest

This section summarizes the survey findings with respect to "post-harvest loss," "fishing ports," and "food safety," which are positioned in the CNFIDP as key issues and topics for the post-harvest sector.

1) Post-harvest loss

Post-harvest loss in the Philippines constitutes a significant social issue, and the CNFIDP formulated by the DA identifies countermeasures as a major challenge in the post-harvest subsector. Survey results by the NFRDI on the volume and monetary value of catch losses are summarized below.

Table 4.1-13 Post-harvest Loss of Fish Catch in the Philippines

Item	Source	Average loss rate (%)	Loss value (PHP)	Remarks
Tuna species	Capture fisheries	17.25%	223,192,519	Losses on carrier vessels transporting purse-seine catches operated in the HSP-1[23] fishing ground
Small pelagics / sardines	Capture fisheries	4.00% (max. 21.42%)	499,409.70	Losses occurring during landing
Tilapia, shrimp, mussels, mud crab	Aquaculture	0.22%	15,642.52	Losses occurring during wet markets
Small pelagics, blue swimming crab, squid, tuna species, bycatch	Capture fisheries	0.97%	10,444,808.38	Losses due to undersized fishery commodities
Tilapia, milkfish, mussels, oysters,	Aquaculture	4.02%	4,790,481.39	Losses due to undersized fishery commodities

[23] HSP 1: An abbreviation for "High Seas Pocket 1." It refers to an area of the high seas in the western and central Pacific Ocean that is enclosed by the EEZs of surrounding coastal States. This area is subject to the conservation and management measures of the Western and Central Pacific Fisheries Commission (WCPFC).

shrimp, mud crab				

Source: CNFIDP 2021–2025 (Montojo et al., 2020; Tadifa et al., 2022; Banicod et al., 2021).

A study on post-harvest losses occurring on refrigerated carrier vessels used in the offshore skipjack and tuna fishery (Montojo et al., 2020) found that the loss rate at the time of unloading from the carrier vessel was 17.25 percent, with an estimated loss value of PHP 223 million. While the number of fishing days per trip in the skipjack and tuna fishery ranges from 21 days to nearly 80 days, the volume of losses was positively correlated with the number of fishing days. This suggests that there are challenges in the carrier vessels' quality preservation and handling practices.

A study on post-harvest losses driven by market supply and demand fluctuations for fishery products (Tadifa et al., 2022) assessed the economic loss rate, loss volume, and loss value resulting from oversupply at several fishing ports and markets[24]. The results confirmed losses of 11 tons (6.8 percent) out of an annual landed volume of 171.21 tons of sardines at a small-scale fishing port in Dipolog, Zamboanga del Norte. During the peak fishing season (March), the loss rate rose as high as 21.42 percent due to oversupply.

Losses during transport are also considered to be substantial. Fish and other products caught and landed on Mindanao, the Philippines' principal fishing ground, are often transported over long distances to consumer markets such as Manila, Iloilo, and Cebu by truck via a combination of road and ferry transport. The catch is typically shipped in expanded polystyrene (foam) boxes together with ice; however, according to interviews with the Philippine Fisheries Development Authority (PFDA), the amount of ice used is generally insufficient, which constitutes a major cause of post-harvest losses during transport. For transport operators, in addition to the cost of purchasing ice, increasing the amount of ice reduces the volume of fresh fish that can be carried, thereby increasing overall costs. That said, if increasing the proportion of ice can reduce the monetary losses associated with post-harvest losses, the net cost burden could be mitigated to some extent.

CNFIDP 2006-2025 states that post-harvest loss rates can reach as high as 25 to 40 percent, and this figure is frequently cited in BFAR and PFDA materials and interviews. However, no specific basis for the estimate is provided. CNFIDP 2021-2025 sets a target of reducing post-harvest losses to below 10 percent over five years, but the breakdown of this target is also unclear. That said, the plan points out several issues: the actual status of post-harvest losses has not been accurately quantified; appropriate post-harvest facilities are insufficient and access is limited; and the application of suitable technologies for handling waste, bycatch, and by-products is inadequate. It therefore identifies the following areas for action.

(1) Standardize methods for estimating post-harvest losses and the mechanisms for reducing them.
(2) Develop appropriate technologies to enable effective utilization of processing waste and by-products
(3) Improve post-harvest and cold chain technologies and facilities, including ice plants, chilled and frozen storage facilities, trading facilities such as major and medium-scale fishing ports and CFLCs, private ports, and other post-harvest facilities.
(4) Ensure equitable access to post-harvest facilities, including cold chain infrastructure.
(5) Strengthen capacity for proper catch handling, quality management systems, and maintenance of post-harvest facilities.

[24] In the Philippines, during peak seasons for high-volume species such as sardines, fish prices generally collapse. As supply exceeds demand, catches may remain unsold, and processing capacity for canning, freezing, and other methods can also be exceeded. During such periods, it is reported that fishing vessels may discard part of the catch at sea, or, even if landed, the fish may remain unsold and ultimately have to be disposed of.

2) Fishing Ports

Fishing ports under the jurisdiction of Philippine fisheries authorities are classified into large-scale fishing ports (Regional Fish Ports) and medium-scale fishing ports (Municipal Fish Ports) administered by PFDA, and CFLCs (Community Fish Landing Centers) administered by BFAR.

Regional Fish Port

Large-scale fish ports are facilities that are developed and operated by the PFDA primarily for commercial fisheries, with nine ports currently in operation nationwide. No regional fish port (RFP) has been developed in the BARMM area. Many of these ports are equipped with processing facilities and cold storage/freezing units, and their operations are outsourced to private operators. In addition, a large share of the large-scale fish ports is aging, and a rehabilitation program with a total budget on the order of PHP 22 billion is under way. PFDA is also considering the construction of new large-scale fish ports, and concrete examinations have begun for sites in Palawan Island and Surigao in Mindanao.

The annual total volume of fish landed by each large-scale fish port (2024) is shown in the table below. The General Santos Fish Port Complex accounts for 50.24% of the total, and the Navotas Fish Port Complex accounts for 35.41%, with these two ports together representing 85.65% of the overall volume. By contrast, the Sual Fish Port and the Camaligan Fish Port, which are in the lower tier in terms of volume, each record annual landings of less than 500 tons.

Table 4.1-14 Volume Landed at Regional Fish Ports

Fish Port	Province	Total Volume Landed* (2024, MT)
Navotas Fish Port Complex	Metro Manila	205,251.98
General Santos Fish Port Complex	South Cotabato	291,160.62
Iloilo Fish Port Complex	Iloilo	28,233.14
Zamboanga Fish Port Complex	Zamboanga del Sur	9,882.01
Lucena Fish Port Complex	Quezon	19,727.82
Davao Fish Port Complex	Davao del Sur	3,715.77
Sual Fish Port	Pangasinan	485.66
Bulan Fish Port Complex	Sorsogon	21,069.65
Camaligan Fish Port	Camarines Sur	40.90

Source: PFDA Agency Briefer, PFDA, 2025

Municipal Fish Port

A municipal fish port is a relatively small-scale fish port intended primarily for use by municipal (coastal) fishers. PFDA had developed 138 such ports by 2025 (Table 4.1-15). PFDA is responsible for the feasibility study (F/S), design, and construction, while the LGU manages and operates the port after completion. For certain ports, the LGU is required to pay PFDA 10% of the port's monthly revenue as a management fee. This requirement applies to ports that were assessed as financially viable at the F/S stage; ports constructed for the purpose of improving the livelihoods of small-scale fishers are exempt. Because LGU budgets for fish port management are often insufficient, LGUs may submit requests to PFDA for repair funding. However, PFDA's budget is not sufficient to cover repairs for all municipal fish ports; accordingly, PFDA reviews

requests and responds based on prioritized needs.

Table 4.1-15 Number of Municipal Fish Ports Developed (by Region, as of 2025)

Region	Number Developed
Cordillera Administrative Region (CAR)	1
Ilocos Region (Region I)	5
Cagayan Valley (Region II)	8
Central Luzon (Region III)	12
CALABARZON (Region IV-A)	13
MIMAROPA (Region IV-B)	12
National Capital Region (NCR)	1
Bicol Region (Region V)	15
Western Visayas (Region VI)	12
Central Visayas (Region VII)	16
Eastern Visayas (Region VIII)	12
Zamboanga Peninsula (Region IX)	7
Northern Mindanao (Region X)	4
Davao Region (Region XI)	4
SOCCSKSARGEN (Region XII)	4
Caraga (Region XIII)	4
Bangsamoro Autonomous Region in Muslim Mindanao (BARMM)	8
Total	138

Source: PFDA Agency Briefer, PFDA, 2025

Approxinately, 60% of municipal fish ports are in operation primarily for fisheries-related purposes; however, 30% are used for non-fisheries purposes such as water transport hubs, and a further 10% are not in operation. Reasons for non-operation include facility damage caused by typhoons, insufficient LGU budgets, and cases in which the LGU has relinquished management responsibilities for various reasons.

Most municipal fish ports consist solely of a market hall and often lack ice-making and cold storage facilities. In some cases, PFDA has installed ice-making equipment and ice storage facilities; however, it has been reported that maintenance and operation become difficult due to factors such as insufficient LGU budgets. As a result, when fishery products are transported to consumer markets, traders must bring ice themselves, which increases the cost of quality control.

CFLC (Community Fish Landing Center)

A CFLC is a small-scale fish landing facility intended for small coastal communities. It is equipped with facilities such as a landing site, a handling/auction area, a management office, a small freezer, and a well, and aims to reduce post-harvest losses and improve livelihoods in fishing communities. BFAR serves as the lead agency, and the development program is implemented in coordination with the National Anti-Poverty Commission (NAPC) and LGUs. Following construction, the LGU assumes responsibility for management and operation. BFAR also provides support such as extension services and the distribution of equipment and materials.

The CFLC construction program began in 2015, with an initial target of developing 252 sites nationwide. Development has continued, and as of 2021, construction was planned at 729 sites nationwide; of these, 54% were in operation and 37% had completed construction (CNFIDP, 2025). According to interviews with BFAR, BFAR's monitoring of LGUs identified 194 CFLCs where landing and sales of fishery products were being conducted. In addition, there are cases where, although fishery products are not handled, the facilities are used as community meeting venues or for the sale of agricultural products, among other uses. The number of CFLCs used for fisheries purposes by region is shown in the following table.

Table 4.1-16 Number of CFLCs Developed (by Region, as of August 2025)

Region	Number Developed
Cordillera Administrative Region (CAR)	1
Ilocos Region (Region I)	19
Cagayan Valley (Region II)	2
Central Luzon (Region III)	26
CALABARZON (Region IV-A)	21
MIMAROPA (Region IV-B)	6
National Capital Region (NCR)	0
Bicol Region (Region V)	25
Western Visayas (Region VI)	26
Central Visayas (Region VII)	6
Eastern Visayas (Region VIII)	8
Zamboanga Peninsula (Region IX)	10
Northern Mindanao (Region X)	17
Davao Region (Region XI)	11
SOCCSKSARGEN (Region XII)	4
Caraga (Region XIII)	12
Total	194

Source：Materials provided by BFAR

Many CFLCs face shortages of funds for repairs and for the provision of equipment and materials, which constitutes a constraint on proper operation. In addition, the installation of ice-making facilities, refrigeration and freezing equipment (e.g., chest freezers), and fish processing equipment has not progressed sufficiently, and the development of such facilities remains a key challenge.

3) Food safety

BFAR has established inspection facilities for food safety, including Fish Health Laboratories (FHL), Aquatic Toxicology Laboratories (ATL), and Fishery Products Testing Laboratories (FPTL). FHLs conduct fish disease testing for aquaculture species; ATLs primarily conduct testing for shellfish toxins; and FPTLs provide information related to the safety of fishery products in accordance with the Philippine Food Safety Act (2013).

Interviews with BFAR confirmed support needs for improving inspection facilities that meet international

market safety standards and for strengthening testing capacity for shellfish toxins.

4.1.4 Current Status and Issues in the BARMM Region

(1) Structure of the fisheries administration

The ministry responsible for fisheries administration in the BARMM is the Ministry of Agriculture, Fisheries and Agrarian Reform (MAFAR). Under the Office of the Minister, administrative functions are carried out by the Agricultural Services, the Fisheries Services, and the Agrarian Reform Services. The organizational structure of the Fisheries Services is as follows:

Fisheries Operation Services
Fisheries Product Division
Fisheries Post-Harvest and Marketing Division
Fisheries Resource Management Division
Fisheries Research and Regulatory Services
Fisheries Regulatory and law Enforcement Divion
Fisheries Research Division

(2) Fishery Development Plans, Programs, and Related Frameworks

In the 2nd Bangsamoro Development Plan 2023–2028 (BDP 2023–2028), which is currently being implemented by the Bangsamoro Planning and Development Authority (BPDA), a mid-term review is being conducted as of January 2026. Within this review, BPDA plans to incorporate the concept of a "blue, green, and circular economy roadmap." The details are as follows (quoted from the TOR).Details of each sector are as follows (quoted from the TOR).

① Blue: Sustainable management and utilization of marine and freshwater resources, including fisheries, coastal tourism and biotechnology (sustainable management and utilization of marine and inland water resources, including applications to fisheries, coastal tourism, and biotechnology).
② Green: Strategies for environmental conservation, renewable energy deployment, sustainable agriculture and biodiversity protection (formulation of strategies related to environmental conservation, social deployment of renewable energy, sustainable agriculture, and biodiversity protection).
③ Circular: Waste minimization, recycling, resource recovery, and promotion of eco-innovation across key industries (waste reduction, recycling, resource recovery, and promotion of cross-cutting eco-innovation across priority industries).

In addition, the BDP 2023–2028 identifies the following as the key fisheries-related issues: "low productivity in agriculture and fisheries" and "unstable food supply." The specific details of each are presented in the following table.

Table 4.1-17 Fisheries Development Challenges in the Bangsamoro Development Plan 2023-2028

Key Challenge	Description	Specific Issues
Low productivity in agriculture and fisheries	High post production, sales, and marketing costs, leading to high retail prices	• Weak infrastructure such as road networks, including Farm to Market Roads (FMRs) • Higher aggregation and logistics costs due to a lack of consolidation and processing centers
	Limited technologies for commercialization	• Insufficient capacity development for R&D personnel, very limited regular positions for researchers
	Lack of reliable, timely, and accurate test results and reporting	• Weak collaboration with other regional and national research institutes • Absence of a database for agriculture and fisheries testing
	Degradation of coastal ecosystems such as coral reefs, seagrass beds, and mangrove forests	• Inappropriate use of inorganic fertilizers in seaweed farming • Lack of mechanisms to sustain marine protected areas • Limited community participation in coastal resource management • Illegal cutting • Conversion of mangrove areas into fishponds • Lack of information provision • Weak regulatory data and institutional support • Lack of clearly defined water boundaries
	Insufficient development of aquaculture and offshore and municipal fisheries	• Limited services for processing, transport, and marketing • Insufficient Mariculture Parks, including sea cage facilities, landing sites, and cold storage • Inadequate supply of seed and formulated feed for aquaculture • Insufficient capacity development for fishers and inadequate hatcheries, nursery facilities, and other necessary infrastructure
	IUU fishing	• Low law enforcement capacity against illegal operations • Insufficient coordination with LGUs and law enforcement agencies • Insufficient staff capacity development • Lack of equipment for monitoring, control, and surveillance

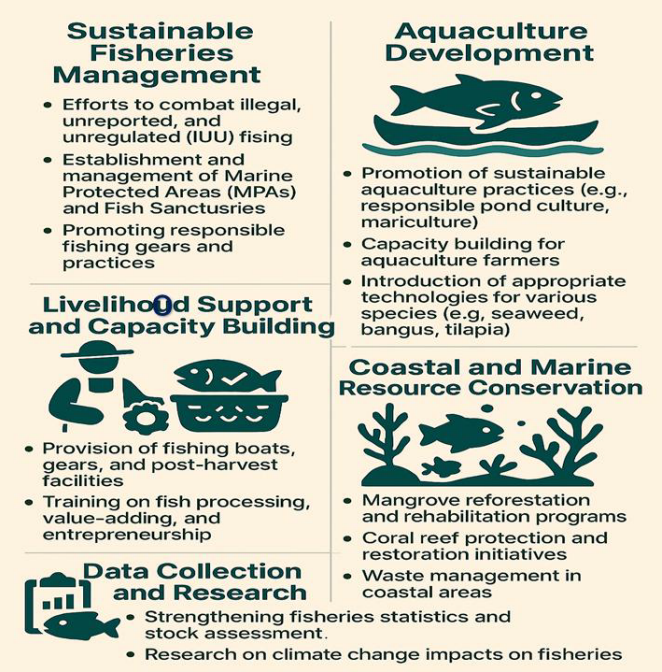
		• Absence of a marine environmental monitoring system
Unstable food supply	High post harvest losses	• Inadequate identification and development of FMRs • Insufficient financial support for pre harvest and post harvest infrastructure • Lack of information and inventories for pre harvest and post harvest facilities • As a result, traditional post harvest handling methods are still used • Inter agency coordination is required to implement responsive programs
	Limited opportunities for market linkage activities	• Unorganized value chains • Lack of funding for processed product development • Limited marketing expertise among fishers • Lack of transport options • Absence of comprehensive financing mechanisms for fishers • Constrained access to domestic and international markets

Source: JICA Study Team

BIMP-EAGA (Brunei Darussalam–Indonesia–Malaysia–Philippines East ASEAN Growth Area), also referred to in Japanese as the BIMP East ASEAN Growth Area, is one of the subregional cooperation frameworks comprising four countries: the Philippines, Brunei, Malaysia, and Indonesia. With a particular focus on strengthening economic linkages among predominantly Muslim areas, BARMM is actively engaged in this framework. Its current policy direction is set out in Vision 2025 and focuses on: (1) competitive and environmentally sound productive activities; (2) sustainable, competitive, and disaster-resilient agriculture and fisheries; and (3) sustainable tourism. BPDA, as a member of the BIMP-EAGA Development Council, is working to formulate the BARMM BIMP-EAGA Strategic Plan 2025–2028. With respect to fisheries-related initiatives, one program aims to develop intra-regional agriculture and fisheries value chains centered on halal certification: “Climate Resilient and Inclusive Green Growth for Poor Rural Communities: Advancing Climate Resilient Halal Agri-Aqua Value Chain in the BARMM Region.” It was reported that KOICA and the Global Green Growth Institute (GGGI) are involved in supporting the formulation of this program.

In addition, MAFAR has formulated the Integrated and Sustainable Development for Aquaculture/Capture Fisheries (ISDA) as the core development program for the fisheries sector. The program is structured around the following pillars: sustainable fisheries management; aquaculture development; livelihood support and capacity development; conservation of marine resources; and data collection and research. The main components of the program are illustrated in the figure below; however, detailed information was not

available under this study.



Source: Fisheries Strategic Direction, MAFAR, January 2026

Figure 4.1-17 Composition of ISDA

In addition, MAFAR has formulated a plan on food security in BARMM, the Bangsamoro Food Security and Nutrition Roadmap. Through a range of related projects and activities, the roadmap aims to achieve "a sustainable and competitive food supply chain," "balanced intake of halal foods," and "community adaptive capacity," thereby pursuing self-reliant and resilient food security.

Other initiatives include the "Fisheries Industry Development Plan" supported by the European Union and the "Philippines Rural Development Plan (PRDP)" supported by the World Bank; however, detailed information on these initiatives was not available.

(3) Overview and Key Issues of the BARMM Fisheries Sector

BARMM is one of the Philippines' leading fishery production areas. In inter-regional comparisons, BARMM ranked first nationwide in production volume in 2023 and second in production value (Philippines Fisheries Profile, 2023). In other words, fisheries constitute a core industry in the BARMM region, and the promotion of the fisheries sector is indispensable to BARMM's economic development.

From the perspective of the fisheries sector, Region IX (Zamboanga Peninsula) and Region XII (SOCCSKSARGEN) are closely linked with BARMM. These regions not only share resources and fishing grounds with BARMM but also function as logistics hubs through which BARMM's products are transported to markets. Accordingly, efforts to promote fisheries in BARMM require due consideration of linkages with these neighboring regions.

Post-harvest loss is also a major issue for the BARMM fisheries sector. BARMM has substantial needs for support in developing post-harvest infrastructure, including fish port construction and the introduction of

freezing, refrigeration, and processing facilities. The region lacks large-scale fish ports, and most facilities are small-scale ports centered on CFLCs; as a result, infrastructure capacity in terms of landing volumes and ancillary facilities is insufficient. In addition, the cold chain remains underdeveloped, which constitutes one of the contributing factors to post-harvest loss.

(4) Status and Issues of Fish Port Development

The BARMM region has no Regional Fish Ports directly managed by PFDA. In addition, there are eight Municipal Fish Ports that were developed prior to BARMM's establishment as an autonomous region, as listed below.

Table 4.1-18 Municipal Fish Ports in the BARMM Region

No. of MFP	Location
131	Ganassi, Lanao del Sur (Brgy. Pamalian)
132	Jolo, Sulu (Brgy. Cerrantes St.)
133	Lamitan, Basilan (Brgy. Kulay Bato)
134	Maimbung, Sulu (Brgy. Poblacion)
135	Maluso, Basilan (Brgy. Shipyard Port)
136	Panglima Sugala, Tawi-Tawi (Brgy. Batu-batu)
137	Parang, Sulu (Brgy. Alu Layag-layag)
138	Sumisip, Basilan (Brgy. Buli-Buli)

Source: PFDA Agency Briefer, PFDA, 2025

The impact of conflict has been significant, and many fish ports are in a condition requiring repair or rehabilitation. Although the island areas were not direct conflict zones, they are considered to have been indirectly affected as "conflict-affected areas," where administrative functions did not operate normally, which is presumed to have affected fish port management as well. Areas with the highest priority for repair, rehabilitation, or new construction are (1) Tawi-Tawi, (2) Basilan, and (3) Maguindanao (Maguindanao del Norte). Zamboanga on Mindanao serves as a distribution hub for fishery products from Tawi-Tawi and the Sulu Archipelago (the sailing time between Tawi-Tawi and Zamboanga is approximately 18 hours). Because a large share of fishery products produced in these areas is transported to Zamboanga without value addition, MAFAR hopes to develop infrastructure on Basilan Island, located across from Zamboanga, to process products and increase value added before shipping them onward to other parts of the Philippines. This is primarily envisaged for the drying and processing of seaweeds but freezing and canning of fish such as sardines are also considered potential future issues. In addition, with support from the Government of the Philippines (Special Development Fund), fish port development is currently underway in Tawi-Tawi.

In interviews with MAFAR, requests were made for support from donors such as JICA to conduct feasibility studies (F/S) for fish ports and for seaweed and fish processing plants. It was also indicated that the provision of equipment required for seaweed quality control and processing, such as solar-powered ice-making machines, dryers, and freezers, is needed, but that such equipment is insufficient across BARMM.

CFLCs have been established at 94 sites; however, only 16 are sufficiently developed and operational. In addition, rehabilitation works are currently under way in five areas: Tawi-Tawi, Basilan, Sulu, Maguindanao,

and Lanao. CFLC operation and management falls under the responsibility of LGUs, while MAFAR provides financial and technical support. However, budgets for CFLC rehabilitation and human resources for capacity development to enable effective utilization are insufficient, and support is also requested in these areas.

(5) Seaweed aquaculture

1) Technical challenges

Seaweed aquaculture is one of the most important industries in the BARMM region, which also has extensive water areas suitable for aquaculture development. In recent years, however, production has tended to plateau due to issues such as genetic deterioration of planting materials (due to repeated propagation), poor growth associated with global warming, and the occurrence of diseases, including the so-called “ice-ice” disease in which thalli deteriorate and appear to “melt.” Ice-ice disease is not a condition caused by a single pathogen; rather, it is a syndrome-type disease that manifests through complex interactions among multiple factors, including the host seaweed, symbiotic microbial communities (the microbiome), environmental stressors (temperature, salinity, and nutrients), and grazing damage by herbivores. The mechanisms underlying these interactions remain unclear, and at present, the development of targeted intervention measures has not yet been achieved. In recent years, producers have increasingly been using inorganic fertilizers to accelerate seaweed growth; however, this has become an issue because the resulting products contain a lower concentration of carrageenan in the final refined carrageenan product.

At present, the following practical measures are recommended at farm level. While these measures have demonstrated a certain degree of effectiveness, in the longer term, the introduction of selective breeding and diagnostic technologies is considered indispensable.

- Use healthy and vigorous planting materials/seedlings.
- During periods of high-water temperatures, select sites with sufficient depth and good water exchange.
- Reduce stocking density to mitigate stress and limit the spread of infection.
- Regularly remove epiphytic algae and weakened seaweed.
- During the rainy season, avoid areas with substantial freshwater inflow.
- Cultivation methods that do not use inorganic fertilizers.

From this background, the Mindanao State University Tawi-Tawi College has established a Seaweed Research and Development Center on campus with support from DOST-PCAARRD and has initiated fundamental research. In this survey, information was collected from the Center Director, and the following needs for countermeasures were confirmed:

- Distribution of high-quality and faster growing seedlings produced through tissue culture and other laboratory-based methods.
- Development of local seed supply hubs (nurseries) within the region.
- Diversification of varieties and species to secure genetic diversity.
- Improvement of farming design, spacing, and site selection to reduce stress.
- Technical training and quality control support for farmers, LGUs, and cooperatives.
- Strengthening of value addition and market linkages.

Source: Seaweed R&D Center, Mindanao State University Tawi-Tawi, Dr. Zayda Halun

Figure 4.1-18 Seaweed Tissue Culture Laboratory

- Introduction of IMTA/integrated multi-trophic aquaculture approaches through diversification of cultured species, to improve environmental conditions and enhance resilience.

2) Improving the seaweed value chain and strengthening extension and dissemination systems

In the BARMM region, seaweed farming operations are predominantly small-scale, family-run enterprises. The farming area per household is reported to be approximately 0.25 ha, which is about one quarter of the scale observed in South Sulawesi Province, Indonesia, a major production area (Seaweed Industry Roadmap 2022–2026). After harvest, farmed seaweed is dried and distributed through the following channel: barangay-level collectors (barangay traders) → large-scale consolidators and dry processing based mainly in Zamboanga → carrageenan processing companies centered in Cebu → domestic and international markets. In practice, given the distinctive trading practices specific to seaweed marketed as carrageenan raw material, an even more complex value chain is likely to be formed.

To ensure the sustainability of small-scale operations, it is important to strengthen organized approaches such as the formation of producer associations, and to scrutinize the seaweed value chain to implement measures to increase value added within local communities, including improvements in drying, processing, and storage methods.

With respect to aquaculture promotion in the BARMM Region, MAFAR has been taking the lead. During the period 2020 to 2024, MAFAR distributed 587 tons of seedlings, provided 4,230 sets of aquaculture inputs to 846 fishing households, established a total of 70 nurseries across the provinces of Maguindanao, Basilan, Sulu, and Tawi-Tawi, set up a seaweed tissue culture research laboratory in Maguindanao, conducted training on aquaculture techniques, and installed pilot drying facilities to improve product quality (MAFAR, 2026). In addition, there are plans to increase the number of seaweed seedling nurseries by 16. Going forward, MAFAR is expected to continue undertaking awareness-raising and information campaigns, technical training, and other activities to disseminate aquaculture; however, support is required to strengthen its implementation capacity.

MTIT has already conducted a feasibility study on a seaweed processing facility and its associated transport

hub in the Polloc economic zone (Freeport and Eco-Zone). However, the Governor of Tawi-Tawi prefers processing to be undertaken within Tawi-Tawi Island, and no consensus has been reached regarding the location of the processing plant. Nevertheless, Tawi-Tawi Island has insufficient electricity and water resources and is therefore not suitable as a location for a processing plant. For this reason, BEZA, which is responsible for Polloc's development, places importance on constructing the facility in Polloc.

(6) Environmental Administration and Key Issues

Environmental administration within the Bangsamoro Government is undertaken by the Ministry of Environment, Natural Resources and Energy (MENRE). MENRE is currently formulating the Bangsamoro Biodiversity Strategy and Action Plan (BBSAP), which is a comprehensive plan for ecosystem conservation in BARMM, and once finalized, it is expected to be integrated into the Bangsamoro Development Plan (BDP). Incorporating the concept of the Blue Economy, the BBSAP covers areas including sustainable fisheries, ecotourism, climate change resilience, and coastal resource management, and it aims to be completed in 2026. In addition, a wide range of development partners are supporting activities related to coastal resource management and coastal ecosystem biodiversity in coordination with MENRE, as outlined below.

(1) UNDP
(2) World Food Program
(3) Coral Triangle Initiatives on Coral Reefs, Fisheries and Food Security（CTI-CFF）
(4) WWF Philippines
(5) Marine Wildlife Watch of the Philippines
(6) Wildlife Conservation Society
(7) UNESCO
(8) ASEAN Center for Biodiversity

MENRE aims to promote the Blue Economy based on the principle, set out in the Bangsamoro Organic Act (Republic Act No. 11054), of developing sustainable management of natural resources, as well as on relevant plans such as the Philippine Development Plan (PDP), the National Climate Change Action Plan, and the Philippine Biodiversity Strategy and Action Plan. In addition, MENRE seeks to formulate the BBSAP as a regional plan tailored to BARMM that aligns with these national plans. Based on these policies and plans, MENRE is implementing ecosystem conservation activities, including in protected areas designated in each region and at the Turtle Islands Wildlife Sanctuary.

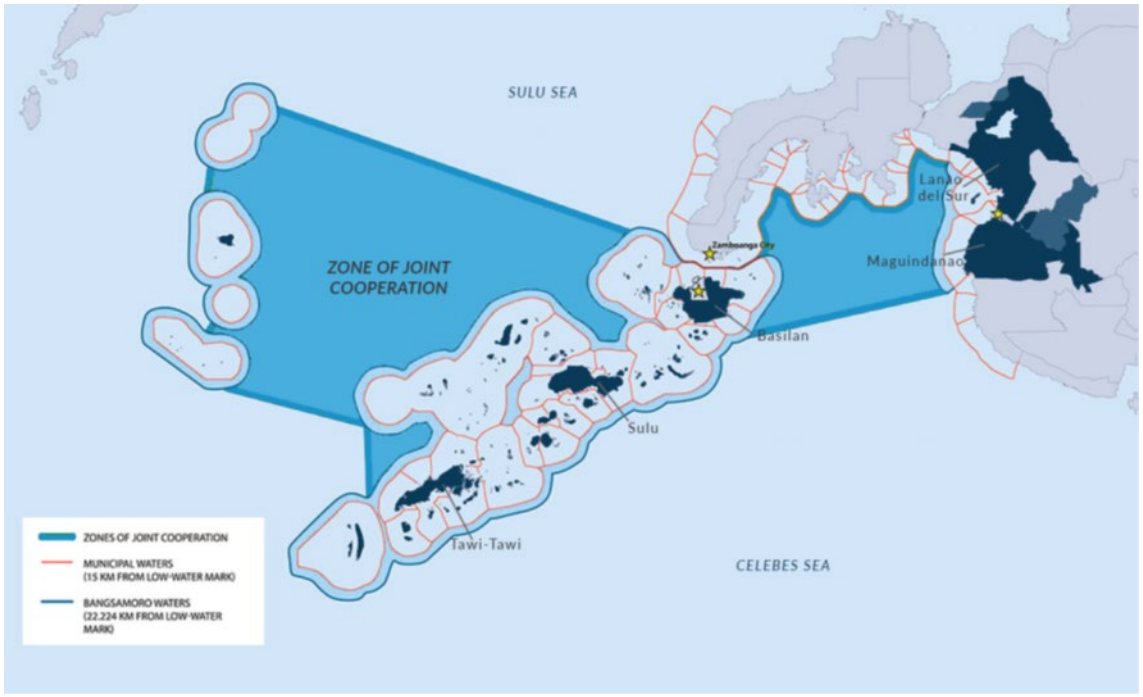
Coastal and marine management is also being carried out in cooperation with MAFAR. While BARMM's coastal areas span Fisheries Management Areas (FMAs) 1, 2, and 3, MENRE and the Fisheries Bureau of MAFAR are working together to advance coastal resource management and measures against IUU fishing, and they plan to conclude a memorandum of agreement (MOA) in the future to formalize these initiatives under the Bangsamoro Government.

Furthermore, based on information obtained through interviews, the following support needs for MENRE were identified: (1) MENRE capacity development for research, planning, and implementation related to coastal resource management and the Blue Economy; (2) policy formulation support for developing coastal resource management plans; (3) establishment of a Marine Environment and Blue Economy Research

Institute to conduct research and studies on the Blue Economy and coastal resource management; and (4) development of a resource management database incorporating IoT technologies.

(7) Jointly Managed Waters by the BARMM Autonomous Government and the Philippine National Government.

There are maritime areas jointly managed by the Philippine National Government and the BARMM Government, referred to as the "Zones of Joint Cooperation (ZJC)," extending across the Sulu Sea, Moro Gulf, and Celebes Sea. Under the Bangsamoro Organic Law, BARMM is granted exclusive usufruct rights over living resources within 15 kilometers from the coastline, as well as joint usufruct rights with the Philippine National Government over both non-living resources and living resources beyond 15 kilometers. However, the legal framework governing the Zones of Joint Cooperation, where BARMM and the national government share authority, has not been clearly established. According to the agreement, the area is to be overseen by a council composed of officials appointed by the central government's National Mapping and Resource Information Authority and DENR, together with representatives of the relevant departments of the Bangsamoro Government. However, according to interviews with DENR in January 2026, an MOU reflecting agreement between the two sides had only just been concluded, and the council has not yet been formally established. Establishing this management function is therefore an urgent issue, including from the perspective of strengthening measures against IUU fishing.



Source: BARMM Blue Economy, Policy Proposals for the Bangsamoro Autonomous Region in Muslim Mindanao. November 2020

Figure 4.1-19 BARMM Autonomous Government's Exclusive Economic Zone (EEZ) and the Zones of Joint Cooperation (ZJC)

(8) Initiatives of the Mindanao Development Authority

The Mindanao Development Authority (MinDA) is a cross-sectoral framework whose governing board is composed of various government stakeholders in the Philippines, and the Chief Minister of BARMM also serves as a board member.

With respect to blue economy-related initiatives, the "Mindanao Blue Economy Hub" plan is a representative initiative. Under the national policy direction of "sustainable use of marine resources," the plan seeks to promote investment and financing by the private sector through the advancement of blue economy-related projects formulated under the plan, thereby stimulating capital flows in the Mindanao region. Key activities include organizational development for LGUs (including the conduct of workshops); planning, formulation, and implementation of blue economy-related projects (e.g., marine energy, environmental management based on the ecosystem approach, and measures against marine pollution); promotion of finance-related initiatives (e.g., microfinance); and alignment of existing programs with the blue economy concept. The priority sectors are (1) power and energy and (2) fisheries development and fisheries processing. Specific initiatives include improvements in maritime transport, construction of ice-making facilities, and promotion of aquaculture.

MinDA has entered into partnerships with several external entities (OceanPixel and the Mindanao Renewable Energy R&D Center) and receives technical support for R&D on blue energy, including offshore wind power and wave energy, such as support for feasibility studies and site selection. MinDA has also concluded partnerships with DENR among Philippine government agencies and with NGOs such as RARE.

In addition, based on interviews with MinDA, the following blue economy-related projects in BARMM with which MinDA is involved were identified.

(1) Water–food–energy nexus utilization project targeting Tawi-Tawi (funding: Adaptation Fund, USD 10 million; implementing agency: UNIDO). This is an ongoing project to be implemented over four years from 2025. One of its components includes the promotion of seaweed aquaculture.

(2) Off-grid power generation facility construction project in Tawi-Tawi (Renewable Energy Technology to Increase Value Added of Seaweed in Tawi-Tawi Project: RETS Project) (funding: EU). This is a completed project. Implemented in 2018, it provided electricity infrastructure to small-scale communities engaged in seaweed farming to enable the operation of seaweed drying facilities. The operation and management of the power facilities have since been transferred to the LGU. Facilities were constructed on Sitangkai Island (generation capacity: 600 kW) and Sibutu Island (generation capacity: 1 MW) in Tawi-Tawi Province. In addition, a feasibility study (F/S) was conducted regarding water sources on these islands.

(3) Salt production project. This is being implemented as part of BIMP-EAGA. Solar power is used to meet the necessary electricity requirements.

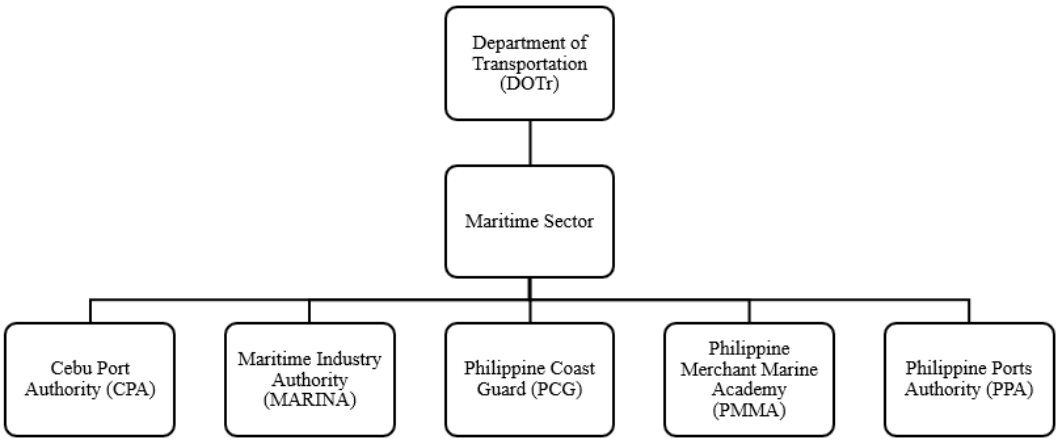
It was also confirmed that other blue economy-related projects and reports include the ADB–MARES project (ADB – Marine Aquaculture, Reefs, Renewable Energy, and Ecotourism for Ecosystem Services), the BIMP-EAGA Blue Economy Action Plan, and The Mindanao Blue Economy Stock Take Report; however, detailed information on these initiatives could not be obtained.

4.2 Ocean Transport Sector

The Philippine maritime industry plays a central role in the country's economy. The Philippines is an archipelagic nation made up over 7,000 islands and over 36,000 kilometers of coastline. Major ports serve as the gateways to international trade while domestic shipping and ports support inter-island trade. Furthermore, the Philippines is one of the world's leading suppliers of seafarers, providing approximately one quarter of the global seafarer workforce. This makes the Philippine maritime industry crucial to domestic logistics, international shipping and the global supply chains.

4.2.1 Related Organizations

The Department of Transportation (DOTr) is the executive branch of the Philippine government which is responsible for developing and regulating a reliable and coordinated network of transportation systems as well as providing fast, safe, efficient and reliable transportation services. The functions of DOTr include policy formulation, regulation, infrastructure development, and international cooperation. DOTr oversees four sectors: aviation, maritime, rail, and road. The maritime sector is administered by five (5) attached agencies as illustrated in Figure 4.2-1: Cebu Port Authority (CPA), Maritime Industry Authority (MARINA), Philippine Coast Guard (PCG), Philippine Merchant Marine Academy (PMMA), and Philippine Ports Authority (PPA) .



Source: Provided by the JICA Study Team based on the WEB information of DOTr.

Figure 4.2-1 Attached agencies related to maritime sector under DOTr

(1) Cebu Port Authority

Cebu Port Authority (CPA) is a port management authority established under Republic Act No. 7621 enacted on June 26, 1992. CPA began full operations on January 1, 1996, assuming the port management responsibilities of PPA for all ports in Cebu Province. This moves established Cebu Port Authority as an independent regional port system.

CPA's primary mandate is to plan, develop, construct, and operate ports and port facilities within its jurisdiction in an integrated and coordinated manner in accordance with the needs and requirements of the local community. It also promotes regional economic and industrial development by facilitating international and domestic commerce that transits through or utilizes regional ports, and by providing services that support the growth of the region's exports and other priority industries.

(2) Maritime Industry Authority

Maritime Industry Authority (MARINA) was established under Presidential Decree No. 474, known as the Maritime Industry Decree of 1974, issued on June 1, 1974, as an attached agency under the Office of the President. The agency's mission was to unify and integrate the development, promotion, and regulation of the maritime industry in the Philippines.

Subsequently, Presidential Decree No. 546, issued on July 23, 1979, placed the agency under the Department of Transportation and Communications (current DOTr) to ensure consistency in policies and programs. This strengthened the maritime administration system in coordination with national transportation policy.

MARINA's primary function is to oversee the promotion and development of the maritime industry and to implement effective regulations for maritime transport operations. Specifically, since June 1994, it has had the authority to issue certificates of public interest authorizing the operation of domestic and international water transport businesses, and also performs a wide range of administrative functions, including ship registration and issuance of licenses, ensuring safety in ship construction and operation, and enforcing maritime laws and regulations.

(3) Philippine Coast Guard

Philippine Coast Guard (PCG) was established under Republic Act 5173 of the Philippine Coast Guard Law, enacted on October 10, 1967. This law transferred coast guard functions, previously under the jurisdiction of Philippine Navy, to PCG, establishing its institutional foundation as an independent coast guard organization. Subsequently, through the issuance of Presidential Decree No. 477, PCG was transferred from the Department of National Defense to the Department of Transportation and Communications (current DOTr) and is now a maritime law enforcement agency under DOTr. This change in jurisdiction further strengthened its coordination with maritime safety and maritime traffic management.

PCG's primary mission is to enforce all applicable laws and regulations within Philippine territorial waters, as well as to conduct maritime security operations, protect life and property at sea, and preserve the marine environment and marine resources. Through these activities, it plays a central role in ensuring maritime order and safety for the nation.

(4) Philippine Merchant Marine Academy

Philippine Merchant Marine Academy (PMMA) is a national maritime higher education institution established in January 1963 under Republic Act 3680, reorganizing the former Philippine Nautical School. Its primary mission is to train merchant marine officers for the domestic and international maritime industry.

PMMA offers two undergraduate degrees: Bachelor of Science in Marine Transportation and Bachelor of Science in Marine Engineering, and trains navigation officers and marine engineers with both academic and practical knowledge. Furthermore, it offers two master's programs: Master in Shipping Management and Master in Maritime Education and Training, contributing to the development of highly skilled professionals and educational leaders in the maritime field.

(5) Philippine Ports Authority

Philippine Ports Authority (PPA), established in December 1975 under Presidential Decree No. 505, is the national port authority responsible for planning, developing, and managing the country's major port system. Since its inception, its core mission has been to contribute to national economic development through port infrastructure development.

Executive Order No. 159, issued in 1987, granted PPA full authority to implement all port construction projects within its port system, along with fiscal autonomy, enabling more efficient and flexible port development and operations.

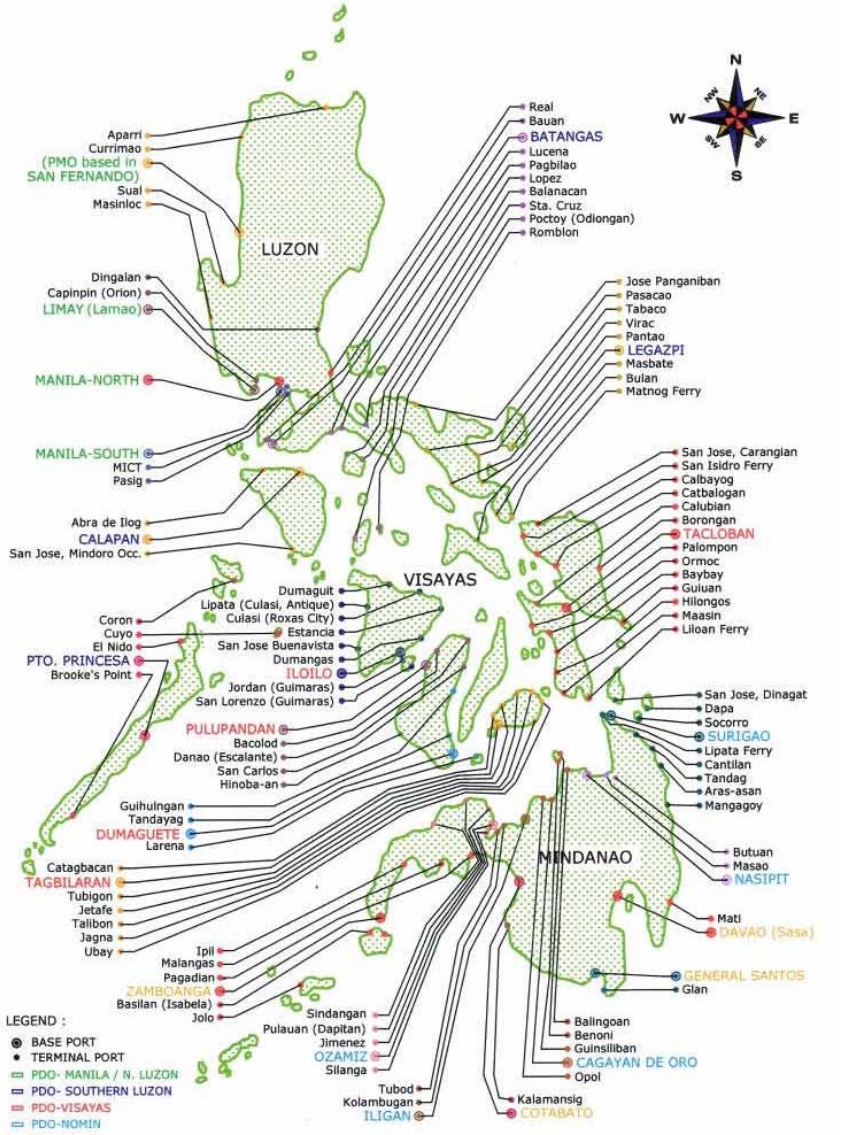
PPA's mission is to develop and provide modern, sustainable, and resilient port infrastructure and facilities, while ensuring responsive, reliable, and efficient port services. In advancing the national port development program, PPA emphasizes the establishment of a transparent and fair regulatory framework that considers the needs of all stakeholders.

4.2.2 Outlines of Ocean Transport Sector in Philippines

(1) Current Situation of Philippine Ports

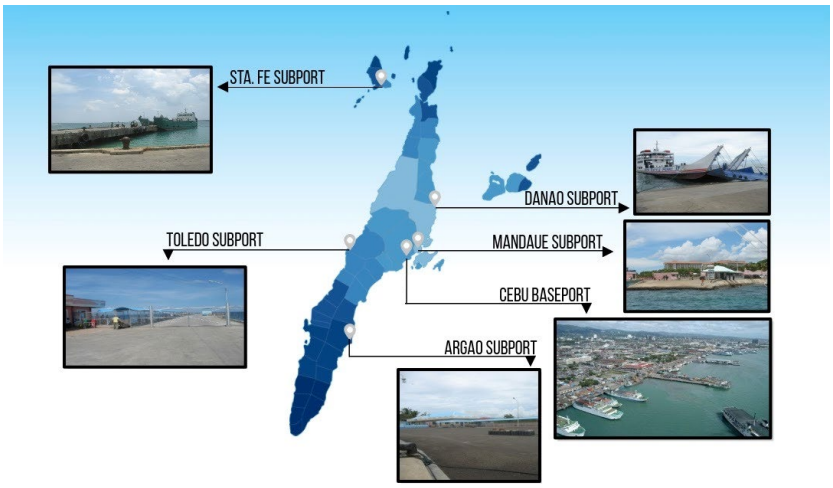
The Philippine port sector is primarily governed by two national port authorities (PPA and CPA), as well as local government units (LGUs), other port management bodies, and local and private operators.

PPA manages and regulates the majority of the country's public ports and oversees major international gateway and domestic ports (over 500 ports). Cebu province's ports (over 130 ports), including Cebu International and Domestic Ports, are managed by CPA. International hub ports serve major international trade flows, handling containerized cargo, bulk cargo, and international passenger traffic. Meanwhile, domestic inter-island ports connect major islands through liner shipping routes and support Ro-Ro shipping, coastal cargo, and domestic passenger traffic.



Source：PPA

Figure 4.2-2　PPA ports across the Philippines (Source PPA)



Source：CPA

Figure 4.2-3　CPA ports across Cebu Province (Source CPA)

Local government unit ports or municipal ports (LGU ports) are smaller ports whose operation and management has been transferred from PPA to local governments. Unlike larger ports concentrated in major economic hubs, which primarily serve both international and domestic shipping routes, LGU ports provide essential services to local communities, such as collecting domestic port dues, handling cargo and providing port-related services, and ensuring inter-island transportation. There are reportedly more than 1,300 LGU ports nationwide.

In addition to PPA, CPA and LGUs, economic zone authorities also operate under a separate governance framework from the national port authority system. These economic zones manage their own ports to support export industries, manufacturing, and investment promotion. They are typically specialized and located within industrial parks or special economic zones. Examples include the Subic Bay Freeport under the jurisdiction of the Subic Bay Metropolitan Authority (SBMA), the Mindanao Container Terminal under the jurisdiction of the Philippine Veterans Investment and Development Corporation Industrial Authority (PHIVIDEC), ports in the Bataan region under the jurisdiction of the Authority of the Freeport Area of Bataan (AFAB), Port Irene under the jurisdiction of the Cagayan Economic Zone Authority (CEZA), and the San Fernando International Port under the jurisdiction of the Poro Point Management Corporation (PPMC).

(2) Current Situation of Philippine Maritime Sector

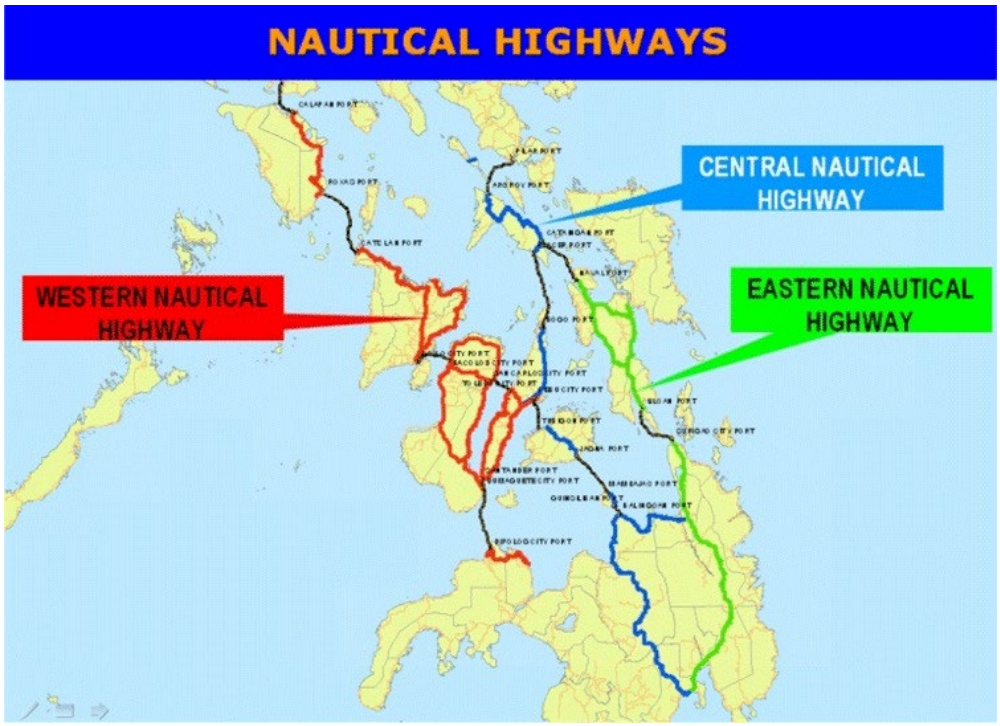
Domestic inter-island transportation in the Philippines is supported by the Philippine Nautical Highway System (PNHS), a national Ro-Ro network system that enables seamless land and sea transport. PNHS is an integrated network of expressways and ferry routes connecting the major islands of Luzon, the Visayas, and Mindanao. The system is primarily comprised of three main routes:

Western Nautical Highway: First opened in April 2003 as the Strong Republic Nautical Highway (SRNH), it connects Batangas to Zamboanga via Mindoro, Panay, Guimaras, and Negros.

Central Nautical Highway: Connects Sorsogon to Cagayan de Oro via Masbate, Cebu, and Bohol, providing an important link between Cebu and northern Mindanao.

Eastern Nautical Highway: Connects northeastern Mindanao via Masbate and Leyte (Pulo ng Leyte), from Masbate to Surigao del Norte.

The domestic inter-island shipping fleet is primarily composed of fast crafts, Ro-Ro ferries, and passenger liners. Fast crafts are high-speed catamarans that provide rapid passenger transport between major nearby islands (e.g., Batangas-Calapan, Cebu-Bohol, etc.). Ro-Ro ferries are large ships that can accommodate passengers and vehicles and operate on medium- to long-distance inter-island routes. Passenger liners are larger vessels that are often used for nighttime or long-distance routes.



Source：DPWH

Figure 4.2-4 Philippine Nautical Highways

Table 4.2-1 No. of routes in Nautical Highway System (2024 data)

	Nautical Highways			Lateral Ro-Ro-routes			Total
	Western	Central	Eastern	Northern Luzon	Southwest Mndanao	East-west lateral	
No. of Ro-Ro routes	43	52	13	10	6	188	312
No. of Ro-Ro operators	20	20	11	0	7	52	110
No. of Ro-Ro vessels	87	78	31	0	22	232	450
No. of served routes	41	47	13	0	5	155	261
No. of Pionner status	5	5	0	0	0	6	16
No. of Missionary	3	9	4	0	0	19	35
No. of unserved routes	2	5	0	10	1	33	51

Source：MARINA

(3) Status of Shipbuilding and Ship Repair Industry (SBSR)

As an archipelago nation, the Philippines builds ships for both domestic and international trade. As of 2024, it is the fourth largest shipbuilding nation in the world in terms of gross tonnage of new ships delivered (1.7 million gross tons), and the SBSR industry employs over 9,000 people.

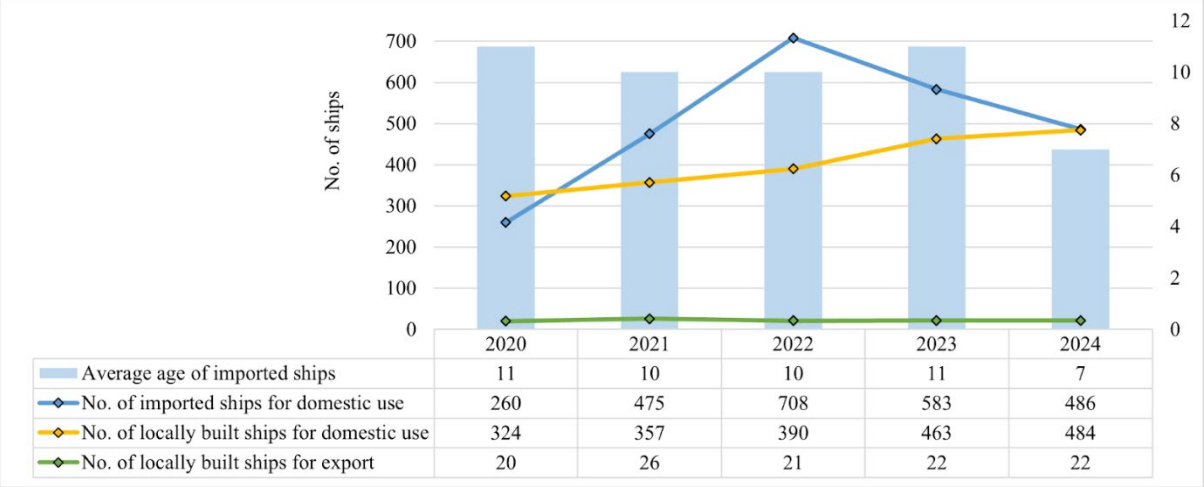
As of 2024, there were 131 MARINA-registered and licensed SBSR entities in the Philippines, categorized into three classes. The shipbuilding industry structure is characterized by export-oriented foreign-owned shipyards, primarily classified as Class A, building large ships for export. Meanwhile, the majority of domestic shipyards are smaller (Class B or C), focusing almost exclusively on ship repair, refurbishment, and the construction of smaller vessels for the domestic fleet.

Table 4.2-2 Classification of shipyards in the Philippines

Classification	No. of shipyards	Capacity
Class A	8	Capable of building and repairing large ships with a length of 130 meters and above
Class B	26	Capable of building and repairing ships with a maximum length of 129 meters
Class C	97	Capable of building and repairing ships with a maximum length of 80 meters

Source：MARINA

Comparing the trends in ships built for domestic use and ships imported, the Philippines is importing more ships than it builds for domestic use, although the number of domestically built ships has been increasing since 2020. The average age of imported ships is about 10 years. The number of ships built domestically for export has remained relatively stable over the years.



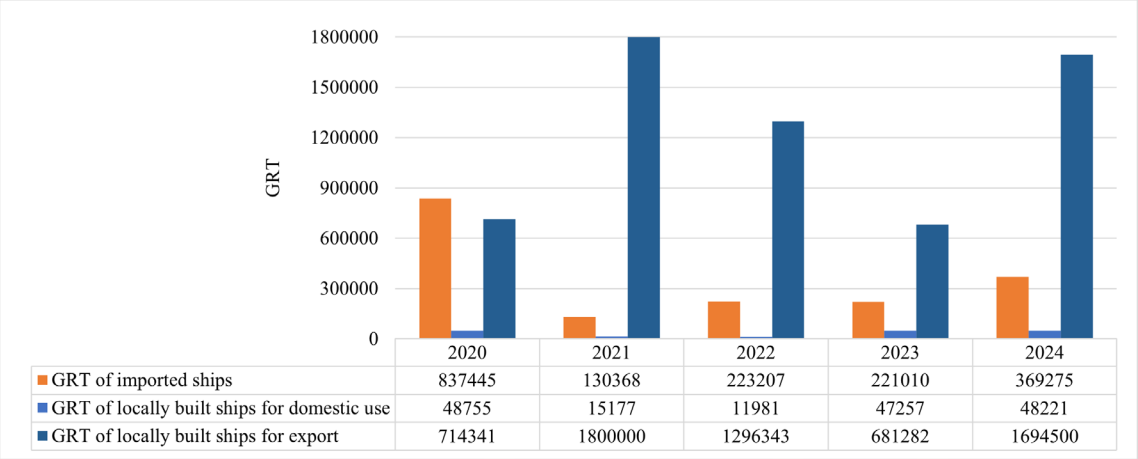
	2020	2021	2022	2023	2024
Average age of imported ships	11	10	10	11	7
No. of imported ships for domestic use	260	475	708	583	486
No. of locally built ships for domestic use	324	357	390	463	484
No. of locally built ships for export	20	26	21	22	22

Source：Prepared by Survey Team based on MARINA’s data

Figure 4.2-5 Comparison on the number of locally built ships vs imported ships

Furthermore, when comparing the gross tonnage (GRT) of ships imported for domestic service with those built domestically, there is not a significant difference between the number of imported ships and locally built ships for domestic use. However, there is a significant difference in GRT depending on the type of ship. Specifically, passenger ships, cargo ships, and tankers with an average size of about 3,000 GRT, and tugboats, dredgers, fishing boats, and recreational vessels with an average size of about 100 GRT are imported, while domestic

passenger ships and cargo ships with an average size of about 100 GRT, and other small ships with an average size of less than 30 GRT are built.



	2020	2021	2022	2023	2024
GRT of imported ships	837445	130368	223207	221010	369275
GRT of locally built ships for domestic use	48755	15177	11981	47257	48221
GRT of locally built ships for export	714341	1800000	1296343	681282	1694500

Source：Prepared by Survey Team based on MARINA’s data

Figure 4.2-6 Comparison of GRT of locally built ships vs imported ships

(4) Laws and Plans related to Blue Economy in Ocean Transport Sector

The Philippine Blue Economy Bill Framework aims to review all existing policies, plans, programs, rules, and regulations related to ocean-based and ocean-related activities, analyze the current situation and emerging trends and changes related to the Blue Economy, and identify strategic and sustainable activities that should be prioritized. Activities related to the maritime transportation sector include shipping, logistics, and marine transport; shipbuilding and ship repair; oil and natural gas exploration, development, and extraction; and renewable energy production from marine resources.

Currently, the Philippine maritime sector refers to and implements the following laws and plans, guidelines related to the Blue Economy: ASEAN Blue Economy Framework, PPA Port Environmental Policy, Green Port Award System, and Maritime Industry Development Plan 2019-2028.

1) ASEAN Blue Economy Framework

While the Blue Economy Bill has not yet been passed, the Philippines is referencing and adhering to the ASEAN Blue Economy Framework and implementing blue economy initiatives in the domestic maritime transport sector, including green ports, the use of low- and zero-carbon cargo handling equipment, renewable energy, and energy conservation. Although the Blue Economy Bill has not yet been passed, the Philippines is adhering to the ASEAN Blue Economy Framework and implementing blue economy practices domestically. This ASEAN framework provides a regional template for sustainable use of marine resources, marine spatial planning, pollution control, and inter-sectoral collaboration. In the port sector, the PPA emphasizes greening port operations and logistics (energy efficiency, low-emission equipment, and waste management). The PPA prioritizes the development of a Green Code (currently under development) to provide a roadmap for climate-resilient ports and environmental performance metrics. Based on this, private

terminal operators and public ports will be encouraged to use low-emission technologies and implement waste management programs.

2) PPA Port Environmental Policy (PEP)

Regarding policies and guidelines for green ports, PPA has issued Administrative Order No. 005-2018 "The Port Environmental Policy" (PEP) and Administrative Order No. 007-2015 "Guidelines on the Implementation of the PPA Orange Book on Safety, Health, Environmental Management and Handling of Dangerous Goods in Ports." It has also issued three circular notices on port safety, health, and environmental management systems for the Port of Batangas (MC 011-2015), PMO Socsargen (MC 012-2015), and Cagayan de Oro Port (MC 002-2013). These administrative orders and circular notices serve as the basic environmental policies for ports. PEP is the basis for the Port Environmental Code (PEC), or the Green Code, which will serve as a tool for PPA ports to address environmental challenges and establish a framework for measuring and managing environmental performance.

3) Green Port Award System (GPAS)

The Green Port Award System (GPAS) is a green rating system for ports in the Asia-Pacific Economic Cooperation (APEC) region, developed by the APEC Port Services Network (APSN). It was inspired by Europe's Ecoports and North America's Green Marine but was developed with different formats to suit all APEC ports. Since 2011, APSN has conducted two pilot programs to test the rating scheme, developed an implementation plan, and established an expert pool to review GPAS applications. It officially launched GPAS in 2016.

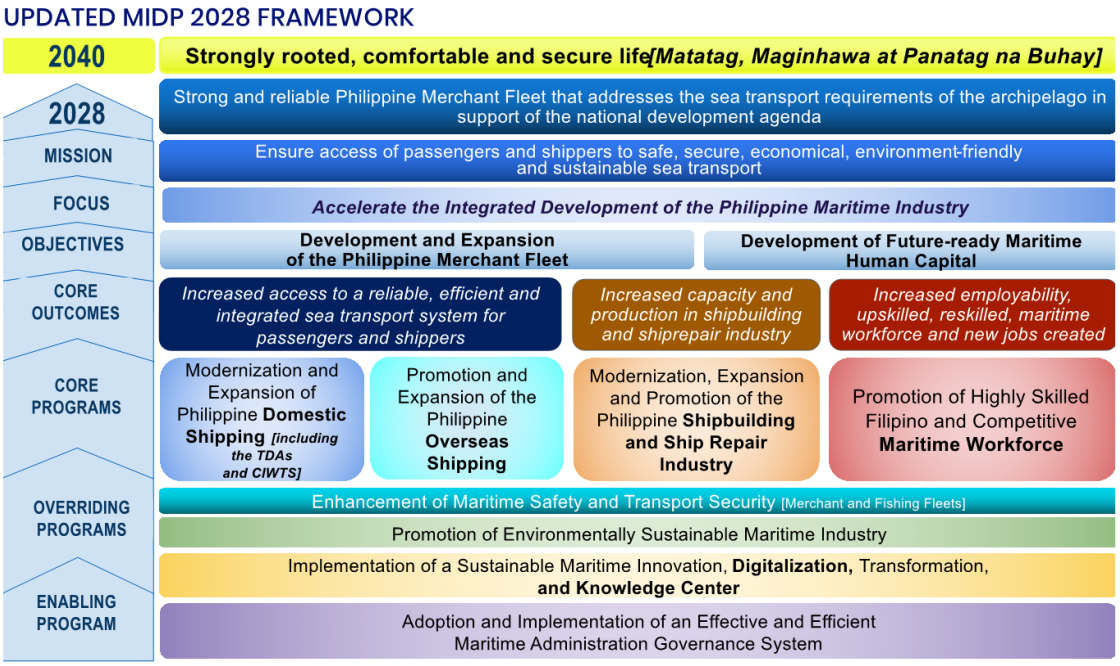
The purpose of GPAS is to encourage green and sustainable development in ports and port-related industries. Specifically, it aims to provide a platform for sharing best practices among ports in the APEC region, raise awareness of ports committed to green practices, and improve their capacity for sustainable development. Applications for GPAS are open to any port (port administrator or port operator) that has implemented a green program to improve the environmental sustainability of its operations for the past three years or more. By 2024, six Philippine ports will have received a total of nine GPAS awards: Port of Batangas (2017 and 2023), Port of Cagayan de Oro (2018, 2021, 2024), Manila International Container Terminal (MICT) (2022), Manila South Port (2022), Port of Surigao (2023), and Port of General Santos (2024).

4) Maritime Industry Development Plan 2019-2028 (MIDP)

The Maritime Industry Development Plan 2019-2028 (MIDP) is a roadmap for accelerating the integrated development of the country's maritime industry, formulated in accordance with the guiding principles of the United Nations Sustainable Development Goals (SDGs).

The latest version, updated in 2023, consists of four Core Programs, three Overriding Programs, and one Enabling Program. The Core Programs include key elements to promote the creation of a business environment in the domestic shipping, overseas shipping, shipbuilding and ship repair, and maritime workforce sectors. The Overriding Programs support the achievement of the Core Programs' goals and

outcomes by creating an environment through maritime safety and security, sustainable maritime industry and digitalization. Furthermore, the Enabling Program facilitate the implementation of MIDP through the establishment and institutionalization of governance mechanisms.



Source：MIDP 2028, MARINA

Figure 4.2-7 Framework of MIDP 2028

Action plans under the MIDP program include fleet modernization, improved Ro-Ro network connectivity and port efficiency, and digitalization, which directly contribute to the Blue Economy goal by reducing emissions, enhancing safety, and improving energy efficiency in shipping and port operations. Furthermore, capacity building for Filipino seafarers and support for the domestic shipbuilding industry are linked to sustainability through the adoption of greener ship designs and environmental standards. Strengthening pollution prevention, climate resilience, and responsible maritime governance complements the maritime environment goal, positioning the maritime industry as a key driver of sustainable ocean-based economic development in the Philippines.

4.2.3 Initiatives and Issues Related to the Blue Economy

(1) Initiatives towards Green Ports in Port Sector

1) Adoption of fuel-efficient cargo handling equipment

The GRaSPS Framework requires port facilities and equipment to be environmentally friendly, energy-efficient, and reduce GHG emissions. Based on the Framework, the following initiatives have been taken:

Manila North Port

- At Manila North Harbour Port Inc. (MNHPI), which operates a terminal in Manila North Harbour, seven of the 28 RTGs have been converted to diesel-electric hybrid RTGs.

Manila South Port

- Asian Terminal Incorporated (ATI), which operates a terminal in Manila South Harbour, currently operates three diesel-electric hybrid RTGs and plans to add six more by 2026. ATI has also acquired 15 internal transfer vehicles (ITVs) and plans to replace all diesel-powered ITVs with electric vehicles by 2030.
- Furthermore, Manila International Container Terminal (MICT), which operates a terminal in the area under Manila South Harbour's jurisdiction, currently operates eight near-zero-emission (NZE) RTGs manufactured by Mitsui E&S (MES), which were first introduced in 2025. Two fully electric terminal tractors, which operate with zero emissions, were also deployed in 2025.

Subic Port

- Subic Bay International Container Terminal (SBITC), which operates a terminal within the port, is equipped with four electric ship-to-shore (STS) cranes.

2) Adoption of onshore power supply system

In response to the GRaSPS Framework's requirement that port facilities and equipment be environmentally friendly, energy-efficient, and reduce GHG emissions, one widely accepted measure to reduce the negative environmental impact of ships berthed at ports is to transition from auxiliary diesel engines to an onshore power supply system (OPS) to power the ships. This not only improves air quality but also reduces CO2 emissions, one of the main causes of global warming. Specifically, the following initiatives are being implemented:

Cagayan de Oro Port: Six shore power supply units have been installed.

Surigao Port: One shore power supply unit has been installed.

3) Use of clean and renewable energy sources

Based on the GRaSPS Framework's hard infrastructure guidelines, port buildings and facilities are required to reduce emissions and adopt low-power or energy-efficient technologies. To this end, the following initiatives are being implemented:

Manila North Port

- MNHPI has adopted solar-powered streetlights and LED lighting within their yard.

Manila South Port (ATI)

- Within the ATI terminal, as of 2025, 94% of electricity consumption will be from renewable energy (solar power), and the terminal aims to achieve 100% renewable energy utilization at Manila Southport

by 2026. The terminal also uses 100% inverter air conditioning.

Manila South (MICT)

- Within the terminal area of MICT, installation of LED lighting within the yard has been completed.

Batangas Port

- ATI has achieved 100% renewable energy utilization since December 2023.

Cavite Gateway Terminal

- The Terminal achieved 100% renewable energy utilization since October 2024.

Subic Port

- SBMA has implemented a utility management system for its facilities, offices, street lighting, and open spaces. SBMA ensures strict compliance with the Government Energy Management Program (GEMP) to reduce monthly electricity consumption (in kWh) and petroleum product consumption (in liters) by at least 10%, as directed by the Department of Energy (DOE) Executive Order No. 110. Starting in 2024, five solar power generation systems with a total capacity of 288 kW will be installed on the rooftops of its office buildings, covering approximately 21% of SBMA's total electricity consumption.

4) Establishment of carbon sink areas and mangrove/tree planting

Pursuant to the Climate Change Act of 2009 (Republic Act No. 9729), PPA issued Administrative Order No. 14-2020, which requires all individuals or entities certified, registered, appointed, or awarded contracts to provide services or goods within ports to plant a minimum of 1,000 trees and/or mangroves. Eligible entities are required to coordinate with their local Community Environment and Natural Resources Office (CENRO) or relevant office of DENR regarding the type of saplings and planting locations. Upon completion of planting, the relevant office will issue a Certificate of Completion, which the entity must submit to PPA. Entities must comply with this requirement within one year of certification, registration, appointment, or award of the contract.

In addition to the minimum 1,000 seedlings, certain service providers are required to plant additional numbers, as shown in the table below. According to a news release by PPA on March 21, 2025, this mandatory tree-planting program has resulted in the planting of more than 12 million trees by early 2025. Additionally, two PPA-run ports, Cagayan de Oro and Surigao, are establishing carbon sink areas or forest parks within their premises.

Table 4.2-3 Mangrove/tree planting obligations under PPA

Port Service Provider	No. of Seedlings
Port Terminal Operator	100,000
Cargo Handling Operator	50,000

Passenger Terminal Building Operator	50,000
Roll On Roll Off Operator	25,000
Private Port Operator	500,000
Harbor Pilot	10,000
Contractors with at least P5 million contract amount For every additional P5 million contract amount or fraction	At least 1,000 Additional 1,000

Source：PPA

Despite being a separate authority from PPA, SBMA implements their own tree planting activities in their designated areas. SBMA has planted 2,700 bamboo trees in existing reforestation open areas and 37,600 native species in reforestation zones, in accordance with the Subic Bay Marine Conservation Areas Rules and Regulations, Subic Bay Protected Area Management Plan, and Quarterly Biodiversity Monitoring Activities.

5) Air and water pollution reduction strategies in ports

Pursuant to PPA Administrative Order 07-2015, PPA regularly conducts ambient air quality monitoring at its ports to ensure that the impact of port activities on air quality is within prescribed limits.

For PMO Misamis Oriental/Cagayan de Oro, measuring equipment such as gas analyzers and opacity meters have been procured to monitor gas emissions from trucks, vehicles, and other equipment operating within the port.

6) Waste management in ports

The GRaSPS Framework's hard infrastructure includes the provision of waste collection facilities such as sewers, drainage pipes, waste collection/treatment facilities, material recovery facilities, shore reception facilities (SRF), and hazardous waste storage facilities.

The provision of SRF, in particular, is critical to comply with MARPOL 73/78 requirements, ensure the proper collection and disposal of waste generated by ships, and promote the benefit and welfare of the maritime and port community.

Port of Batangas: ship waste management plan has been completed with the support of PEMSEA.

7) Construction of sustainable infrastructure facilities in ports

PPA has been developing infrastructure to address port traffic congestion, including multi-gate complexes, quay and berth expansions at various PPA ports, to achieve efficient turnaround times for trucks, vehicles and ships, thereby saving fuel consumption and minimizing carbon emissions.

8) Desitalization

In response to the truck ban and road policy introduced in 2014 to decongest Manila, PPA introduced the Terminal Appointment Booking System (TABS), an electronic platform for container reservations at Manila's major international ports.

Asian Terminals Inc (ATI) has introduced E-Pay and WebTrack, which allows customers to pay port dues online and track containers in real time within the port. It has also implemented a QR code system to monitor truck drivers, contractors, and other port users entering the port.

International Container Terminal Services Inc (ICTSI) has introduced the Advanced Customer Transaction System (ACTS), which allows customers to pay port dues online and print documents necessary for container delivery or unloading.

9) Other Activities

Terminal operators and PMOs regularly conduct coastal cleanup activities on International Coastal Cleanup Day and other occasions designated by each operator or PMO.

Each PMO has implemented a ban on the use of single-use plastics within its jurisdiction.

Additionally, as part of the Race to Carbon Neutrality Program, SBMA acquired 10 battery-electric buses (E-buses) in May 2025. They will operate in five designated areas with 58 bus stops. Two charging stations for the E-buses will be powered by the local power grid.

(2) Initiatives in the Maritime Sector

1) Pasig River Ferry Service

The Pasig River Ferry Service (PRFS) is a public water bus service in Metro Manila that travels along the Pasig-Pasig and Marikina Rivers, connecting the four major cities of Manila, Makati, Mandaluyong, and Pasig-Pasig. It is primarily managed and operated by the Metro Manila Development Authority (MMDA). It serves as an alternative public transportation option to alleviate land traffic congestion in Metro Manila, operating a route of approximately 28 kilometers with multiple stops at 13 stations. The fleet currently consists of seven 55-passenger boats, five 36-passenger boats, and two 16-passenger boats. The PRFS is a water-based commuter service, currently offered to the public at low or no cost, funded by the MMDA. In addition, the PPA has proposed an annual investment of 700–800 million pesos and the transfer of operational responsibility to improve the PRFS. They are also considering issuing licenses to private operators and are examining a plan under which the PPA and MARINA would work together with this in mind.

Source：MMDA

Figure 4.2-8 Pasig River Ferry Station

With funding from the Department of Science and Technology-Philippine Council for Industry, Energy, and Emerging Technology Research and Development (DOST-PCIEERD) and in collaboration with MMDA and MARINA, the University of the Philippines Diliman (UP Diliman) built the Philippines' first electric ferry, the M/B Dalaray, for the Pasig River ferry service. M/B Dalaray is equipped with a 160-kilowatt-hour lithium-ion battery and can travel more than 45 kilometers at a cruising speed of 8 knots. Auxiliary systems are powered by a solar battery system. Charging stations are installed at three stations: Escolta, Guadalupe, and Napindan. The electric ferry is scheduled to begin commissioning in November 2025.

2) MAPALLA Electric Ferry System

DOTr has proposed the Manila Bay-Pasig River-Laguna Lake (MAPALLA) Ferry System, a high-capacity commuter ferry network designed to expand public transportation by utilizing existing waterways in Metro Manila. A feasibility study is currently being conducted with the Public-Private Partnership Center and is expected to be completed in 2026.

DOTr estimates the project cost to be PHP 32.8 billion, aiming to modernize the MAPALLA ferry system by introducing electric ferries for sustainability. Package 1 covers the Pasig and Marikina Rivers and aims to install at least 75 electric ferries and additional stations. Construction is scheduled to begin in 2027 and open by 2029. Package 2 covers Manila Bay and Laguna de Bay and is expected to be completed by 2035. In their first year of operation, the Pasig River Ferry System is expected to carry 10,753 passengers per day, while the Marikina River Ferry System is expected to carry 3,132 passengers per day.

(3) Issues in the Maritime and Port Sector

1) The Need for Master Plan or Benchmarking for Port Decarbonization

While PPA has Port Environmental Policy, there are no uniform standards for measuring environmental

performance and green port initiatives across all PPA-managed ports. To address this situation, the Green Code is being developed but has not yet been approved. While terminal operators at major international ports are implementing their own green port-related programs based on PPA guidelines and GPAS requirements, small and medium-sized PPA ports primarily handle inter-island Ro-Ro services and lack the cargo handling facilities of major international ports, handling containers and a variety of cargoes.

Due to differences in port types and the fact that each PMO is implementing its own green port initiative, baselines and benchmarks for decarbonization efforts at Philippine ports have yet to be established. A unified benchmark is needed to enable the PPA to monitor the progress of green port initiatives. Furthermore, port decarbonization measures need to be incorporated into future port development. Therefore, it is necessary to develop a master plan for port decarbonization to unify decarbonization efforts, monitor their progress, and plan for the development of future carbon-neutral or green ports.

2) Social and Tourism Ports towards Blue Economy

As part of its Transport Modernization Program, DOTr is promoting the development of social tourism ports ("farm-to-market ports"). Social tourism ports are a DOTr initiative aimed at promoting small, remote island and rural ports that, unlike larger ports, lack the commercial appeal of operators.

They directly contribute to food security and rural incomes by building and shortening agricultural and marine product supply chains and logistics lead times, thereby reducing post-harvest spoilage and logistics costs. They also facilitate access to island tourist destinations, which are the core of the Philippines' marine ecotourism economy, and enable passenger ferries and small vessels to support domestic and international tourism. Well-designed social tourism ports can contribute to blue economy goals, such as protecting coral reefs and coastal ecosystems, supporting local businesses, and improving local economies for long-term tourism sustainability.

DOTr has identified 293 social tourism ports nationwide from 2016 to 2025. DOTr continues to develop these port projects, including those funded by local governments, by renovating and expanding existing ports and constructing new, modern ports to provide better port facilities, increase accessibility and public connectivity for coastal and island communities, and promote improved livelihoods. DOTr prioritizes the development of social tourism ports in areas with local government income classes (class 5 or class 6) which can contribute to the blue economy of coastal communities.

3) Issues in SBSR

Currently, support for the shipbuilding industry is being provided through the Philippine government's Corporate Recovery and Tax Incentives for Enterprises Act (CREATE Act). However, this law is targeted at financial support for private companies during the COVID-19 pandemic. Therefore, a comprehensive, long-term framework for shipbuilding support is still needed to support the shipbuilding industry and increase industry incentives. In light of these factors, the Philippine government is attempting to provide incentives to shipyards through the CREATE Act, but policy coordination among government agencies remains challenging. MARINA is strongly pushing for the passage of the Ship Building and Ship Repair (SBSR) Development Act of 2025 to attract more investment, modernize local shipyards, and promote incentives for

the SBSR industry.

MARINA has identified the following challenges facing the Philippine shipbuilding industry:

- Need for facility upgrades: Advanced facilities, equipment, and machinery typically belong to Class A shipyards or shipyards with foreign partners, and most shipyards nationwide are in need of renovation or upgrading.
- Lack of skilled labor or outmigration: While the Philippines has an abundant labor force, highly skilled workers often leave for other countries in search of better working conditions and opportunities. To improve working conditions and raise the technical level at Philippine shipyards and ensure sufficient manpower, there are highly skilled workers, and training programs often need to be upgraded to meet required international standards. Skills training programs, especially for Class C shipyard workers, are essential.
- Lack of ancillary industries: The absence of a developed domestic manufacturing base for marine equipment, components, and specialized materials necessitates imports, increasing the cost of domestic shipbuilding.
- Domestic demand and aging fleet: Domestic shipowners often prefer to import cheaper second-hand foreign ships rather than ordering new ships domestically, hindering the growth of the domestic shipbuilding industry. As a result, domestically built ships are not attracting the domestic market, as is evident from the comparison of the number of imported ships with the number of domestically built ships.

4.2.4 Current Current situation and challenges in BARMM

The maritime transport sector in BARMM is a strategically important infrastructure for the region's economic activities, yet it remains underdeveloped. The maritime transport sector in BARMM is a strategic and underdeveloped component of the region's economy. Major ports such as Polok, Lamitan, Basulian, and Jolo, as well as other regional ports, serve as major gateways for passenger and cargo transport across the Sulu Sea to the Philippine mainland. The maritime transport sector in BARMM faces challenges including inadequate infrastructure, limited hinterland connectivity, security and governance challenges, and sluggish economic activity.

The Bangsamoro Ministry of Transportation and Communications (MOTC), the Bangsamoro Maritime Industry Authority (BMARINA), and Bangsamoro Ports Management Authority (BPMA) are the principal regional agencies responsible for planning, regulating, and operating public ports and short-sea shipping services within BARMM.

The Ministry of Transportation and Communications (MOTC) is the executive department of the BARMM government. It is responsible for policy, planning, coordination, implementation, regulation, and administration in promoting, developing, regulating, and managing a reliable and coordinated transportation and communications network. Its mission is to provide timely, safe, efficient, and reliable transportation and communications services. MOTC has seven attached agencies, two of which, the Bangsamoro Ports

Management Authority (BPMA) and the Bangsamoro Maritime Industry Authority (BMARINA), are responsible for overseeing ports and maritime transportation.

Bangsamoro Ports Management Authority (BPMA) manages and develops public ports in BARMM to ensure safe and efficient trade and connectivity. Currently, the BPMA manages 11 ports in BARMM (Malabang Port, Lamitan Port, Jolo port, Panamao Port, Siasi Port, Sapa-Sapa Port, Simunul Port, Bongao Port, Sibutu Port, Sitangkai Port, Mapun Port).

Bangsamoro Maritime Industry Authority (BMARINA) is responsible for regulating, developing, and promoting the maritime industry in BARMM. BMARINA's mandate includes maritime transportation within BARMM, including domestic shipping, ship registration, and ensuring maritime safety standards, and operating maritime-related services.

Polloc Port is the commercial port of BARMM and a focal point of the region's development plan, serving as an economic gateway and free port. Other important ports in the region include Lamitan and Isabela (Basilan), Malabang (Lanao del Sur), Jolo, Panamao and Siasi (Sulu), and Bongao (Tawi-Tawi). Many municipal ports handle a combination of passenger ferries, inter-island cargo (including small coastal cargo vessels), and limited commercial traffic. Bangsamoro Economic Zone Authority (BEZA) manages Polloc Port. There are four other privately operated ports. While BARMM currently does not have a clear blue economy policy or roadmap, decarbonization initiatives, such as the introduction of solar-powered yard lighting, are being considered on a case-by-case basis when renovating or expanding ports.

In 2023, BARMM established and expanded Ro-Ro and short-sea shipping routes between Mindanao (Cotabato/Polloc) and the island provinces (Basilan, Sulu, and Tawi-Tawi) to reduce transport time and costs and improve connectivity. For example, a Ro-Ro service between Pollok/Parang and Basilan was established in 2023. Maritime transport is an essential component of BARMM's intra-regional mobility, food security (fisheries and agricultural trade), and external trade. Economic Development Gap: BARMM is one of the least economically developed regions in the Philippines, and maritime infrastructure and services reflect this gap. Port capacity, cargo handling equipment, modern berthing and storage facilities, and intermodal transport linkages are generally limited compared to major Philippine ports.

Polloc Port is expected to serve as a gateway to the BARMM region. However, according to JICA's previous report, "Data Collection Survey on Urban Infrastructure Development in Greater Cotabato City, February 2022," several issues have been identified, including the deterioration of facilities, encroachment by informal settlers into areas designated for future expansion, low utilization of the economic zone, and the adverse impact on international trade caused by piracy in the Sulu Sea and the Celebes Sea. In addition, the need to clarify the division of roles with the nearby Timako Port (currently under construction approximately 16.3 km away) has also been identified as a key challenge.

Regarding the port's development plan, based on the feasibility study (F/S) conducted in 2018, short-term (target year: 2028) and long-term (target year: 2043) development plans have been formulated as follows:

Short-term Plan (Target Year: 2028):

- **Berth Extension:** Extend the existing berth by approximately 200 meters to enable the simultaneous berthing of four general cargo vessels and one container vessel.
- **Dredging:** Dredge the port basin to a depth of 11 meters to accommodate foreign cargo vessels and container ships of 20,000–25,000 deadweight tons (DWT).

- **Bulk Terminal:** Develop an approximately 2-hectare bulk terminal to handle fuel, corn, cement, sand, and other bulk commodities.
- **Others:** Rehabilitate the existing pier, carry out revetment works, and develop a gate complex.

Long-term Plan (Target Year: 2043):

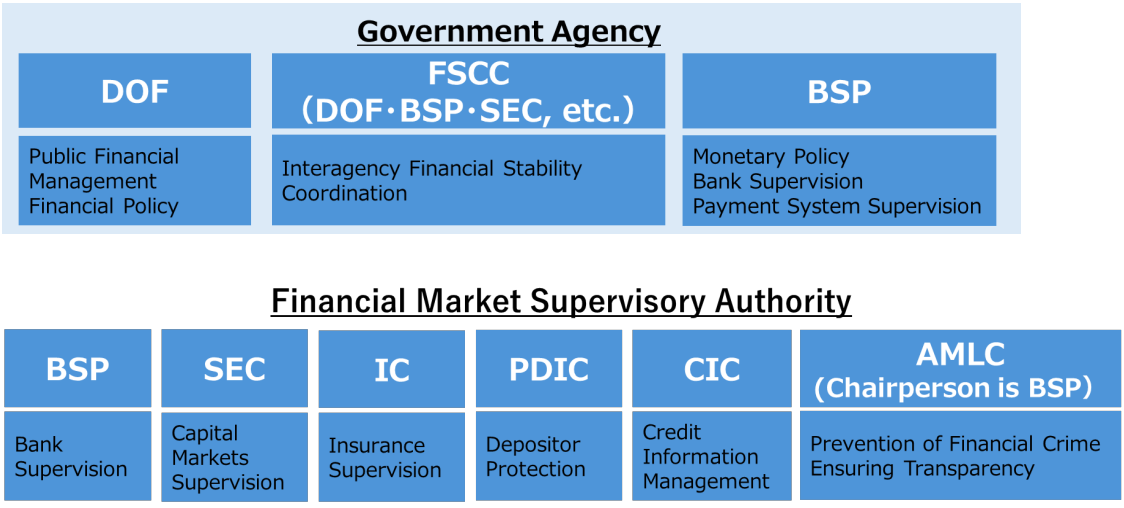
- Further expansion of facilities to accommodate 1,152 vessel calls per year and an annual cargo throughput of 3.4 million tons.

Additionally, as an urgent project to handle increased cargo volumes, the construction of an industrial warehouse (5,520 m²) and the installation of an electronic truck scale with a 70-ton capacity have been proposed.

4.3 Financial Sector

4.3.1 Related Agencies

The administrative agencies that implement policy formulation in the Philippines are the Department of Finance (DOF) for fiscal policy and Bangko Sentral ng Pilipinas (BSP) for monetary policy. The Financial Stability Coordinating Council (FSCC) provides inter-agency coordination for responding to financial crises and systemic risks. In the financial markets, the BSP supervises banks, the Securities and Exchange Commission (SEC) supervises the securities market, the Insurance Commission (IC) supervises insurance institutions, the Philippine Deposit Insurance Corporation (PDIC) oversees depositor protection (financial safety net), and the Credit Information Corporation (CIC) manages credit information (refers to Figure 4.3-1).



Source: JICA Study Team

Figure 4.3-1 Administrative Agencies Involved in Finance and Monetary Affairs and Financial Market Supervisory Agencies

A cross-agency implementation has been established for promoting sustainable finance, including blue finance, and implementing financial policies. At its core is the Inter-Agency Technical Working Group for Sustainable Finance (ITSF), which involves key regulators such as the Department of Finance (DOF), the Bangko Sentral ng Pilipinas (BSP), and the Securities and Exchange Commission (SEC). ISTF was established based on the "Philippines Sustainable Finance Roadmap" and drives the development of a sustainable finance ecosystem. As shown in the Table 4.3-1, it undertakes diverse activities including developing a taxonomy, capacity building, promoting bond issuance, enhancing disclosure, risk management, and participation in international initiatives. It serves as a crucial implementation framework supporting the institutional foundation for sustainable finance in the Philippines.ITSF members are as shown in Figure 4.3-2.

Table 4.3-1 ITSF's Specific Initiatives

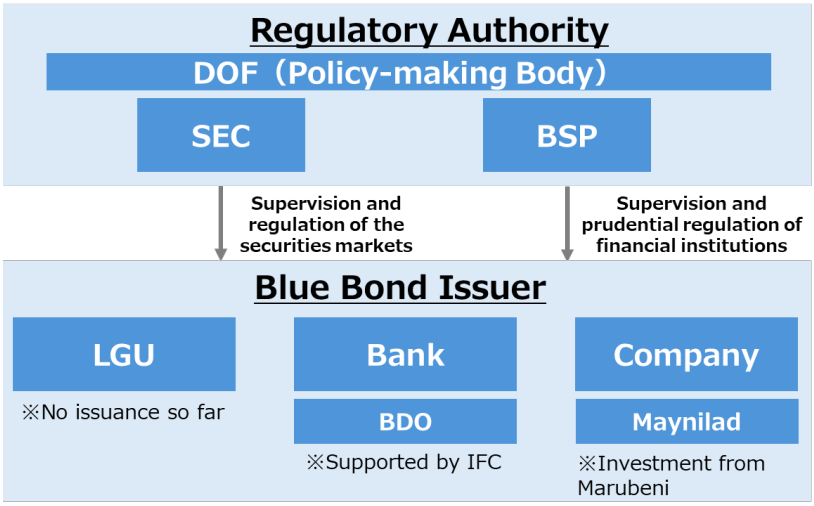
Item	Initiatives
Development of Sustainable Finance Taxonomy	Lead the formulation of the Philippine Sustainable Finance Taxonomy Guidelines (SFTG), a tool for classifying whether economic activities are environmentally and socially sustainable.
Capacity Building	Develop and implement training programs for government agencies, local governments, and others to enhance knowledge on sustainable finance.
Promotion of Sustainable Financial Products	Support the market introduction of diverse financial products such as green loans, social loans, blue bonds, sustainability bonds, transition bonds, and sustainability-linked bonds.
Strengthening Information Disclosure	Review requirements, issue guidelines, and conduct training to improve corporate disclosure of sustainability and climate change-related information.
Risk Management	Encourage financial institutions to incorporate sustainability principles into their risk management frameworks to manage climate-related financial risks.
Participation in International Initiatives	Participate in international frameworks such as the Sustainable Banking Network (SBN), the Network of Central Banks and Supervisors for Greening the Financial System (NGFS), and the Task Force on Climate-related Financial Disclosures (TCFD) to share experiences and best practices.
Establishment of a Database	Centralize information on investment opportunities and establish a database that is easily accessible to investors.

Source: JICA Study Team

Note: NEDA was renamed to the Department of Economy, Planning, and Development (DEPDev) in 2025.
Source: The Philippine Sustainable Roadmap (2021)

Figure 4.3-2 Members of the ITSF

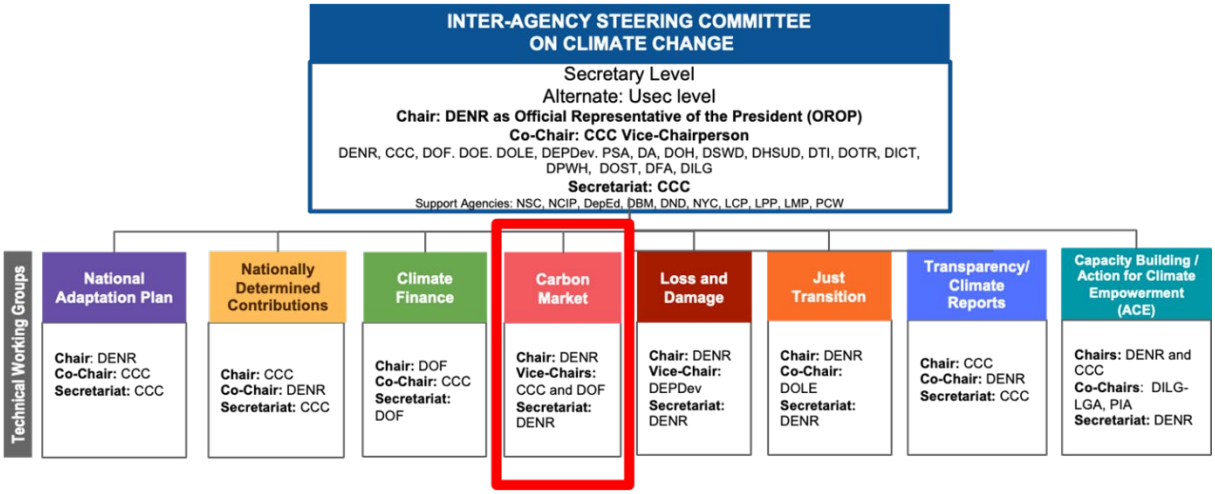
Within Blue Finance, Blue Bonds have garnered significant attention from financial institutions. The institutions involved in Blue Bonds are shown in Figure 4.3-3. However, in the Philippines, only private banks (BDO) and private companies (Maynilad) have issued Blue Bonds and local governments have not yet issued them. For BDO's Blue Bond issuance, the International Finance Corporation (IFC) provided support, including developing guidelines and guaranteeing the bond underwriters. Regarding the domestic supervisory framework, the DOF takes the lead, with the BSP responsible for formulating supervision and regulation for financial institutions, and the SEC responsible for formulating supervision and regulation for the securities market.



Source: JICA Study Team

Figure 4.3-3 Blue Bond-relted Institutions

Regarding the blue carbon credit sector, the Carbon Market Technical Working Group operates under the Inter-Agency Steering Committee on Climate Change. This working group is currently considering frameworks and systems (Figure 4.3-4). The Carbon Market Working Group is chaired by the DENR, with the DOF and CCC (Climate Change Commission) serving as vice chairs. It plans to develop the "Blueprint for Philippine Carbon Market Policy Framework" by the first or second quarter of 2026.



Source: DENR-CCS

Figure 4.3-4 Organizational Chart of the Inter-Agency Climate Change Committee

Currently, the Department of Environment and Natural Resources (DENR) plays a leading role both in policy and in establishing the blue carbon credit system. However, discussions with the Securities and Exchange Commission (SEC), which oversees financial markets, will also be necessary.

Furthermore, blue carbon application projects are created by private enterprises, including startups and MSMEs. Specifically, the Department of Science and Technology (DOST) is taking a leading role in

supporting MSMEs related to the blue economy, promoting initiatives such as establishing funds and developing hub facilities.

4.3.2 Overview of the Philippine Financial Sector

In the Philippines, sustainable finance is gaining momentum, and the market size is expanding.
Although statistics on sustainable finance are not fully aggregated, the SEC's Sustainable Finance Market Report provides detailed information on the bond market. This report (the latest version available from June 2025) summarizes the sustainable finance market in the ASEAN region, particularly the issuance trends of GSS+ bonds (green, social, sustainability, sustainability-linked, and blue bonds).
As of the end of June 2025, the cumulative issuance of GSS+ bonds in ASEAN reached US$68.57 billion, of which the Philippines accounted for approximately US$16.35 billion (about 24% of the total), positioning it as the second largest issuer after Thailand (Refers to Figure 4.3-5 and Table 4.3-2).

Table 4.3-2 Cumulative issuance amount of GSS+ bonds with ASEAN label by country

Country	As of 30 June 2025 (in USD Mill)
Philippines	**16,350.41**
Thailand	27,438.47
Malaysia	18,006.48
Singapore	3,661.54
Indonesia	1,598.36
Cambodia	1,517.78
Total	68,573.04

Source: Prepared by JICA Study Team based on SEC materials

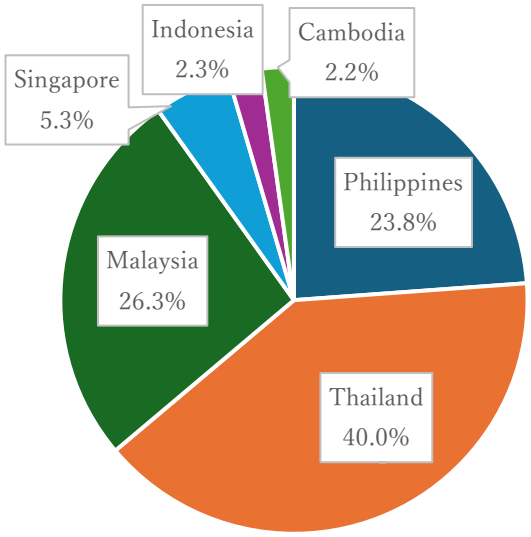


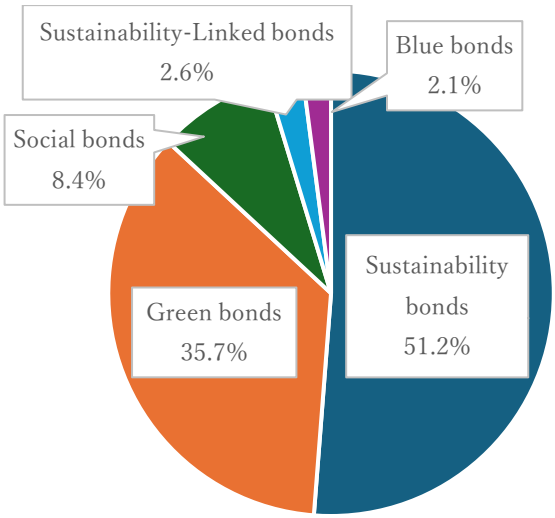
Figure 4.3-5 Percentage of cumulative issuance amount of GSS+ bonds with ASEAN label by country

Looking at the breakdown of bond types issued by the Philippines, sustainability bonds account for the largest share at approximately 51%, followed by green bonds (approximately 36%) and social bonds (approximately 8%)[25] (Refers to Figure 4.3-6). Regarding blue bonds, Maynilad's issuance of approximately US$266

[25] **Sustainability Bond**: A bond whose proceeds are allocated to both green projects and social projects.
Green Bond: A bond whose proceeds are earmarked exclusively for green projects with environmental benefits, such as renewable energy, energy efficiency improvements, and the prevention or reduction of air, water, or soil pollution.
Social Bond: A bond whose proceeds are used exclusively for social projects that address social challenges such as poverty, food security, education, and gender equality.
Blue Bond: A bond issued to raise funds for projects related to marine environmental conservation and the promotion of sustainable ocean-based economic activities.

million is recorded as the Philippines' first ASEAN-labeled blue bond.

Across ASEAN, while blue bonds still represent only a small portion of total GSS+ bonds, policy interest is growing in their use as a means to mobilize funds for sectors such as coastal management, water resources, marine pollution countermeasures, and climate change adaptation. In particular, blue economy investments linked to climate change countermeasures and natural capital conservation are positioned as future growth areas in the Philippines.



Source: Prepared by JICA Study Team based on SEC materialsSEC

Figure 4.3-6 Cumulative issuance amount of ASEAN-labeled GSS+ bonds in the Philippines by type

In terms of the use of funds, approximately 64% of the GSS+ bonds issued have already been allocated to eligible projects, with green bonds in particular exceeding a 90% allocation rate. On the other hand, approximately 30% are considered “unconfirmed” due to factors such as the lack of published impact reports, suggesting that improving transparency is an issue for the future.

In terms of institutional aspects, it is emphasized that the SEC is actively promoting the Sustainable Finance Taxonomy (SFTG) and strengthening the sustainable investment capabilities of non-bank financial institutions (NBFI) in collaboration with the International Finance Corporation (IFC), the World Bank, and the UNDP. This provides policy support for mobilizing private funds, preventing greenwashing, and expanding climate and nature-related investments.

In the loan market, banks have achieved a certain level of success in the green, social, sustainable, and blue sectors through bond issuance, lending, and the development of product frameworks. Representative examples include private banks BDO, BPI, and RCBC (Rizal Commercial Banking Corporation), which have a track record in sustainable finance. Furthermore, several Philippine banks have underwritten blue bonds

(For reference) **Sustainability-Linked Bond (SLB)**: Unlike green or social bonds, SLBs do not restrict the use of proceeds to specific projects. Instead, they are linked to the issuer’s sustainability performance. The issuer sets sustainability-related indicators and corresponding numerical targets known as Sustainability Performance Targets (SPTs). The bond’s financial or structural characteristics—such as the interest rate—typically change depending on whether the SPTs are achieved, thereby incentivizing the issuer’s sustainability efforts.

issued by Maynilad. However, BDO is the only financial institution with a track record in blue label finance and this remains a challenging area.

4.3.3 Blue Economy Initiatives and Related Issues

(1) Related Laws, Guidelines, and Roadmaps

As shown in Figure 4.3-7, the Philippines has established laws, guidelines, and roadmaps to promote sustainability finance, including the blue economy and blue finance.

	Name	Summary
Law	PENCAS Law	Aim to institutionalize a nationwide natural capital accounting system.
Guideline	Philippine Sustainable Finance Taxonomy Guidelines (SFTG)	Classify economic activities as environmentally and socially sustainable for use in investment and financing decisions.
Roadmap	Roadmap for Blue Carbon	aim to establish a strategic framework for the conservation, protection, restoration, and enhancement of blue carbon ecosystems.
	Natural Capital Accounting Roadmap	It is positioned as a strategic guideline for the implementation of natural capital accounting from 2022 to 2040.
	Roadmap for Sustainable Finance	It is positioned as a guide for the financial sector to finance sustainable projects, particularly those focused on marine conservation, sustainable fisheries, and coastal resilience.

Source: JICA Study Team

Figure 4.3-7 Related Laws, Guidelines, and Roadmaps in the Financial Sector

In the Philippines, the "PENCAS Act (Philippine Ecosystem and Natural Capital Accounting System Act)" has been enacted as a financial-related legal framework. This act aims to institutionalize a nationwide natural capital accounting system. It mandates reporting of ESG data to the Philippine Statistics Authority by corporations and government agencies. It also seeks to establish a common framework for valuing ecosystem services, enhancing resilience to climate change, and contributing to biodiversity conservation.

Additionally, the "Philippine Sustainable Finance Taxonomy Guidelines (SFTG)" were developed in 2024 as financial guidelines. These guidelines function as a practical tool for banks to classify and evaluate whether economic activities are environmentally and socially sustainable when making lending and investment decisions, as well as designing financial products.

Furthermore, the following three initiatives are being advanced as financial roadmaps:

- Based on the National Blue Carbon Action Plan (BCAP) formulated in 2024, DENR-BMB is leading the development of a national roadmap to advance the conservation and restoration of blue carbon ecosystems.
- In 2022, DEPDev, DENR, and PSA published the "Roadmap for Institutionalizing Natural Capital Accounting (2022–2040)," outlining strategic guidelines for institutionalizing natural capital accounting.
- The BSP and DOF formulated the "Philippines Sustainable Finance Roadmap" in 2021, establishing policies to promote financing for marine conservation, sustainable fisheries, and coastal resilience.

Within the financial sector, frameworks are being developed to institutionalize natural capital accounting and promote sustainable finance. Additionally, blue economy initiatives are advancing, primarily led by government agencies, including the development of a roadmap related to blue carbon.

(2) Financial Sector Initiatives and Challenges

Challenges facing the financial sector are organized into four areas: blue finance, blue carbon credit systems, the PENCAS Act, and MSMEs related to the blue economy.

1) Blue Bonds in the Blue Finance

Institutions with a track record of issuing blue bonds in the Philippines are currently limited to the following two: BDO and Maynilad Water Services Inc.

- BDO

With support from IFC, BDO issued Southeast Asia's first blue bond in 2022 through the Philippine Stock Exchange in the Philippine bond market. Among the funds raised, it has provided a total of USD 350 million in financing for two water management projects on Luzon Island and one waste management company. The remaining USD 100 million is currently under consideration for investment.

- Maynilad Water Services Inc
- Maynilad, which operates water utilities in the western part of the Manila, announced plans in May 2023 to issue up to 12 billion pesos (approximately 32.2 billion yen) in blue bonds in the Philippine bond market. The proceeds will be allocated to sustainable water and wastewater management projects that meet blue bond requirements.[26]

The limited uptake of blue bond issuance stems from several factors: insufficient incentives, lack of knowledge and expertise among financial institutions, difficulty in identifying eligible projects, and a lack of uniformity in evaluation methodologies. While BDO shares information with other banks through seminars, it is expected to take considerable time before other private banks can independently issue blue bonds.

Given this situation, the Bangko Sentral ng Pilipinas (BSP) outlined two incentives in Circular No. 1185 to promote Blue Bond issuance. First, it allows an additional 15% allocation against the Single Borrower Limit (SBL), the bank lending cap, for Blue Bond-eligible projects. Second, it enables efficient use of funds by setting the reserve requirement ratio at 0% for funds raised through Blue Bonds. While these measures provide financial advantages for institutions, their effect on promoting issuance remains limited at present.

Furthermore, there are no existing cases of Blue Bond issuance by government agencies or local governments. Proactive Blue Bond issuance by national and local governments would demonstrate a commitment to advancing Blue Finance at the national level both domestically and internationally. As a result, it will lead to expanded issuance by private financial institutions.

[26] The SEC and BSP supervise whether or not the requirements for blue bonds are met, based on guidelines formulated by the SEC and international standards such as the Green Bond Principles.

2) Blue Carbon Credit System

The Philippines currently lacks unified policies or institutional frameworks for establishing carbon credit and blue carbon credit systems. Developing carbon credit policies is the top priority. The Blueprint for Philippine Carbon Market Policy Framework, a comprehensive roadmap and draft policy for establishing a domestic carbon market and participating in international carbon trading, is currently being developed. It is intended to form the foundation for the entire carbon credit policy, including blue carbon. Furthermore, the Nationally Determined Contribution (NDC) positions the conservation and restoration of blue carbon ecosystems (particularly mangrove forests) as a key part of climate change mitigation measures, though their specific contribution to emission reduction targets remains undetermined.

As an initiative to promote blue carbon, the Philippine government launched the National Blue Carbon Action Partnership (NBCAP) in February 2025. Philippine coastal habitats sequester approximately 700 billion tons of carbon. NBCAP aims to solicit, coordinate, and support the implementation of high-quality projects focused on the restoration and conservation of these blue carbon ecosystems. NBCAP was initiated primarily by the Department of Environment and Natural Resources (DENR) and is being spearheaded by the Zoological Society of London for the Philippines (ZSL). It also receives support from the World Economic Forum (WEF) and is part of the Blue Carbon Action Partnership (BCAP) initiative launched under the WEF-led Ocean Action Agenda.

The Climate Change Service (DENR-CCS), a department within DENR, is expected to play a central role in managing the registration of blue carbon credits. The DENR's Bureau of Biodiversity (BMB) and Forest Management Bureau (FMB) are anticipated to play roles in technical assessments and data provision related to blue carbon. Specifically, regarding mangrove management, coordination has been underway since around 2021 for the BMB to take a leading role from a biodiversity conservation perspective.

Blue carbon initiatives are also emerging at the East Asian Seas regional level. The international organization PEMSEA (Partnerships in Environmental Management for the Seas of East Asia) aims to establish internationally tradable blue carbon certification standards. Specifically, PEMSEA developed the Regional Blue Carbon Accounting Protocol (RBCAP), a framework providing standardized methodologies for measuring, reporting, and verifying (MRV) carbon stocks in blue carbon ecosystems within the East Asian Seas region. This protocol was approved in July 2025.

The challenge lies in quantifying blue carbon. While mangroves can be quantified to some extent based on existing knowledge, other blue carbon ecosystems suffer from insufficient baseline data and a lack of methodologies, technologies, and expertise for quantification.

As a solution, there is a movement to integrate the knowledge and extensive survey data cultivated by PEMSEA (Partnerships in Environmental Management for the Seas of East Asia), headquartered in the Philippines, into domestic systems. The NBCAP has indicated its policy to adopt PEMSEA's "Blue Carbon Ecosystem Services Management Mechanism (BCESMM)" as the project evaluation standard within the Philippines. Thus, adopting regional standard calculation protocols to overcome quantification challenges and elevate blue carbon credits into internationally marketable investment assets (financial assets) is one of the NBCAP's strategic goals. In addition, the Philippine startup Agrabah Ventures Inc. ("Agrabah") has developed a platform, Agrabah Carbon Plus, that enables companies and business operators to report their GHG emissions and offset them in a practical and transparent manner through carbon credits.

Agrabah was selected through an idea competition under QUEST, a JICA initiative aimed at generating innovative co-creation projects that contribute to solving social challenges, and has been receiving support from JICA.

Unlike large-scale verification systems such as Verra or Gold Standard, this platform is designed to facilitate the creation of small-scale carbon credit projects at the local level. Currently, Agrabah is working with Naga City to formulate a net-zero GHG policy. In the future, the platform aims to be utilized nationwide in the Philippines, with the ultimate goal of contributing to the development of a nationwide net-zero policy.

3) PENCAS Act

The Philippine Ecosystem and Natural Capital Accounting System Act (PENCAS Act: Philippine Ecosystem and Natural Capital Accounting System Act) was signed into law by President Marcos on May 22, 2024 (Republic Act No. 11995).This law aims to quantitatively assess the Philippines' natural resources and ecosystem services, incorporate them into an accounting system, and utilize this information for environmentally conscious and sustainable policy-making.

The Implementing Rules and Regulations (IRR) of the PENCAS Act were promulgated in September 2024, marking the full operational launch of the system. Currently, the Philippines Statistics Authority (PSA) is leading the phased implementation of PENCAS based on the framework of the System of Environmental-Economic Accounting (SEEA), an international statistical standard established by the United Nations. The PSA is starting with sectors where data is relatively well-developed, and the immediate development targets are as follows:

- Land Asset Accounts: Data on land cover already exists and is being utilized to advance development.
- Mangrove Extent Account: This account identifies the extent of mangroves; ecosystems located at the boundary between marine and terrestrial environments. Development is scheduled to begin in early 2026.

Additionally, blue carbon accounting for marine resources other than mangroves (such as seagrass and coral) is currently under development. Meanwhile, the SEEA framework includes descriptions of marine ecosystems and incorporates blue carbon assessment methods. The SEEA framework based on the PENCAS Act is expected to serve as the foundation for the assessment methods required for blue carbon credit-related policies. However, some challenges exist to effectively utilize natural capital accounting based on the PENCAS Act and establish accounting for the marine sector including blue carbon. These challenges include collecting the specific data needed for calculations to build the accounting system (such as baseline data on the status and abundance of marine resources) and strengthening the capacity of personnel from PSA.

4) Support for Blue Economy-Related MSMEs

The Philippine Department of Science and Technology (DOST) implements programs such as the Small Enterprise Technology Upgrading Program (SET-UP) and the Startup Grant Fund, utilizing government funds. It targets MSMEs including technology-based startups. SET-UP, in particular, provides interest-free loans for equipment purchases, requiring repayment within three years, and has supported approximately 8,000 companies nationwide to date.

Additionally, initiatives to strengthen startup ecosystems in each region are advancing nationwide. These include establishing "i-Hubs" to support idea generation and pre-incubation, creating the "i-Fund" for early-stage funding, and setting up Technology Business Incubators (TBIs). "i-Hubs" provides early-stage entrepreneurs with essential support for refining their business ideas, including mentoring, technical advice, innovation workshops, and access to expert resources.

Among these initiatives, the Department of Science and Technology (Region VII) in Central Visayas, Philippines, has been proactive in implementing blue economy-related programs and is also prioritizing support for blue economy startups. Since 2010, the region has supported 51 blue economy-related startups through SET-UP. Furthermore, it has supported 10 early-stage companies through the Technology Business Incubator (TBI) since 2023.

Key sectors for blue economy-related MSMEs in the Philippines include core technological areas supporting the blue economy, such as fisheries post-harvest (freshness preservation and processing), monitoring, traceability, supply chain management, and aquaculture management. However, they face some challenges. Many blue economy MSMEs struggle with establishing products or services that fit the problems faced by diverse stakeholders such as fishermen, aquaculture operators, and coastal communities (Product-Solution Fit). Difficulties in accessing markets and building sales channels also pose significant barriers. Furthermore, reaching the stage of scaling up operations and attracting investment remains a challenge.

While DOST possesses extensive programs and experience supporting startups and MSMEs, its support for challenges that MSMEs face during growth stages such as scaling up and corporate valuation is insufficient. It is indicating room for improvement.

4.3.4 Current Situations and Challenges in the BARMM Region

In the BARMM region, while several ministries were aware of the concept of the "blue economy," it was found that the concept of blue carbon was not recognized even by potential lead ministries such as MTIT, MENRE, and MAFAR.

Meanwhile, in order to examine the feasibility of issuing blue bonds and introducing a blue carbon credit system—key areas within the financial sector for promoting the blue economy in BARMM—online interviews were conducted with the Ministry of Finance and Budget Management and the Al-Amanah Islamic Investment Bank of the Philippines (AAIIBP).

(1) Current Situations

1) Feasibility of Blue Bond Inssurance

The BARMM region has no track record of issuing bonds, including blue bonds. The necessary mechanisms and processes are not in place, and implementation systems and capacity are lacking. While research on bond issuance is currently underway, it is expected to take considerable time before actual issuance can occur.

Meanwhile, banks are providing loans specifically targeting the fisheries sector. Notably, Al-Amanah Islamic Investment Bank of the Philippines (AAIIBP) utilizes a Special Fund established by the government in 2024 to provide loans to fishermen and fishermen's associations. Philippine law mandates that banks allocate 25%

of their loans to the agriculture and fisheries sectors. However, many banks fail to meet this obligation and instead pay fines as an alternative measure. The government established the Special Fund using these fines as capital, and AAIIBP, LBP, and DBP can utilize funds from this Special Fund. Loans utilizing this fund carry an annual interest rate of 4%. AAIIBP plans to expand lending to fishermen and fishermen's associations going forward.

2) Feasibility of Introducing a Blue Carbon Credit System

The Ministry of Environment, Natural Resources and Energy is conducting research on carbon credits, but concrete initiatives have not yet begun. As a result of online hearings, it confirmed that the concept of the blue economy itself is new in BARMM and has not yet been sufficiently disseminated in the region. As the system needs to be built from scratch, external technical support is essential.

(2) Challenges

Based on the above situation, two challenges exist in the BARMM region. First, financial services are not sufficiently penetrated, and initiatives toward issuing blue bonds or establishing a blue carbon credit system have not progressed. Second, within BARMM, the concept of the blue economy is not sufficiently shared among relevant agencies and implementing entities. Consequently, despite the existence of projects that could contribute to the blue economy, these are being implemented individually without being systematically organized under a blue economy framework.

Budget allocations in BARMM are only budgeted after proposals from implementing agencies are incorporated into the development plan. Subsequently, a call for budget proposals is issued annually in January, with required documents submitted to the Ministry of Finance, Budget and Management (MFBM). Submitted proposals are reviewed based on priority, with final approval occurring by December of the same year. Therefore, to secure budget allocation for Blue Economy-related projects, it is essential to ensure BARMM regional stakeholders fully understand the importance of the Blue Economy and incorporate it into the development plan.

Chapter5 Consideration of Development Issues for Promotion of Blue Economy

5.1 Methodology for Issue Analysis

To identify priority issues in each sector, a gap analysis will be conducted to systematically assess the discrepancy between policy objectives and the current situation. As shown in Table 5.1-1, the gap analysis follows these steps: 1. Organizing policy objectives and future visions, 2. Assessing the current situation, 3. Evaluating the gaps, and 4. Understanding donor trends. Based on the analysis results, areas with significant gaps between policy objectives and the current situation will be identified as priority issues. Chapter 6 will then examine proposed cooperation programs addressing these priority issues.

Table 5.1-1 The Flow of Gap Analysis

No.	Item	Description
①	Organizing Policy Goals and Future Vision	Review policy documents, roadmaps, the Blue Economy Act, and other materials issued by relevant Philippine government agencies to organize the government's future vision, goals, and priority areas.
②	Understanding the Current Situation	Through field surveys, interviews with relevant organizations, and literature reviews, organize the current state of systems and implementation frameworks, progress of measures, and challenges faced by stakeholders to clarify the current status relative to policy objectives.
③	Gap Assessment	Compare the gap between policy objectives and the current situation. Based on the magnitude of the challenges, evaluate them using a three-tiered scale: “Challenges Present (×)” for significant challenges requiring priority action, “Partial Challenges Present (△)” for areas needing partial improvement, and “No Challenges (○)” for areas largely meeting target levels.
④	Understanding Donor Trends	Organize the support status and plans of major donors and international organizations such as the ADB, World Bank, USAID, FAO, and EU, and compile the details of their support in the target sectors. Ensure that JICA’s support does not overlap with existing donors and explore possibilities for highly complementary and coordinated cooperation.

Source: JICA Study Team

5.2 Fisheries Sector

5.2.1 Relevany Government Plans and Targets

The gap analysis for examining development challenges in the fisheries sector will be conducted based on the strategies set by sub-sector in the CNFIDP 2021–2025, a medium- to long-term fisheries development plan formulated under the DA. The CNFIDP categorizes the target areas into four sub-sectors: Capture Fisheries, Aquaculture, Post-Harvest, and Trade and Marketing. For the purposes of this study, the scope is limited to the production-related sub-sectors, which are the Capture Fisheries, Aquaculture, and Post-Harvest. Under the CNFIDP, the Trade and Marketing sub-sector primarily addresses issues that are largely private sector–led or institutional in nature, such as expanding domestic and international markets for fishery

products, facilitating distribution and trade, developing market information systems, and strengthening enforcement capacity. These areas do not correspond to the fisheries-related Blue Economy items defined in the PDP 2023-2028, which are resource management, improving access to fishing grounds, facility and equipment investment/financing, and livelihood promotion.

For the strategic objectives of each CNFIDP sub-sector, see Table 4.1-8 in Chapter 4.

5.2.2 Identification of Development Issues and Prioritization of Key Issues

(1) Capture Fisheries

The strategic objectives for the capture fisheries subsector under the CNFIDP include the following ten items: (1) strengthening measures against IUU fishing; (2) introducing the Ecosystem Approach to Fisheries Management (EAFM) into fisheries management; (3) identifying, planning, and implementing fisheries management tools based on EAFM; (4) establishing science-based catch reference points for major fishery resources; (5) reviewing policies and revising laws and regulations based on scientific knowledge; (6) ensuring compliance with the national management framework and commodity roadmaps; (7) strengthening maritime security in the West Philippine Sea[27]; (8) promoting distant-water fisheries; (9) promoting appropriate fishing technologies; and (10) improving the welfare of commercial fishers and their households.

Measures against IUU fishing are a critical issue in the context of the Blue Economy; however, implementation arrangements, particularly for municipal/coastal fisheries, face many challenges, and there is strong demand for support from local stakeholders. EAFM is one of BFAR's core policy directions and initiatives have already been underway; nevertheless, challenges remain in its broader adoption and dissemination. Approaches to science-based resource management, dissemination of fishing technologies, and support for commercial fishers have already been advanced, leaving limited scope for additional assistance. Strengthening maritime security in the East China Sea and promoting distant-water fisheries are diplomatic issues requiring political decisions, and therefore the need for support from Japan is considered low.

Based on these considerations, the gap analysis identified the following three strategic objectives as priority issues. Details of the analysis results are presented in the table below.

(1) Strengthen measures against IUU fishing

(2) Introduce EAFM into fisheries management

(3) Identify, plan, and implement fisheries management tools based on EAFM

[27] The term "East China Sea" as used in the Philippines; this follows the wording in the original text.

Table 5.2-1 Gap Analysis in the Fisheries Sector (Capture Fisheries Sub-sector)

	Strategies	Implementation Status	Challenges	Evaluation		Other Donor Engagement
1	Strengthen Anti-IUUF Measures	・There is a shortage of patrol vessels; surveillance capacity is especially weak for LGU-managed municipal/coastal fisheries. ・As for enforcement against offshore/distant-water fisheries and foreign vessels, priority actions are underway in cooperation with the PCG.	・Procure/deploy small patrol vessels operated by LGUs for municipal fisheries enforcement. ・Capacity building for LGU enforcement officers.	×	Counter-IUU measures are a national-level top priority, particularly in relation to China. While the main needs concern municipal-level coastal fisheries, the policy significance is high, and there are specific requests for support.	Under FishCoRe 1.3, MCS capacity-building for LGUs is being implemented in FMA-6 and FMA-9; no provision of patrol vessels is included.
2	Adopt EAFM in all FMAs	・While national marine capture landings had been increasing, they have decreased in recent years and there are concerns about overfishing. ・Coastal resources are considered to be in a particularly serious condition.	・Establish/strengthen LGU-level institutions and planning frameworks. ・Enhance implementation capacity at the LGU level.	△	Coastal fisheries management remains a central challenge in the Philippines. It is a policy priority, and while technical capacity-building is ongoing, several initiatives, such as FishCoRe, are already under implementation.	Under FishCoRe 1.1, support is provided to FMA-6 and FMA-9 for species-specific management planning and institutional arrangements.
3	Identify, plan and implement appropriate and socially acceptable fisheries management tools in the FMA, in accordance with EAFM and supported by scientific information	・Same as above.	・Design concrete EAFM tools and develop them through pilots/validation. ・Conduct outreach and scale-up of EAFM tools.	△	Same as above.	Same as above.
4	Set Points/ Harvest Control Rules, based on scientific information, for the sustainability of top fisheries stocks	・For some species, management plans are already being developed. ・Studies are underway for other species as well.	・None in particular.	○	Research is being conducted across multiple institutions.	
5	Conduct policy reviews and recommend appropriate amendments to relevant national and local laws based on best scientific information	・Funding support is insufficient to promote the introduction and renewal of advanced fishing gear.	・None in particular.	○	As these are primarily scientific endeavors, the scope for external development assistance is limited.	
6	Compliance to national management framework and/or commodity roadmaps	・Management plans have already been formulated, and efforts to disseminate and operationalize the plans are progressing.		△	This area requires administrative and political decision-making, leaving little room for external aid involvement.	
7	Strengthen security for fishing operations in the West Philippine Sea	・Addressed as a top priority in coordination with the PCG. ・Construction of surveillance/patrol vessels is being fast-tracked.	・Although shortages of patrol vessels and crew competency gaps remain, the demand for external assistance is limited.	○	Implementation and dissemination are already at an advanced stage, leaving limited need for external assistance.	Donor support may be involved in patrol vessel procurement, but details are unclear; JICA is assisting via the PCG.
8	Promote offshore fisheries	・This strategy is a matter of fisheries diplomacy, and sustained engagement is ongoing.	・While many challenges can be anticipated, the need for support under aid schemes appears limited.	○	Ongoing efforts are already in place.	
9	Promote appropriate fishing technologies	・Funding support is insufficient to promote the introduction and renewal of advanced fishing gear.		○	Ongoing efforts are already in place.	
10	Improve wellbeing of members of the commercial fisheries sector and their house			○	Ongoing efforts are already in place.	

Note: ○：No issues, No room for assistance, △：Some issues, some room for assistance, ×：Issues, external assistance required

Source：JICA Study Team

(2) Aquaculture

The strategic objectives for the aquaculture subsector under the CNFIDP include the following six items: (1) ensuring a stable supply of quality seed through coordinated investments in breeding facilities; (2) institutionalizing GAqP for major fishery commodities and promoting sustainable aquaculture; (3) ensuring the quality and traceability of aquaculture inputs and products; (4) investing in species with high commercial potential; (5) optimizing the operation of mariculture parks; and (6) ensuring the resilience of aquaculture to climate change and disasters.

Strengthening the production of aquaculture seed is one of the major challenges for the fisheries sector in the Philippines as a whole, and it also contributes to food security. Related to this, the promotion of milkfish marine cage culture and the facilitation of investment in it are regarded as important issues for strengthening and modernizing aquaculture production. In addition, issues such as seaweed farming, which is significantly affected by climate change, and the restoration of mangrove forests, including harmonizing coastal

conservation with aquaculture, are considered matters that should be addressed in coordination with research institutions such as universities and with environmental authorities.

Based on these considerations, the gap analysis identified the following strategic objectives as priority issues. Details of the analysis results are presented in the table below.

(1) Ensure a stable supply of quality seedstock through coordinated investment in breeding facilities

(2) Invest in species with high commercial potential

(3) Optimize the operation of mariculture parks

(4) Ensure the resilience of aquaculture to climate change and disasters

Table 5.2-2 Gap Analysis in the Fisheries Sector (Aquaculture Sub-sector)

	Strategies	Implementation Status	Challenges	Evaluation		Other Donor Engagement
1	Secure quality fry/seed supply through coordinated investments in propagation facilities (broodstock hatchery, nurseries, laboratories)	・A stable system for supplying high-quality seedstock has not yet been established. ・Heavy reliance on imported milkfish (bangus) fry/seedstock (the majority share). ・Seaweed seedstock/propagule facilities are being expanded, but demand still outpaces supply.	・Priority needs for milkfish seedstock: (1) rehabilitation/upgrading of existing hatcheries; (2) support for establishing private facilities; (3) strengthening training capacity on production technologies; and (4) developing high-quality broodstock and setting up a distribution system to the private sector.	×	From a food security perspective, this is a major national concern, with explicit requests for assistance.	Support is provided under FishCoRe 2.1–2.3. At the NFDC, training facilities have been established, but seed production capacity has not yet been upgraded.
2	Institutionalize GAqP for key commodities and promote sustainable aquaculture	・Finalization of GAqP (Good Aquaculture Practices) certification is in its last stage. ・According to BFAR analysis, significant economic benefits are expected.	・None in particular.	○	Implementation efforts are already progressing.	
3	Assure quality and traceability of aquaculture inputs and outputs	・Species-specific roadmaps for major aquaculture commodities have been prepared, and progress is being monitored.	・Shellfish, in which food-poisoning incidents are frequent, requires appropriate post-harvest handling and value-chain development.	△	There are significant challenges in shellfish toxicity testing capacity, and specific requests for technical support have been identified.	FishCoRe 2.3 includes plans to establish/upgrade three laboratories.
4	Invest on species with high commercial potential	・Seaweed aquaculture is the most commercially focused, with many institutions conducting R&D and extension activities. ・Efficient, planned production using advanced aquaculture technologies is required for milkfish, tilapia, and shrimp.	・Seaweed (especially Kappaphycus) faces strong global demand and is particularly important for improving island fishers' livelihoods; further investment is also expected given its role as a CO_2 absortion source. ・The promotion of marine cage aquaculture is considered an issue; however, there are challenges related on investment promotion and enviromental conservation.	×	Seaweed aquaculture expansion continues to face major constraints, particularly in Palawan and other areas with high potential. Detailed requests for support have been expressed.	Activities are underway under FishCoRe 2.1–2.2; however, they do not involve development of large-scale seaweed aquaculture facilities.
5	Optimize operation of mariculture parks	・To promote marine aquaculture, Mariculture Parks (MPs) are being designated to attract private sector participation; 38 sites had been established nationwide as of 2023.	The development of MPs is currently being promoted. However, attracting private-sector investment remains a challenge. There are also environmental concerns due to the large-scale expansion of MPs.	×	While information is limited, issues related to indirect support for private investment are assumed.	
6	Ensure climate/disaster resilience of the aquaculture sector	・Numerous cases of reduced aquaculture productivity are linked to rising sea surface temperatures. ・Seaweed production has decreased due to the spread of ice-ice disease, among other factors. ・High temperatures are accelerating eutrophication and water-quality deterioration in grow-out ponds.	・Needed measures: develop seaweed varieties tolerant of high temperatures and expand offshore farming areas. ・Introduce low-environmental-impact aquaculture species (e.g., sea cucumbers and bivalves) to improve and stabilize fishers' livelihoods.	×	There are serious technical challenges in seaweed varietal improvement and rehabilitation of AUU ponds (abandoned, unutilized, underutilized).	Under FishCoRe 2.1–2.2, actions are ongoing; research institutions continue R&D on new seaweed varieties/strains.

Note: ○：No issues, No room for assistance, △：Some issues, some room for assistance, ×：Issues, external assistance required

Source：JICA Study Team

(3) Post-harvest

The strategic objectives for the post-harvest subsector under the CNFIDP include the following six items: (1) reducing post-harvest losses along each value chain; (2) developing value-added products from fishery products and processing wastes; (3) improving operators' compliance with quality and safety regulations; (4) strengthening livelihood and entrepreneurship support programs in coastal areas; (5) enhancing the international competitiveness of Philippine fishery products; and (6) ensuring the sustainable use of fishery resources.

Post-harvest losses are recognized as a major problem in the fisheries sector and are also a key factor constraining the promotion of the Blue Economy. Improving fishery product safety has long been a challenge for the Philippine fisheries sector; in particular, shellfish poisoning incidents involving farmed bivalves have become a serious issue, and strengthening inspection systems is urgently required. The development of the

many coastal communities that exist along the Philippine coastline is also an important social issue. Support is needed to improve the livelihoods of people living in these communities, and this should be addressed in conjunction with EAFM-related issues in the capture fisheries subsector. In addition, while large-scale processors have been independently advancing efforts to increase the value added of fishery products, challenges remain at the small-scale level. From the perspective of improving livelihoods in coastal communities, efforts are likewise required in combination with EAFM-related initiatives.

Based on these considerations, the gap analysis identified the following two strategic objectives as priority issues. Details of the analysis results are presented in the table below.

(1) Reduce post-harvest losses across each value chain

(2) Improve operators' compliance with quality and safety regulations

Table 5.2-3 Gap Analysis in the Fisheries Sector (Post-harvest Sub-sector)

	Strategies	Implementation Status	Challenges	Evaluation		Other Donor Engagement
1	Reduction of post-harvest losses along the value chain of different fisheries commodities	・There are only nine large-scale regional fishing ports nationwide, and their capacity is limited. ・Heavy reliance on imported milkfish (bangus) fry/seedstock (the majority share). ・More than 50 small/municipal fishing ports have been developed by local governments nationwide, but many are under-utilized and are also aging. ・Cold-chain development, such as ice plants, cold storage, and refrigerated trucks are yet in need for development. Total post-harvest losses are estimated at 25–40% of landings.	・Development of three additional major fishing ports (RFPs) is planned. ・At the LGU level, CFLCs lack sufficient capacity building, repair of aging facilities, and provision of equipment and materials. ・A cold-chain system centered on CFLCs is needed.	×	Development gaps remain substantial. There is an urgent need for nationwide construction of large-scale fishing ports, upgrading of Community Fish Landing Centers (CFLCs), and installation of cold-chain facilities.	Upgrading of CFLCs and provision of cold-chain equipment are partially covered under FishCoRe 2.1.
2	Increase in the production of value added products from fish and fishery by-products and processing wastes	・Technical guidance on fisheries product processing is being provided; retail facilities and processing machinery are being distributed; marketing support is offered. ・Efforts include increasing aquaculture output and developing value-added products.	Large-scale processing is being led by the private sector. However, in municipal fisheries, particularly at the fishing village level, there is a need for product value addition and measures to reduce post-harvest losses.	△	Activities are being implemented through livelihood generation initiatives by FARMCs. However, the required level of technology is relatively low.	
3	Improvement of the compliance of fishery establishments to relevant national & international regulations on seafood quality and safety	・At the NFDC and at major fishing ports, processing facilities compliant with international standards are being established. ・Monitoring is conducted by BFAR Regional Offices. ・Safety manuals and monitoring are in place for shellfish poisoning (PSP).	Facilities and equipment related to quality management and food safety remain underdeveloped.	×	Food safety during the landing, handling, and transportation of fishery products requires urgent improvement. Improvements in this area can be implemented more efficiently when integrated with the construction and/or rehabilitation of fish ports.	
4	Strengthening of fishery-based livelihood and entrepreneurial programs in coastal communities	・FishCore and SAAD are implementing assistance programs to improve the livelihoods of coastal/municipal fishers, including technical support, provision of equipment, and enterprise development assistance.	This issue is recognized and is currently being addressed in small-scale coastal villages, particularly through activities involving women. However, many LGUs are unable to implement these activities due to budget constraints.	△	This is an important factor in the development and management of coastal fisheries. The required level of technology is not high; therefore, it is well suited to support implementation through FARMCs.	
5	Enhancement of the global competitiveness of Philippine fish and fishery products.	・Promotion of export-oriented industries for milkfish, seaweeds, and tilapia. ・Private companies and fisheries assosiations are undertaking direct-to-consumer sales through online platforms.	Global marketing and the development of sales channels are recognized as issues.	○	There is limited need for external assistance.	
6	Sustainable utilization of Philippine aquatic resources	・National plans have been formulated for resource management and fisheries compliance, including measures against IUU fishing and the FMA framework. ・Gender development is a core policy of BFAR. ・Academic institutions conduct and support R&D on post-harvest technologies. ・BFAR and the DA review their plans for sustainable fisheries resource use on a 3–5-year cycle.		○	Based on the aforementioned activities, comprehensive implementation is needed.	

Note: ○：No issues, No room for assistance, △：Some issues, some room for assistance, ×：Issues, external assistance required

Source：JICA Study Team

5.3 Ocean Transport Sector

5.3.1 Government Development Plans and Objectives related to Blue Economy

The government's development laws and plans and their objectives regarding the blue economy in the maritime transport sector are summarized below.

Table 5.3-1 Government development plans and objectives for the blue economy related to the ocean transport sector

Plans	Summary
Blue Economy Bill	Law governing the activities related to the blue economy
Port Environmental Policy	Guidelines for promoting the decarbonization of ports under PPA management
Maritime Industry Development Plan	Sustainable development programs and plans aimed at social and environmental advancement in the maritime industry sector

Source：Prepared by Survey Team

Blue Economy Bill

The Blue Economy Bill identifies the following as priority strategic ocean-based and ocean-related economic activities related to the ocean transport sector:

- Marine and coastal tourism
- Shipping, logistics and maritime transport
- Shipbuilding and ship repair
- Renewable energy production from marine resources
- Conservation of the marine environment and resources

While the Blue Economy Bill does not specify specific activities, DOTr and its affiliated agencies are promoting their own initiatives to realize the blue economy.

The Blue Economy Bill also includes sections on marine science, innovation, technology, and marine literacy. The Bill's Ocean Literacy Framework promotes the integration of ocean-related education at various educational levels. It also promotes understanding of the economic, socio-cultural, spiritual, scientific, and political importance of the ocean, promotes information dissemination about the ocean, and encourages informed and responsible decision-making regarding the ocean and its resources.

Port Environmental Policy

PPA Port Environmental Policy defines the GRaSPS Framework with the aim of providing infrastructure that is climate resilient, energy efficient, and environmentally friendly. The Framework provides guidelines for sustainability activities in both hard and soft infrastructure. Implementation guidelines and the PPA Green Code are currently being developed to institutionalize the PEP activities in all government-managed ports.

Maritime Industry Development Plan

MIDP was formulated as a roadmap for the sustainable development of the maritime industry and positions the blue economy as an essential element. Of the 10 programs and action plans in MIDP, the following are related to the blue economy:

Core Program 1 includes action plans for modernizing the domestic fleet and strengthening the Ro-Ro transport system and infrastructure. These include identifying coastal and inland waterway routes,

establishing cruise routes in tourist destinations, and expanding the Nautical Highway across southwest Mindanao.

Core Program 3 includes action plans for upgrading and strengthening the SBSR industry. These include developing attractive financing programs for the SBSR industry and promoting green shipyards.

Overriding Program 2 and Overriding Program 3 include action plans for sustainable marine environment and conservation. This includes the development of low-emission and decarbonization technologies and alternative fuels in domestic shipping, the transition to green shipping, the electrification of short-distance craft, training seafarers on the safe operation of ships using zero or near-zero GHG emission fuels and technologies, and education on protecting the marine environment.

5.3.2 Identification of Development Issues and Pliolity Issues

Based on the government plans and activities, the Survey Team has summarized the objectives and future vision related to the blue economy and analyzed the gaps with the current situation as follows.

Table 5.3-2 Gap analysis of objectives and future prospects related to the blue economy

Objectives and future prospects	Current situation	Issue	Evaluation	Donor activities
Promotion of Port Decarbonization Nationwide	No national guidelines or plans for ports to follow. Each port implements their own activities. Terminal operators at large international ports are taking the initiatives in implementing GAPS. Few concrete initiatives at small and medium-sized ports under PPA jurisdiction.	△	A national-level master plan for port decarbonization is required. Based on the master plan, it will be possible to promote decarbonization at each port and implement monitoring, including obtaining the Green Port Award through GPAS.	No particular movement
	Terminal operators at large international ports are taking the initiatives in implementing GAPS.	△	As terminal operators implement their own initiatives, there is a possibility that they may occasionally request technical support for specific technologies, One example is shore power supply, which was approached during this survey.	No particular movement
Developing port-related infrastructure for decarbonization	Port users (private shipping companies) have pointed out issues such as long waiting times and prolonged loading and unloading times due to a lack of infrastructure and cargo-handling equipment at regional ports.	△	Improvements to port infrastructure and cargo-handling equipment can reduce waiting and unloading times at ports of call and fuel consumption. This can contribute to reducing carbon dioxide emissions.	WB is supporting the formulation of policies for the decarbonization of island ferries.
	Of the more than 1,000 small ports under the jurisdiction of local governments/DOTr across the country, 293 have been designated as Social and	△	Development of Social and Tourism Ports can contribute to the promotion of marine ecotourism as part of the blue economy.	ADB is supporting the development of approximately

	Tourism Ports and are subject to development and planning.			25 ports.
Development of Ro-Ro routes and terminals to promote inter-island connectivity	Currently, three major nautical highways provide intermodal connectivity between the islands. MIDP also emphasizes an action plan to extend these nautical highways to southwest Mindanao.	△	A comprehensive assessment will identify needs and bottlenecks regarding the nautical highway's quality of service, fleet status, network connectivity, and climate resilience. This will enable effective evaluation and monitoring of the nautical highway.	No particular movement
Utilizing next-generation fuels and renewable energy for decarbonization	Technologies for next-generation fuels are being developed. While procurement and supply chain issues remain, some efforts are underway to promote the use of certain fuels such as biodiesel and LNG.	△	Biodiesel fuel, blended with existing diesel at 3% (B3), is sold on the general market. Biodiesel fuel has not yet been used in ships. Biodiesel can be used in existing engines, so increasing production or the blending rate and promoting its further use could contribute to decarbonization.	No particular movement
	Construction of offshore wind farms is underway in Mercedes, F/S in Batangas and consideration in Currimao. Introduction of new offshore wind farms in future is being considered.	△	Construction of offshore wind farms requires the development of base ports. Demand for the development and construction of base ports is expected to increase as demand for offshore wind farm construction increases.	WB is conducting a study on selection of base ports,
Electrification of inter-island Ro-Ro vessels for decarbonization	Electric ferries are currently operating on the Pasig River. MIDP aims to electrify boats and ferries on short-distance routes, and a feasibility study on decarbonizing inter-island ferries is currently underway.	△	Given that demonstration tests of electric ferries are already underway, the next step should be to consider electrifying inter-island transport vessels. Establishing a roadmap, policies, and specific standards for both ships and ports is expected to accelerate the electrification of inter-island Ro-Ro vessels.	WB is conducting a feasibility study on inter-island ferry decarbonization.
Financing and incentives support system to promote domestic shipbuilding	Ship Building and Ship Repair (SBSR) Development Bill of 2025 has been drafted but not passed yet. The Bill aims to promote shipyard modernization and expansion and provide financing mechanisms for domestic shipbuilders.	△	A comprehensive shipyard assessment is needed to identify needs and bottlenecks in the SBSR. The development of financing mechanisms and programs to encourage domestic shipbuilders to enter the domestic market and promote green shipyards is essential.	No particular movements
Promotion of the blue economy and marine environmental conservation and education and training on	The Blue Economy Bill includes maritime safety and resource conservation.	△	PCG conducts maritime security activities and activities to conserve the marine environment and marine resources. There are insufficient bases for patrol vessels and other operations, and the development of a base port is underway.	With the U.S. assistance, the development of a base port in Southern Palawan is underway.

maritime workforce			Development of a new base port is expected to strengthen PCG's functions in the West Philippine Sea, including maritime domain awareness, security, environmental monitoring, and IUU fishing countermeasures. Port development is consistent with the goals of the PCG Task Force, the priority strategies of the Blue Economy Bill, and Overriding Program 1 of the MIDP.	
	The Blue Economy Bill includes an "Ocean Literacy Framework" to promote understanding of the importance of the ocean and its resources at various educational levels.	○	Developing learning modules and providing education will raise awareness of the ocean economy. It will help bring potential business development and economic growth to society in their region.	No particular movement
	The Philippines supports the IMO Guidelines for Seafarer Training on Alternative Fuels and Next-Generation Technologies. It also emphasizes the need to develop a skilled maritime workforce and promote low-emission technologies.	○	This will narrow the skills gap between the introduction and deployment of next-generation vessels and the maritime workforce (seafarers). This will provide Filipino seafarers with additional opportunities in the international market and create opportunities for them to engage in modernized operations within the domestic shipping industry.	No particular movement

Note: ○：No issues, No room for assistance, △：Some issues, some room for assistance, ×：Issues, external assistance required

Source：JICA Study Team

5.4 Financial Sector

5.4.1 Identification of Development Issues and Priority Issues

As shown in Figure 5.4-1, interviews with government agencies, banks, local governments, academic institutions, and other organizations (NGOs, Statistics Bureau, SEC, etc.) confirmed that each institution is independently advancing initiatives related to the financial sector.

Specifically, the Bangko Sentral ng Pilipinas (BSP) has developed a Sustainable Finance Framework and an Environmental and Social Risk Management (ESRM) Framework. It also provides incentives for bond issuance through deregulation measures for banks. The Securities and Exchange Commission (SEC) has established guidelines for blue bond issuance and is promoting market development aligned with international standards. Furthermore, government-owned financial institutions LBP and DBP are expected to expand lending to blue economy-related projects under the Blue Economy Act. Additionally, the Department of Science and Technology (DOST) is promoting support for blue economy-related MSMEs and establishing innovation hubs for startups, while the Philippine Statistics Authority (PSA) is involved in drafting natural capital accounting (PENCAS Act).

However, with the Blue Economy Act still pending approval in Congress, efforts remain fragmented across individual agencies. Furthermore, local government initiatives remain limited, indicating that the concept of the Blue Economy has not yet sufficiently permeated the local level.

Regarding cooperation needs, interest in blue carbon is high across agencies. For blue bonds, issuance has not progressed beyond BDO, largely due to a lack of knowledge and expertise on blue finance among financial institutions (including BSP and private banks). While frameworks are being established (such as the SEC developing guidelines), they have not yet been sufficiently adopted. Therefore, capacity building for financial institutions is essential to promote blue bond issuance.

Types of Organizations	Organization Name	Activities, Requests and Challenges
Ministry	DENR-BMB	• Intention to take the lead in advancing the Blue Carbon system.
	MARINS	• Discussing preferential loans for the shipbuilding industry with DBP but not yet implementing
	DOST	• Plan to establish the Blue i-FUND and an i-Hub specialized in BlueTech. • Interested in blue carbon but lack the necessary technology.
	DEPDev	• They expect to support DENR's planned project to establish research institutions for contribute to the development of evidence-based policies.
Bank	BDO	• The first bank to issue a blue bond. Other banks will take more time to issue blue bonds. • They have a strong interest in blue carbon.
	BPI	• We would like to know Japan's insights, such as the experience of local governments issuing blue bonds. • Implementing blue finance for MSMEs is not cost-effective.
	DBP	• No initiatives on the blue economy (dependent on the government's policy direction)
	LBP	• Intention to take the lead in advancing the Blue Carbon system.
	Central Bank	• There is a lack of knowledge and technical expertise on blue finance among financial institutions, including the BSP, as well as local governments.
Local Government	Cebu City Hall	• The concept of BE has not yet become widespread, and no BE-related projects have been implemented. • They do not have the capability to issue blue bonds.
Academia	MERF	• In collaboration with DENR-BMB, working on blue carbon certification and the development of parameters. • There are challenges regarding the sustainability of research projects after the completion
Others	rare (NGO)	• Cooperation from LGU is essential, but the concept and importance of BE is not widely recognized within LGUs. • The sustainability of projects after their completion remains a challenge.
	MCWD	• They have neither the capability nor the opportunity to issue blue bonds. • They are seeking follow-up to the groundwater conservation survey previously conducted by JICA.
	PSA	• Engaging in making PENCAS law
	SEC	• They expect to establish a regional-level blue finance taxonomy for the ASEAN region.

Source: JICA Study Team

Figure 5.4-1 Initiatives and Cooperation Needs of Financial Sector Institutions

The gap analysis for the financial sector is shown in

Table 5.4-1. The "Strategic Goals" are set based on the roles of each institution in the financial sector as outlined in Chapter 9 of the Blue Economy Act.

First, regarding the BSP, Section 24 of Blue Economy Act explicitly states that "banks shall be required to adopt the UN Environment Programme Sustainable Finance Principles as the foundation for corporate governance and risk management." Regarding the SEC, Section 25 assigns it the role of promoting the issuance of blue bonds, requiring compliance with the ASEAN Green Bonds Standards and Green Bonds Principles developed by the ASEAN Capital Markets Forum and the International Capital Market Association. Furthermore, government-affiliated financial institutions LBP and DBP are obligated to allocate 5% of their regular loan portfolios to blue economy-related projects.

In addition to above, the National Development Plan explicitly states the establishment of a blue carbon credit system. Furthermore, field research confirmed high demand for a blue carbon credit system across multiple institutions. Therefore, the analysis includes the establishment of a blue carbon credit system as part of the strategic goals.

Next, priority issues are identified ("Evaluation") based on the gap between the "Strategic Goals" and the "Implementation Status" and confirmed through interviews during the field survey.

The introduction of UN principles by BSP and the 5% allocation for lending portfolios by LBP and DBP are expected to be implemented automatically once the Blue Economy Act is enacted. Therefore, these are positioned as low-priority issues. In contrast, the promotion of blue bonds and the establishment of a blue carbon credit system are high-priority issues where a significant gap currently exists between the strategic goals and the current implementation status.

Regarding Blue Bonds, a key area of Blue Finance, issuance to date has been limited to BDO and one private company. While institutional frameworks are advancing, such as the SEC developing guidelines, issuance itself is not being promoted. Consequently, this creates a situation where advancing Blue Economy-related projects is difficult. If the adoption of Blue Finance, including Blue Bonds, does not progress, it could become a major constraint for promoting the Blue Economy in the Philippines.

Regarding blue carbon credits, while a domestic roadmap and implementation framework are under consideration in the Philippines, the greatest challenge lies in quantifying carbon credits. For example, while methods for quantifying mangroves, as part of forests, are somewhat established within the Philippines, quantifying other blue carbon ecosystems like seagrass beds and coral reefs is extremely difficult. This is due to a lack of baseline data and the absence of appropriate methodologies within the Intergovernmental Panel on Climate Change (IPCC) guidelines. Furthermore, at present, efforts are limited to establishing a framework within Nationally Determined Contributions (NDCs) for exploring blue carbon, and its contribution to specific emission reduction targets remains unquantified.

Furthermore, while MSMEs are envisioned as the entities capable of creating specific projects applicable to blue carbon, their current numbers are limited. Although the Department of Science and Technology (DOST) supports blue economy-related MSMEs, few MSMEs have yet led to blue carbon issuance. Therefore, establishing the system alongside building an ecosystem is required.

Based on the results of this gap analysis, promoting blue finance and establishing a blue carbon credit system are assessed as essential and top-priority tasks for advancing future blue economy-related initiatives.

Table 5.4-1 Gap Analysis (Financial Sector)

Strategic Goals		Implementation Status	Evaluation		Other Donor's Activities
Blue Economy Act	Mandate financial institutions to adopt UNEP's Sustainable Blue Economy Finance Principles	Not implemented as the Blue Ecoonmy Act has not passed.	△	Action is expected once the Blue Economy Act is adopted.	No particular actions are observed.
	Promotion of Blue Finance	Only BDO and one private company have issued Blue Bonds. Additionally, the SEC is developing a framework for Blue Bonds. SEC is developing blue bond application standards. The Inter-Agency Technical Working Group for Sustainable Finance also supports the promotion of blue finance.	×	Although various institutions are working to promote blue finance, including blue bond issuance, only the BDO and one private company have actual issuance records. Overall, sufficient results have not yet been achieved.	The IFC is providing support to the BDO regarding blue bond issuance.
	Government-affiliated financial institutions are required to extend credit to marine-related enterprises	Government-affiliated financial institutions such as DBP and LBP have not taken action until the Blue Economy Act is approved.	△	Action is expected once the Blue Economy Act is adopted.	No particular actions are observed.
National Development Plan	Establishment of a Blue Carbon Credit System	DENR-BMB is developing a roadmap for blue carbon through NBCAP. DENR-CCS is working to institutionalize carbon credits in consultation with other agencies such as DOF, DA, and CCC. Academic institutions such as the University of the Philippines are advancing research related to blue carbon. Based on the PENCAS Act, the PSA is examining methodologies for assessing the economic value of natural resources related to marine ecosystems. While initiatives exist, such as establishing funds through DOST to support MSMEs related to the blue economy, the number of blue conomy related MSMEs remain limited. Blue economy related MSMEs have the potential to become blue carbon credit issuers.	×	・While various agencies are working towards introducing a blue carbon system, inter-agency coordination is currently lacking. ・The need for system implementation has been confirmed across ministries and related agencies, indicating high priority for action. ・DOST supports MSMEs related to the blue economy, but few marine-related enterprises qualify as potential blue carbon credit issuers.	・ADB is supporting the PENCAS Act. It is also assisting in developing a roadmap for blue carbon credits. ・WB is conducting studies on blue carbon certification and measurement methods.

Source: JICA Study Team

5.5 Development Isues in the BARMM Region

The issue analysis for the BARMM Region is more limited than the nationwide analysis for the Philippines, as travel restrictions prevented the conduct of adequate field surveys. Consequently, the identification of priority issues had to be undertaken under these constraints, and the results compiled under these conditions are presented below. The prioritization of issues was carried out using the gap analysis method described in Section 5.1, “Methodology for Issue Analysis.”

5.5.1 Fisheries Sector

As described in detail in Chapter 4, Section 4.1.4, the current situation and key issues in the fisheries sector in the BARMM Region are as follows. In this section, a gap analysis is conducted to identify priority issues based on the major challenges set out in the 2nd Bangsamoro Development Plan (BDP 2023–2028). The plan identifies two fisheries-related challenges: (1) low productivity in agriculture and fisheries, and (2) unstable food supply. The former encompasses issues affecting fisheries production and distribution, such as high production costs, shortages of research and development personnel, degradation of coastal ecosystems, and IUU fishing. The latter includes issues such as post-harvest losses and problems in market distribution. It should be noted that, in BARMM, FAO’s fisheries project, “Development of Sustainable Fishery Value Chain in BARMM,” is currently being implemented under a two-year plan starting in 2025. In selecting the

development issues, due consideration was given to ensuring potential synergies with this project while avoiding duplication of activities.

With respect to the issues under the former challenge, "high post-production, selling, and marketing costs and high retail prices" remains a significant concern, as inadequate infrastructure from production areas to consumption areas and the resulting high distribution costs have not been sufficiently addressed. "Degradation of coastal ecosystems" is also highlighted as a major issue, reflecting insufficient functions and capacity for coastal conservation and management. Under "insufficient development of aquaculture and offshore/coastal fisheries," the dissemination of seaweed farming which is an area with substantial untapped development potential in BARMM remains a key challenge. Regarding "IUU fishing," there is an urgent need to establish a management framework for the jointly managed waters with the central government of the Philippines (Zones of Joint Cooperation: ZJC). Under the latter challenge, "high post-harvest losses," as in the Philippines overall, remains a major unresolved issue.

Seaweed farming is the most important industry in BARMM, and its production volume is the largest in the Philippines. Given the favorable natural conditions, BARMM is also expected to have the country's largest potential area suitable for seaweed farming. Further development is therefore highly feasible, and expectations on the part of the BARMM Government are significant. However, its productivity has declined in recent years due to factors such as continuous-cropping constraints and the spread of ice-ice disease. Accordingly, technical improvements are needed, including strain improvement and disease control measures. In addition, the marketing and transport processes for produced seaweed are highly complex and may be constraining improvements in producers' incomes. Support is therefore required to improve the value chain, including a review of processing and distribution processes to increase value addition, together with the infrastructure development noted above. It should also be noted that the FAO project does not include a seaweed farming component.

Regarding post-harvest losses, development of fisheries ports and cold-chain facilities (e.g., cold storage and ice-making machines) is required as infrastructure for quality management of landed fish. However, in BARMM, progress has been limited, partly due to the impact of conflict. There are eight medium-scale municipal fish ports developed prior to the establishment of the autonomous region, but many need rehabilitation. In addition, 94 CFLCs have been established, yet only 14 are in an operational condition. The BARMM Government has identified three priority areas for fisheries port development which are Tawi-Tawi, Basilan, and Maguindanao, and needs for support have been confirmed for the rehabilitation or new construction of fish ports and for cold-chain development. In addressing this issue, it is desirable to give due consideration to the dissemination and further development of activities on catch quality management to be implemented under the FAO project, such as the provision of an ice-making machine (one unit) and cooler boxes, and training for fishers.

For coastal ecosystem conservation and management, and for ZJC management including measures against IUU fishing, strengthening the capacity of MENRE, which is responsible for environmental administration, is required. According to interviews with MENRE, challenges include enhancing capacity related to marine and coastal resource management, as well as strengthening research capacity on the marine environment and the Blue Economy. Regarding the former, MENRE has begun working on coastal resource management in BARMM, including measures against IUU fishing, under a cooperative relationship with MAFAR, and plans to commence full-scale activities going forward. With respect to ZJC management, establishing a concrete

implementation framework and formulating a management plan will be required in the future. However, MENRE and MAFAR currently have limited capacity for marine and coastal management, and capacity development is needed. As part of this capacity development, the establishment of a research institution is also recognized as a priority issue, to conduct foundational research related to the Blue Economy (including the marine environment and the socio-economic conditions of coastal communities) and to undertake technology development for addressing related challenges. It should also be noted that the FAO project includes an assessment of coastal fisheries resources, and in addressing this issue it would be desirable to utilize the results of that assessment.

Based on these considerations, the gap analysis identified the following four items as priority issues. Details of the analysis are presented in the table below.

(1) Addressing post-harvest losses
(2) Promoting seaweed farming
(3) Strengthening capacity for marine and coastal resource management
(4) Establishing a Marine Environment and Blue Economy Research Institute

Table 5.5-1 Gap Analysis in the Fisheries Sector (BARMM Region)

	Key Challenge	Description	Specific Issues	Evaluation		Other Donor Engagement
		High post production, sales, and marketing costs, leading to high retail prices	•Weak infrastructure such as road networks, including Farm to Market Roads (FMRs) •Higher aggregation and logistics costs due to a lack of consolidation and processing centers	×	The Bangsamoro Economic Zone Authority (BEZA) has plans to establish a seaweed processing center in either Polloc or Tawi-Tawi; however, the concrete implementation approach has yet to be determined. In addition, there remain numerous challenges in developing the necessary transport-related infrastructure.	
		Limited technologies for commercialization	•Insufficient capacity development for R&D personnel, very limited regular positions for researchers	△	Although universities and research facilities exist, in-house research divisions and institutions capable of comprehensively addressing the blue economy have not yet been established. Further action is required, together with the development of a database.	
		Lack of reliable, timely, and accurate test results and reporting	· Weak collaboration with other regional and national research institutes · Absence of a database for agriculture and fisheries testing	△		
	Low productivity in agriculture and fi	Degradation of coastal ecosystems such as coral reefs, seagrass beds, and mangrove forests	•Inappropriate use of inorganic fertilizers in seaweed farming •Lack of mechanisms to sustain marine protected areas •Limited community participation in coastal resource management •Illegal cutting •Conversion of mangrove areas into fishponds •Lack of information provision •Weak regulatory data and institutional support •Lack of clearly defined water boundaries	×	The line ministries responsible for institutional and research arrangements related to integrated coastal area protection and management are MENRE and MAFAR. MENRE has only recently begun initiatives in this field; therefore, strengthening staff capacity remains a key issue. Technical assistance for policy formulation and implementation is also required.	
		Insufficient development of aquaculture and offshore and municipal fisheries	•Limited services for processing, transport, and marketing •Insufficient Mariculture Parks, including sea cage facilities, landing sites, and cold storage •Inadequate supply of seed and formulated feed for aquaculture •Insufficient capacity development for fishers and inadequate hatcheries, nursery facilities, and other necessary infrastructure	×	Seaweed aquaculture accounts for 71% of BARMM's fisheries production and still has high potential for further output expansion. The BARMM autonomous government also has high expectations for strengthening production going forward. Improving community livelihoods is likewise a key issue.	
		IUU fishing	•Low law enforcement capacity against illegal operations •Insufficient coordination with LGUs and law enforcement agencies •Insufficient staff capacity development •Lack of equipment for monitoring, control, and surveillance •Absence of a marine environmental monitoring system	×	There is a need to strengthen fisheries management capacity in the maritime areas administered by the BARMM autonomous government, including the ZJC with the Central Government of the Philippines.	Partly addressed under an FAO project (2025–2026); however, it does not cover management of the ZJC.
	Unstable food supply	High post-harvest losses	•Inadequate identification and development of FMRs •Insufficient financial support for pre harvest and post-harvest infrastructure •Lack of information and inventories for pre harvest and post-harvest facilities •As a result, traditional post-harvest handling methods are still used •Inter-agency coordination is required to implement responsive programs	×	There is a need to reduce post-harvest losses through a set of integrated measures, including improvements in catch transportation and the promotion of processing. In particular, strengthening the seaweed value chain remains a major issue in the BARMM region. Responses are required that include the development of fishing ports and processing facilities.	Partly addressed under an FAO project (2025–2026) through support to improve quality control techniques for a subset of fishers; however, no infrastructure development will be undertaken.
		Limited opportunities for market linkage activities	•Unorganized value chains •Lack of funding for processed product development •Limited marketing expertise among fishers •Lack of transport options •Absence of comprehensive financing mechanisms for fishers •Constrained access to domestic and international markets	△	While this issue is related to many of the challenges outlined above, it primarily requires institutional improvements, and the need for external support is not considered to be high.	Partly addressed under an FAO project (2025–2026).

Source: JICA Study Team

5.5.2 Ocean Transport Sector

The 2nd Bangsamoro Development Plan 2023-2028 (BDP) is a roadmap for the region's development, setting out priority strategies and development directions for the BARMM from 2023 to 2028. Agenda 5, "Investment in Transport, Communications, and Other Strategic Infrastructure," part of the "Enhanced 12-Point Priority Agenda for BARMM 2023-2028," aims to build reliable and resilient systems for land, sea, and air transport, communications, commerce, social, industrial, environmental, and other strategic infrastructure to promote BARMM's economic growth.

BARMM is home to 11 commercial ports, and domestic shipping accounts for 37% of the region's maritime traffic. The main ports of call for domestic ships are Jolo Port in Sulu Province, Lamitan Port in Basilan Province, and Bongao Port in Tawi-Tawi Province.

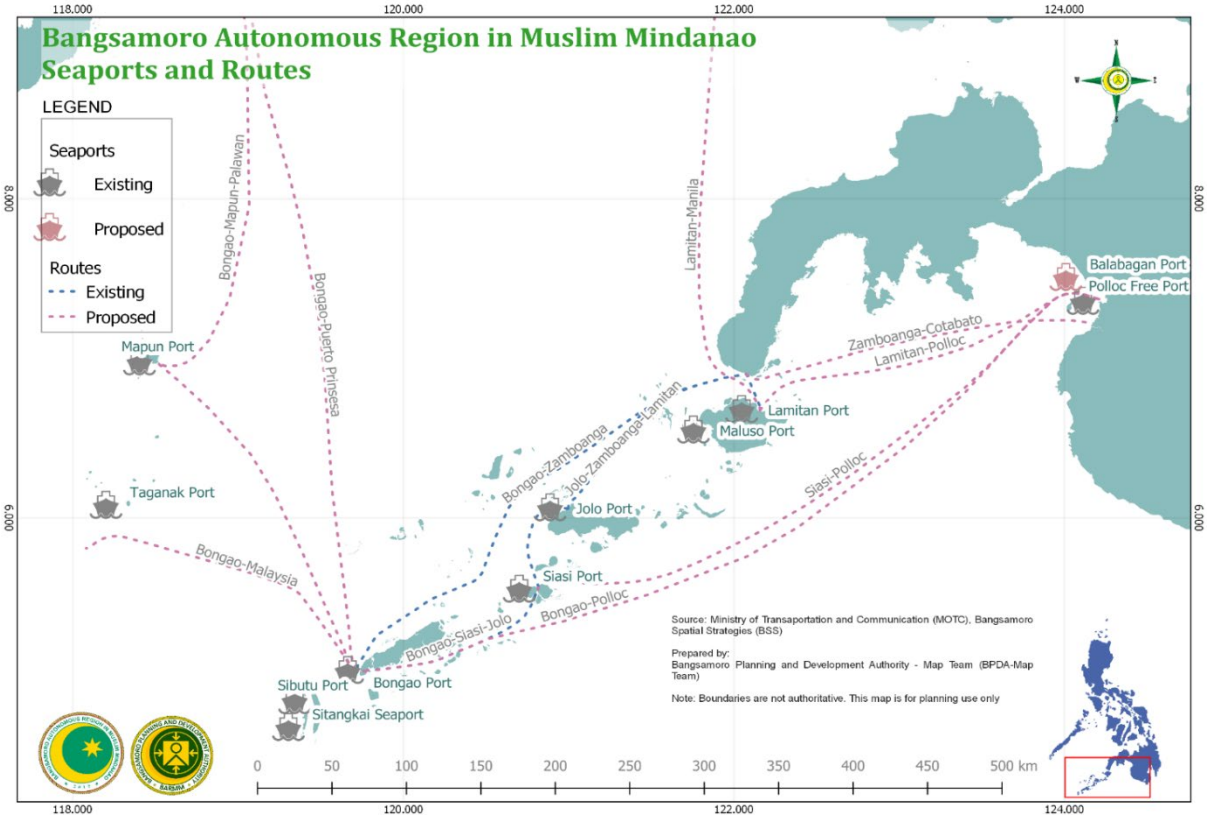


Figure 5.5-1 Ports and routes in BARMM (Source: 2nd BDP)

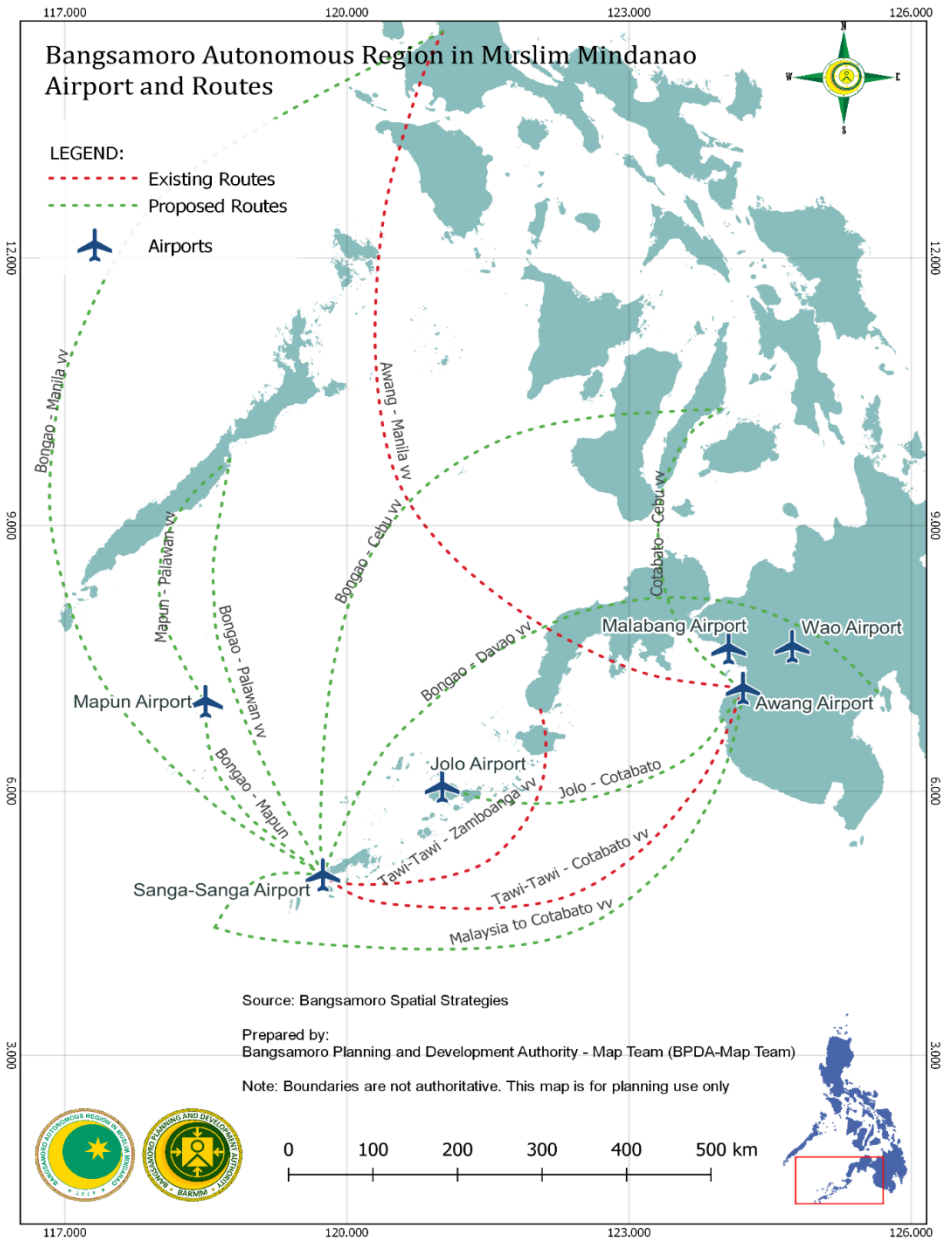


Figure 5.5-2 Airports and flight routes in BARMM (Source: 2nd BDP)

As can be seen from Figure 5.5-1, existing sea routes connecting ports within BARMM are not necessarily sufficient. The main ports of call for domestic ships are concentrated in the provinces of Basilan, Sulu, and Tawi-Tawi, limiting connectivity between the mainland provinces and island provinces. Furthermore, as can be seen from Figure 5.5-2, there are no direct air routes connecting Mindanao's mainland with the island provinces, with the exception of the Cotabato-Tawi-Tawi air route. This results in inefficient inter-island transportation by sea and air, creating geographical and structural gaps in these regions.

In light of these factors, BARMM has prioritized the following strategies for the transportation sector in the 2nd Bangsamoro Development Plan: ensuring an efficient transportation system, improving connectivity to market areas within and outside BARMM, and strengthening inter-island connectivity to facilitate the movement of goods and people.

In line with this priority strategy, cooperation programs aimed at the development of the maritime transportation sector in BARMM will be considered.

Based on the BARMM government's plans and activities outlined above, the gap between the current situation and the goals and future vision related to the blue economy was analyzed as follows:

Table 5.5-2 Gap analysis of blue economy-related goals and future prospects in the BARMM region (Ocean Transport Sector)

Objectives and future prospects	Current situation	Issue	Evaluation	Donor activities
Ensuring smooth connectivity between islands and strengthening maritime transport capacity	Currently, domestic ship calls are unevenly concentrated in the provinces of Basilan, Sulu, and Tawi-Tawi. The Second Bangsamoro Development Plan lists ensuring an efficient transport system, improving connectivity to market areas within and outside the BARMM, and strengthening inter-island connectivity to facilitate the flow of goods and people as priorities for the transport and traffic sector.	△	Strengthening the maritime transport network and strengthening connections within the BARMM area and with the main island states will shorten logistics lead times and contribute to reducing post-harvest loss of agricultural and marine products, which is currently identified as a problem. It will also improve transportation from seaweed farming areas within the BARMM area to nearby markets, leading to industrial development.	During the web meetings, the Survey Team has learned that US-AID is providing cooperation related to maritime transport, but no additional information on specific details has been obtained, so the details are unclear.

Note: ○: No issues, No room for assistance、△: Some issues, some room for assistance、×: Issues, external assistance required

Source: Prepared by Survey Team

5.5.3 Financial Sector

As stated in 4.3.4, while the BARMM region's financial sector outlines institutional design and industrial development directions to support the regional economy, significant challenges remain: financial services are not sufficiently penetrated, and few enterprises are eligible for financial services. Furthermore, the concept of the Blue Economy has yet to gain widespread adoption even among ministries and agencies.

In the BARMM region, "Islamic banking and finance" (financial mechanisms aligned with the region's socio-cultural and religious context) is positioned as a key element for inclusive growth. However, examining the actual economic structure reveals that the regional business sector remains fragile. Since many MSMEs belong to the informal sector, financial institutions find it difficult to assess creditworthiness and make lending decisions for these businesses. Consequently, corporate access to capital is often constrained.

Furthermore, the delayed "formalization" of business activities remains a challenge. According to the "Bansamoro Development Plan 2023-2028," while business name registrations in the Philippines saw significant growth in 2021, the BARMM region accounts for less than 1% of the national total. This suggests that market participants in the region remain limited, and the user base for financial services (depositors and borrowers) is not sufficiently robust. For financial institutions, this makes profitability difficult, creating a

vicious cycle where expanding branch networks and financial product offerings is hindered.

In addition, barter trade still functions as a means of livelihood in the BARMM region, which can be said to hinder the spread of finance. More transactions are centered on cash transactions and transactions that do not go through the financial system, such as barter trade, the less necessary financial services such as remittances, settlements, and loans become, making it difficult to develop financial services.

Furthermore, according to the "Bansa Moro Blue-Green Circular Economy Roadmap 2026-2031 Formulation and Implementation Guidelines," the goal is to attract sustainable investment from international and regional partners through involvement in the East ASEAN Growth Area (BIMP-EAGA), but it is unclear which industries and businesses are potential investment targets.

Therefore, the priority issues in the financial sector in the BARMM region can be summarized as 1. restrictions on corporate access to Islamic finance and 2. delays in corporate development. Those issues are shown as a gap analysis of the financial sector at Table 5.5-3. The "priority issues" were set based on the "Bansamoro Development Plan 2023-2028".

Table 5.5-3 Gap Analysis (BARMM Region: Financial Sector)

Main Challenges		Specific details	Evaluation		Trends of Other Doners
Bangsamoro Development Plan 2023–2028	Constraints on companies' access to (Islamic) finance	・Islamic finance and other financial mechanisms tailored to the region's socio-cultural and religious context are insufficient. ・Because the local business sector is weak, financial institutions find it difficult to conduct credit assessments and lending decisions for firms, which in turn tends to constrain companies' access to finance.	×	The concept of the blue economy has not yet been widely adopted in the region, and launching bankable projects that contribute to the blue economy is a priority.	Shariah finance framework training and related programs were conducted through cooperation between the Government of Malaysia and the International Centre for Education in Islamic Finance (INCEIF) under the Malaysian Technical Cooperation Programme.
	Delay in company development	・While business name registrations in the Philippines increased significantly in 2021, the share of businesses in the BARMM region accounts for less than 1% of the national total. ・Land resources are not being fully utilized, and investment potential remains untapped.	×	Support for industrial development and capacity building for MSMEs operators is needed.	Support for the halal industry is being implemented with assistance from the EU and UNIDO.

Guidelines for the Formulation and Implementation of the Bangsamoro Blue-Green-Circular Economy Roadmap 2026–2031	Lack of sustainable investment	Through engagement with BIMP-EAGA (the East ASEAN Growth Area), attract sustainable investment from international and regional partners.	×	The concept of the blue economy has not yet been widely adopted in the region, and launching investment-ready projects that contribute to the blue economy is a priority.	No particular developments have been observed.

Source: JICA Study Team

Chapter6 Consideration of Potential Cooperation Projects

This chapter examines cooperation programs to be provided by the JICA with a view to resolving the priority issues identified in the preceding chapter. The examination process is structured as follows: project concepts are first developed to address the priority issues in the fisheries, maritime transport, and finance sectors, after which these concepts are consolidated across sectors to formulate an integrated, cross-cutting cooperation program. In drafting the program, emphasis is placed on defining blue economy challenges that have emerged as broad societal issues irrespective of any specific sector, and on proposing programs oriented toward their resolution. In addition, the program is designed to generate synergies through the combination of individual projects, thereby enabling a cross-sectoral and comprehensive approach to addressing social challenges. It should be noted that the contents presented in this chapter have not necessarily been coordinated with the relevant departments of JICA and represent proposals made by the study team. Accordingly, for the further concretization of each program and project, individual consultations among the relevant stakeholders will be essential.

6.1 Cooperation Program for the Fisheries Sector

6.1.1 Extracting Support Needs from the Priority Issues

To develop detailed projects corresponding to the priority issues in the fisheries sector confirmed in the previous chapter, the support needs for each priority issue are organized in the following table based on the information compiled in Chapter 4 and other relevant sources. For details on the current situation and challenges for each item, refer to the respective tables in “5.2.2 Extraction of Development Issues and Identification of Priority Issues.”

Table 6.1-1 Support Needs by Priority Area in the Fisheries Sector

Priority Area		Support Needs
Priority Area 1	Strengthening measures against IUUF	Enhancing capacity for activities related to IUUF countermeasures in coastal Areas
Priority Area 2	Introducing the EAFM Approach	Support to FARMCs (which are the primary implementing bodies for EAFM in coastal areas) will promote the concrete implementation and practical dissemination on the methodology of EAFM and strengthen FARMC capacity.
Priority Area 3	Identify, plan, and implement fisheries management tools based on EAFM	
Priority Area 4	Securing stable stocks of high-quality seeds through collaborative investment in hatcheries	Improvements in seed production capacity, selective breeding and strain improvement of seedlings, and activities against fish diseases for the further promotion of aquaculture.
Priority Area 5	Investment in aquaculture commodities with high	Promoting aquaculture commodities with strong potential for enhanced production (e.g.,

	commercial potential	seaweed), and including marine cage aquaculture, which is currently expanding because of technological advancements in the sector.
Priority Area 6	Optimizing operations of Mariculture Parks	Providing support for the expansion of Mariculture Parks being promoted by the BFAR.
Priority Area 7	Strengthening the resiliency of aquaculture against climate change and natural disasters	Strain improvement and strengthened disease control will be implemented to take measures against the declining seaweed farming productivity, which is supposedly linked with rising seawater temperatures. In addition to the above, the revitalization of abandoned coastal aquaculture ponds and mangrove restoration will be implemented.
Priority Area 8	Reducing post-harvest losses in the value chain	The support will focus on developing and upgrading fishing ports, and cold-chain facilities (e.g., cold storage and ice-making equipment) as well as strengthening the capacities of relevant stake holders to reduce post-harvest loss.
Priority Area 9	Improving the compliance of fisheries business operators in product quality and various safety regulations	

In addition, the priority issues and corresponding support needs for the fisheries sector in the BARMM region, as examined in the preceding chapter, are organized as set out below. For further details, refer to “5.5 Development Issues in the BARMM Region” and “5.5.1 Fisheries Sector.”

Table 6.1-2 Support Needs by Priority Issue in the Fisheries Sector (BARMM)

Priority Area		Support Needs
Priority Area 1	Activities against post-harvest losses	Developing a masterplan and implementing related inputs, including the construction of new large-scale fishing ports, and/or the rehabilitation and upgrades of Municipal Fishing Ports and CFLCs, alongside the provision of cold-chain equipment.
Priority Area 2	Promote seaweed farming	Further expanding seaweed farming, which has one of the highest development potentials in BARMM.
Priority Area 3	Strengthen capacity for marine and coastal reource management	Capacitating human resources for marine and coastal management, supporting the formulation of management plans, and carrying out pilot/demonstration activities to validate the

		management plans
Priority Area 4	Establishing a Marine Environment and Blue Economy Research Institute	Support the establishment of the institute by constructing research facilities, providing necessary equipment, and initiating technical transfer for its operation and management.

6.1.2 Consideration of Cooperation Projects in the Fisheries Sector

In alignment with the support needs identified above, project concepts to address each priority issue are proposed as follows.

<Project: Fisheries 01>

Project Title	Coastal IUUF Countermeasures for Sustainable Resource Use
Duration	Approximately 3 Years (including detailed planning survey)
C/P Agency	BFAR
Implementation Structure	The project will target BFAR coastal monitoring stations and strengthen coordination with LGUs and FARMCs.
Assistance Scheme	Grant Aid (Including Soft Components)
Project Purpose	As a counter measure against IUUF in coastal waters, BFAR has deployed small enforcement vessels to coastal monitoring stations. However, most of these are deteriorating, and are non-operational. This project will provide replacement enforcement vessels and enhance BFAR's capacity against IUUF.
Target Areas	Approximately 4 to 5 high-priority coastal monitoring stations nationwide
Beneficiaries	Coastal Fishers
Inputs	・ Approximately 20 small FRP coastal fisheries enforcement vessels (30ft) ・ Surveillance/monitoring equipment for coastal monitoring stations ・ Training for enforcement officers (BFAR staff) assigned to coastal monitoring stations, including the handling of vessels, equiptment, and enforcement techniques
Project Outline	・ Conduct a detailed planning survey to select target areas and monitoring stations, and to define the specifications of enforcement vessels and equiptment as well as training modules ・ Procurement of enforcement vessels and equipment ・ Develop coordination methods with LGUs and FARMCs to strengthen enforcement capacity ・ Implement training for coastal monitoring station staffs, and relevant LGUs/FARMCs
Potential Collaboration with Other Sectors	None in particular

Achieving the sustainable use of fisheries resources requires the orderly conduct of fisheries, and countermeasures against IUU fishing are regarded as one of the core challenges of the blue economy. In the Philippines, which faces territorial issues in theWest Philippine Sea, efforts to address IUU fishing in offshore waters have been prioritized. BFAR has continued to build enforcement vessels, and Japan is also currently providing support to the Philippine Coast Guard (PCG). On the other hand, with respect to countermeasures against IUU fishing in coastal waters, BFAR has established coastal monitoring stations throughout the country and deployed small fisheries enforcement boats; however, these assets are aging, and the implementation of training to enhance the capacity of enforcement officers has not kept pace. According to BFAR, the number of coastal fisheries enforcement boats required nationwide is 105, yet only 46 are currently operational. Of the remainder, 31 require repair and 28 require replacement, but progress has been limited due to budget constraints. In addition, while there are 363 fisheries enforcement officers nationwide, only 135 (37%) have completed basic training. BFAR also experiences frequent personnel rotations, which necessitates continuous training; however, shortcomings in the training delivery system have prevented the required training from being adequately conducted.

Considering the above, grant aid incorporating a soft component will be provided to supply approximately 20 small fisheries enforcement boats (excluding those to be addressed through BFAR's own efforts), together with related equipment and materials, and to deliver technical guidance to strengthen the capacity required for enforcement training. The enforcement boats are envisaged to be approximately 30-foot FRP vessels, equipped with inboard/outboard main engines so that they can operate in shallow coastal waters. Other equipment to be provided is assumed to include GPS plotters, radar, AIS, HF/VHF radios, searchlights, binoculars, loudhailers, and similar items to be installed on the boats. Technical guidance for improving enforcement training capacity will include the provision of equipment and materials necessary for training, as well as Training of Trainers (TOT) for instructors. For the instructors, it is desirable to dispatch personnel from organizations related to the Japan Coast Guard, such as the Japan Association of Marine Safety.

<Project: Fisheries 02>

Project Title	Promotion of EAFM for Sustainable Resource Use in Coastal Areas
Duration	5 years
C/P Agency	BFAR
Implementation Structure	The project will be implemented jointly with FARMCs of the target LGUs and coastal communities. It will also promote coordination between FARMCs and relevant agencies, including the DENR, and other relevant institutions.
Assistance Scheme	Technical Cooperation Project
Project Purpose	To strengthen the capacity of FARMCs and coastal communities to implement the EAFM, which is led by the LGUs and FARMCs.
Target Areas	Selected 2 to 3 high-priority LGUs/FARMCs nationwide
Beneficiaries	Target LGUs and coastal communities
Inputs	・ Experts (coastal fisheries management, ecosystem management/blue carbon credits, fish processing, ecotourism, and marketing)

	・ Site-based pilot projects (participatory fisheries management, ecosystem conservation, and livelihood improvement) and required equipment
Project Outline	・ Selected FARMCs assessed at around BFAR level 3 and use the upscaling of these FARMCs to level 4 or 5 as a key performance indicator ・ Implement pilot projects covering community-based co-management of resources, livelihood improvement through fish processing and ecotourism development, ecosystem conservation through activities such as mangrove planting, and development of income streams to sustain FARMC operations (blue carbon credits and sales of mangrove seedlings) ・ Consolidate the results from these activities into practical tools and compile them into guidelines to spread the activities and effects in other areas
Potential Collaboration with Other Sectors	・ Outcomes from the financial-sector project, which propose the development of a framework for blue carbon credits, will be applied to this project

The catch from coastal fisheries in the Philippines declined by approximately 300,000 tons (21%) over the roughly 20-year period from 2001 to 2023, falling from 1.3 million tons to 1.0 million tons. The principal causes are overfishing and the deterioration of coastal environments, and in particular, the decline of demersal fish resources is a growing concern (CNFIDP 2021–2025). In response, BFAR has introduced the Ecosystem Approach to Fisheries Management (EAFM), led by Fisheries and Aquatic Resources Management Councils (FARMCs) at each LGU. However, the current application of EAFM has focused mainly on offshore fisheries, and concrete activities and support for coastal fisheries have lagged. EAFM-related activities undertaken by FARMCs primarily include the conservation of coastal environments (e.g., mangrove planting, water quality monitoring, and coastal clean-up activities), fisheries management (e.g., monitoring against IUU fishing and dissemination of fishing methods with lower fishing pressure); and improvement of community livelihoods (e.g., promotion of fish processing and marketing). FARMCs implement these activities with support from BFAR and regional offices of DENR. BFAR also classifies FARMCs into five levels according to the maturity of their activities. For FARMCs at the lower operational levels (Levels 1 and 2), activity budgets in many cases rely on BFAR and DENR training programs and support from NGOs. In contrast, FARMCs at Levels 4 and 5 have income sources such as the production and sale of mangrove seedlings, secure their own budgets, and undertake activities autonomously. Lower-level FARMCs are likewise required to identify latent local resources and secure independent funding on that basis. In this regard, financing through blue carbon credits could also serve as a promising option. (Note: numbers of FARMCs by level, future target values, etc.)

Considering the above, technical cooperation will be provided targeting lower-level FARMCs to support the dissemination of EAFM in coastal areas that achieves both coastal environmental conservation and fisheries management while improving livelihoods. The counterpart (C/P) agency will be BFAR; however, since field-level activities require close coordination with LGUs and DENR, it will be necessary to establish an implementation framework for joint execution with these institutions. Activities are under three components, “coastal environmental conservation,” “fisheries management,” and “livelihood improvement”, and will be planned through consensus-building, including the establishment of subcommittees for each component. The

livelihood improvement component will also include the generation of funding for FARMC activities, through initiatives such as ecotourism, blue carbon credits, and the development and value addition of processed products utilizing local fisheries resources.

<Project: Fisheries 03>

Project Title	Promoting Seaweed Farming in Island Communities to Achieve the Blue Carbon and Regional Development
Duration	5 years
C/P Agency	BFAR, MAFAR (Bangsamoro Government)
Implementation Structure	At the national level, BFAR will be taking the lead. In the BARMM region, MAFAR will lead. The project will be implemented jointly with LGUs, carrageenan processors, seaweed traders, universities (seaweed research units) and other relevant stakeholders.
Assistance Scheme	Technical Cooperation Project
Project Purpose	To promote small-scale aquaculture in island communities with a focus on seaweed farming, by integrating blue economy approaches including the introduction of blue carbon credits and blue tourism. Through these interventions, the project aims to contribute to sustainable and holistic regional economic development, and to the Philippines' economic growth.
Target Areas	BARMM (Region-wide) and Palawan Island
Beneficiaries	Coastal aquaculture enterprises and cooperatives, business operators involved in the processing and distribution of seaweed and other aquaculture products, and private companies
Inputs	・ Experts (seaweed farming, value chain, blue carbon, finance, and gender mainstreaming) ・ Equipment/materials related to the implementation of pilot projects ・ Support for inputs in aquaculture enterprises ・ Training programs (in the Philippines, in Japan, and in third countries)
Project Outline	・ Conduct baseline surveys on the status of aquaculture (farming areas, production techniques, fish disease, processing and value chain) ・ Planning and implementing pilot projects on appropriate seaweed farming techniques ・ Developing manuals from the results of the project ・ Providing technical training and input support (quality seedstock and small-scale farming equipment) ・ Quantifying carbon sequestration that is attributable to seaweed farming ・ Support value addition of produced seaweed through coordination with carrageenan processors and other relevant actors ・ Develop blue tourism initiatives linked to aquaculture/seaweed farming

Potential Collaboration with Other Sectors	・ Outcomes from the financial-sector project, which propose the development of a framework for blue carbon credits, will be applied to this project

Seaweed aquaculture contributes to blue carbon by sequestering carbon in the ocean and, because it imposes minimal environmental burdens, has attracted global attention as a means of sustainable fisheries development. In the Philippines, the aquaculture production of Eucheuma reached 1,626,245 tons in 2023 and has been utilized as a major cultured species, accounting for 68.2% of total aquaculture production (10.3% in terms of production value). The number of farming households is estimated at approximately 200,000 (with a labor force of about 400,000) (Philippine Seaweed Industry Roadmap 2022–2026). Against the backdrop of growing global demand for carrageenan, BFAR assigns a high priority to further promoting the sector. The principal production areas are the BARMM region and the southern part of Palawan Island, where seaweed farming has contributed to improving local livelihoods. At present, numerous projects ranging from small and medium-scale initiatives to comprehensive programs are being implemented, including the Enhanced Philippine Seaweed Development Program (EPSDP; planned budget: PHP 1.06 billion), with donor support as well. On the other hand, in recent years, production has plateaued or shown a declining trend, constrained by factors such as poor growth believed to be associated with global warming and continuous cropping, disease outbreaks typified by “ice-ice” disease, and grazing damage by herbivorous fish. In addition, the sector encompasses a range of social challenges, including improving the livelihoods of small-scale seaweed farmers and enhancing the efficiency of a hierarchical and increasingly complex value chain involving brokers and consolidators.

The BARMM region and Palawan Island are well suited to seaweed aquaculture and have already seen substantial development. Moreover, in BFAR’s Seaweed Aquaculture Development Roadmap (2022), they are designated as priority development areas with high potential for further expansion. In terms of developable sea area, the three leading regions are ARMM (26,000 ha), the Zamboanga Peninsula (17,000 ha), and Palawan Island (8,200 ha). Even at present, seedling production facilities and research sites have been established, and distribution routes for harvested seaweed to carrageenan factories (in Cebu Island) are already in place. Nationwide seaweed production in the Philippines is approximately 1.63 million tons; however, according to interviews with processing companies, market demand remains strong and there is sufficient processing capacity to accommodate increased production. While stable price formation is required to remain competitive in international markets, prices are currently volatile because raw material supply has not kept pace with domestic demand for carrageenan processing. Accordingly, increased seaweed production is needed. However, production in remote islands is largely carried out by small-scale, family-run producers, and under the current circumstances it is difficult for them to enhance technical capacity or make investments necessary for expansion. In other words, there is insufficient technical and financial support for small-scale producers to increase seaweed production.

Accordingly, a technical cooperation project will be implemented to provide technical assistance to small-scale seaweed farmers in the BARMM region and Palawan Island, support the establishment of a financing framework, and deliver extension support for new entrants into seaweed farming. The project will include, inter alia, an assessment of current constraints, the development of appropriate technologies, the preparation of production manuals for dissemination, the mobilization of finance through blue carbon credits leveraging

seaweed's blue carbon function, and the design of financing mechanisms in coordination with major carrageenan processing companies in Cebu. In addition, to support improvements in seaweed farmers' livelihoods and to publicize and promote blue carbon initiatives, the project will also pursue the development of ecotourism that utilizes seaweed farming sites as tourism resources.

<Project: Fisheries 04>

Project Title	Genetic and Breeding Validation of Seaweeds, and Development of Improved Strains for Climate Change Adaptation
Duration	Approximately 3 to 4 years
C/P Agency	Mindanao State University, University of the Philippines, BFAR, and the NFRDI
Implementation Structure	The project will conduct joint research and development in collaboration with the above universities and research institutions.
Assistance Scheme	Technical Cooperation (SATREPS)
Project Purpose	To investigate the causes of poor growth performance and disease outbreaks such as ice-ice disease in farmed seaweeds. The outbreak is speculated to be driven by global warming, continuous cropping, and farming stress. The project will utilized advanced scientific approaches and the latest knowledge, such as omics analyses and microbiome research to identify the factors, and examine solutions (e.g., the identification and development of improved strains).
Target Areas	BARMM and other sites designated by the C/P agencies
Beneficiaries	Participating Universities and Research Institutions
Inputs	・ Experts (researchers based in Japan conducting relevant studies) ・ Research equipment and materials required for the surveys
Potential Collaboration with Other Sectors	・ Dispatch experts and develop necessary facilities and equipment, covering fields such as seaweed biology, omics analysis, microbiology, genetic breeding, and aquaculture engineering ・ To ensure the sustainability of research activities, it is expected that a part of the project cost may be supported through funds from DOST-PCAARRD
Potential Collaboration with Other Sectors	None in particular

Seaweed aquaculture contributes to blue carbon by sequestering carbon in the ocean. As noted above, it is also a major aquaculture commodity in the Philippines, and further promotion of the sector is required in the coming years in light of growing global demand for carrageenan. In the Philippines, BFAR and relevant research institutions recognize as an urgent issue the decline in productivity caused by poor growth and disease outbreaks, including ice-ice disease. The principal drivers are considered to include constraints associated with continuous cropping and rising seawater temperatures. Average sea surface temperature increased by 0.5°C from 2000 to 2020, and a further increase of 1.8°C is projected from 2020 to 2025 (Karl

S., 2021). Accordingly, the development of improved seaweed strains with higher heat tolerance and disease resistance has become an urgent priority in the Philippines.

Accordingly, the project will seek to elucidate the causes of poor growth in Eucheuma and the occurrence of ice-ice disease, which are attributable to rising seawater temperatures and continuous cropping constraints, by leveraging the latest knowledge and approaches such as omics analyses and microbiome studies. Based on the findings, the project will examine potential solutions, including the identification of superior strains. From Japan, highly specialized researchers will be dispatched as experts in fields such as seaweed biology, omics analysis, microbiology, genetic breeding, and aquaculture engineering, and the project will also provide for the development of necessary research facilities and equipment. In addition, with a view to ensuring sustainability after project completion, the use of research grants from DOST-PCAARRD to cover part of the project costs will also be considered.

<Project: Fisheries 05>

Project Title	Promoting Investment in Marine Cage Aquaculture through IMTA and Advanced Technologies
Duration	Approximately 5 years (including detailed planning survey)
C/P Agency	DOF, BFAR
Implementation Structure	A collaboration framework will be established with BFAR, NFRDI, relevant LGUs, and universities and other institutions conducting research on IMTA.
Assistance Scheme	Loan Assistance (Two-Step Loan) with Attached Technical Cooperation
Project Purpose	Through loans to support investment in Mariculture Parks, and through the development and dissemination of technologies that reduce environmental impacts, the project will promote the expansion of sustainable milkfish marine cage aquaculture by private operators.
Target Areas	1 or 2 Mariculture Parks prioritized by BFAR
Beneficiaries	Milkfish aquaculture operators, local coastal communities, and other local stakeholders benefiting from increased investment
Inputs	・ Survey and support from experts for implementation planning ・ Two-step loan financing ・ Experts (Attached technical cooperation; aquaculture technology, environmental management, livelihood improvement, and investment promotion) and related equiptment
Project Outline	・ Select target Mariculture Parks and establishing environmental carrying capacity parameters ・ Formulating a master plan to promote investment ・ Implementing two-step loan financing <Technical Cooperation Component> ・ Identify appropriate IMTA inputs (seaweeds, shellfish, sea cucumbers) and conduct pilot demonstrations jointly with research institutions

	・ Pilot the introduction of advanced aquaculture technologies, such as automatic feeders, automated net-cage cleaning equipment, and remote water-quality monitoring systems
Potential Collaboration with Other Sectors	None in particular

In the Philippines, finfish aquaculture, particularly milkfish, has traditionally been practiced mainly through inland pond culture. However, opportunities for further development in coastal areas are now limited. To improve milkfish productivity, BFAR has been promoting the development of Mariculture Parks (MPs), which are offshore cage-culture areas. Under BFAR's oversight, an LGU designates the sea area, and private aquaculture operators may obtain permits by paying user fees to the LGU, install cages, and conduct aquaculture operations. While offshore cage culture has expanded through private initiatives in recent years, MPs offer the advantage of enabling larger-scale, more consolidated production. Over the ten-year period from 2015, milkfish cage-culture production increased from 100,000 tons to 150,000 tons, and its share of total milkfish production rose from 27% to 43%. The MP initiative can be positioned as one of the blue economy promotion projects, as it seeks to identify sea areas suitable for aquaculture and to promote sustainable aquaculture development with due consideration to the natural environment, while generating positive impacts on the local economy. It also represents an important structural shift in the industry from the perspective of economic development that does not entail the conservation risks to coastal land areas and the destruction of mangrove forests. Moreover, demand for milkfish among Filipinos working overseas is considered significant. Although the current export volume is 3,235 tons (2023), further growth is expected, primarily driven by overseas Filipino communities.

On the other hand, concerns have been raised that such intensive offshore cage aquaculture may impose environmental burdens on surrounding waters due to uneaten feed and excreta. Moreover, cage culture is often conducted in shallow waters of sheltered bays where wave effects are limited, which makes environmental impacts more likely to occur. To date, no specific measures for environmental consideration have been implemented in MPs. Accordingly, it is desirable to incorporate IMTA, for which research has advanced in recent years, as an aquaculture technology to mitigate environmental impacts. IMTA is a method in which finfish, benthic organisms, seaweeds, and other species are cultured simultaneously, enabling the uptake of organic matter and nutrients generated by finfish culture to prevent eutrophication in waters surrounding the farming area, while also improving efficiency of inputs and enhancing profitability.

In view of the above, a project is proposed to promote the introduction of IMTA technology in order to achieve both objectives: providing financing to aquaculture operators entering MP initiatives, thereby further promoting milkfish aquaculture, and encouraging environmental conservation to support the sector's sustainable development, including the conservation of mangrove forests. Under the IMTA concept, it is envisaged that sea cucumbers, which decompose uneaten feed and excreta from milkfish culture, and Eucheuma, which absorbs the resulting nutrients, will be farmed concurrently.

<Project: Fisheries 06>

Project Title	Project to Revitalize Abandoned Aquaculture Ponds (AUU Ponds), and Promote Coastal Environmental Improvement

Duration	Approximately 5 years (including detailed planning survey)
C/P Agency	DOF
Implementation Structure	The project will be implemented in coordination with BFAR, DENR, and relevant LGUs.
Assistance Scheme	Loan Aid (Sector Loan, co-financing with ADB/AFD and other development agencies)
Project Purpose	To achieve the revitalization of abandoned aquaculture ponds (AUU ponds) in coastal areas and environmental conservation, the project will promote aquaculture development, salt production, mangrove planting and other relevant measures.
Target Areas	Nationwide (priority areas to be selected in line with BFAR priorities)
Beneficiaries	Coastal communities and coastal fishers
Inputs	・ Survey and support from experts for the formulation of an implementation plan ・ Sector-loan financing
Project Outline	・ Assess the outcomes from the MEBED program supported by ADB/AFD/KfW ・ Select target areas and formulate an implementation plan for the revitalization of abandoned aquaculture ponds (AUU Ponds) and mangrove planting. ・ Examine the feasibility of co-financing possibilities with ADB, AFD, and other possible partners
Potential Collaboration with Other Sectors	・ With DOF as the C/P agency, the project is expected to be implemented in coordination with BFAR and DENR, to cover the fisheries and environmental conservation sector

In the Philippines, shrimp aquaculture was once a major industry. However, the sector declined due to factors such as outbreaks of viral diseases and the shift of major production areas to neighboring countries including Thailand and India. As a result, abandoned, underutilized, and undeveloped (AUU) fishponds have become a social issue. The total area of coastal fisheries development land under BFAR's jurisdiction is 110,000 hectares, and approximately half of this, 5,800 ha, was developed as aquaculture farms under Fisheries Lease Agreements (FLAs). BFAR has been undertaking activities to redevelop aquaculture farms and develop salt farms; nevertheless, many AUU ponds remain as abandoned land. With respect to the remaining 5,200 ha, discussions are ongoing between BFAR and DENR regarding its status, as BFAR was formerly an agency under DENR at the time. DENR intends to restore these AUU ponds to mangrove forests in their pre-development state; however, the actual conditions have not been fully ascertained, and consultations with BFAR have progressed slowly. For this reason, under the MEBED program, a policy loan being implemented through co-financing by ADB, AFD, and KfW, a survey is being conducted on land use conditions for areas not covered by FLAs. Based on the results, an agreement between BFAR and DENR on the future treatment of AUU ponds is scheduled to be reached by early 2026. In addition, concrete guidelines on restoration to mangrove forests are planned to be formulated by July 2027. It should also be noted that, in the

redevelopment of AUU ponds under FLAs, users are required to establish mangrove forests as a buffer zone in front of the ponds.

Accordingly, following the completion of the MEBED survey and the subsequent development of the guidelines, it is anticipated that policies will be required to promote investment by private operators to advance both the restoration of AUU ponds to mangrove forests and their utilization and redevelopment for aquaculture operations. Under this project, policy-based lending will be provided to the Department of Finance (DOF) to support BFAR and DENR in assisting private-sector initiatives, and to facilitate coordinated action by the two agencies to achieve a balance between coastal aquaculture and salt farm development and environmental conservation. In addition, since ADB and AFD are also considering follow-on operations under MEBED, it is also envisaged that JICA's project could be structured as co-financing in coordination with these institutions.

<Project: Fisheries 07>

Project Title	Establishing a Strategic Aquaculture Seed Supply System to Strengthen Food Security
Duration	Approximately 3 to 5 years (including detailed planning survey)
C/P Agency	BFAR
Implementation Structure	With the NFDC as the core implementing agency, the project will establish a partnership framework with large-scale private hatcheries.
Assistance Scheme	Loan Aid (Sector Loan)
Project Purpose	To expand the NFDC and private seed production facilities and increase the self-sufficiency rate of milkfish, as 60% of the current seedlings and fry supply is being imported.
Target Areas	Suitable milkfish seed production areas, centered on Dagupan/Pangasinan Province
Beneficiaries	Satellite hatchery operators and milkfish aquaculture operators
Inputs	・ Surveys and expert support for the formulation of an implementation plan ・ Sector-loan financing
Project Outline	・ Conduct implementation planning surveys (cost analysis for production, assessment of distribution channels, rehabilitation plan for NFDC facilities, and development plan for satellite hatcheries, etc.) ・ Upgrading NFDC facilities (water intake systems and broodstock rearing facilities) ・ Developing satellite hatcheries (construction of new facilities and upgrading of existing facilities)
Potential Collaboration with Other Sectors	None in particular

Milkfish is an important staple food in the Philippines and can be regarded as a national fish, with aquaculture

widely practiced across the country. As noted above, in recent years the sector has been shifting from pond culture developed through the conversion of mangrove forests to more modern and intensive methods using offshore cages. Current demand for milkfish fingerlings is estimated at approximately 4.0 billion. However, based on the average for 2022 to 2024, domestic production amounts to 1.3 billion, while imports total 3.0 billion. As a result, roughly 70% of demand is met through imports. Much of these imports are assumed to come from Indonesia, where production costs such as labor and electricity are comparatively advantageous. However, if import volumes were to decline significantly due to climate change or circumstances on the Indonesian side, it is anticipated that Philippine milkfish farmers and consumers would suffer substantial impacts, constituting a major food security risk. In addition, at the National Fisheries Development Center (NFDC) in Dagupan, Pangasinan Province, which has been developed as a hub for aquaculture development in the country, the capacity to produce early-stage seed has declined due to aging facilities. This has also contributed to the reduced self-sufficiency rate for fingerlings.

Accordingly, under this project, the detailed planning study will conduct analyses of production costs in the Philippines, the status of distribution, a rehabilitation plan for NFDC facilities, and a development plan for satellite hatcheries. Based on these outputs, a sector loan will be provided to BFAR to finance infrastructure development that supports the expansion of private-sector seed production facilities and facilitates new market entry.

<Project: Fisheries 08>

Project Title	Master Plan Formulation Survey for Developing a Large-Scale Fish Port to Reduce Post-Harvest Losses and Ensure a Stable Supply of Fishery Products
Duration	Approximately 2 to 3 years
C/P Agency	PFDA
Implementation Structure	A coordination framework will be established between BFAR and the relevant LGUs, with BFAR responsible for fisheries distribution and quality management, and the LGUs leading regional economic development initiatives.
Assistance Scheme	Development Survey-Type Technical Cooperation
Project Purpose	To construct a large-scale fish port that will serve as a landing and distribution hub in an area with strong potential demand and reducing post-harvest losses. The project will also contribute to local economic development by incorporating retail and tourism-related functions into the port concept.
Target Areas	1 priority PFDA fish port site to be selected from Bayawan, Cadiz, and Tacloban
Beneficiaries	Fish port users (fishers, traders, transport operators, processors, retailers, etc.), residents
Inputs	・ Experts (fisheries development, fish port design, fisheries civil engineering, fisheries distribution, quality management, refrigeration, marketing, and tourism development)
Project Outline	・ Survey potential landing volumes in the target area

	・ Assess the area's potential as a fisheries distribution hub ・ Conduct environmental surveys (including boring tests) ・ Formulate a plan for fish processing facilities ・ Formulate a plan for quality management initiatives at the fish port ・ Formulate plans for retail and tourism facilities ・ Prepare a preliminary design for fish port construction that incorporates the above components
Potential Collaboration with Other Sectors	・ Integrate linkages with the tourism sector from the planning stage, and pursue an active tourism development

In the Philippines, the scale of post-harvest losses of fishery products has become a social concern. According to an NFRDI study (2022), post-harvest losses for sardines in the Philippines reach as high as 6.86%. This is attributable to oversupply during peak fishing seasons, and it constitutes a major issue from both the standpoint of wasted resources and the economic losses incurred by fishers. Post-harvest losses are understood to involve challenges at three stages: losses on board vessels, losses at landing, and losses during transport, each of which requires countermeasures. However, losses from the post-landing stage through transport are regarded as the most serious (based on interviews with BFAR). Because the cold chain is weak, physical and economic losses during transport from production areas to consumption areas are considered substantial. Accordingly, there is a need for measures such as the development of potentially important landing hubs, the installation of cold storage and ice-making facilities at existing fishing ports, the review of distribution systems, livelihood support for small-scale fishers, and the processing of surplus catches.
Under this project, surveys will be conducted to ascertain the actual conditions of post-harvest losses and to identify issues in the existing cold chain. Based on the findings, a master plan will be formulated to address the challenges outlined above. The master plan will be premised on the construction of a new large-scale fishing port in accordance with PFDA's existing port development plan, and will include, environmental surveys required for the proposed construction. In addition, the new fishing port will be planned not only to serve as a landing facility, but also to function as a regional hub for economic development by incorporating multiple functions. These functions will include fish processing capacity, quality management capacity for fishery products including shellfish toxin testing, and facilities for retail and tourism.

<Project: Fisheries 09>

Project Title	Development of a Large-Scale Fish Port to Reduce Post-Harvest Losses and Ensure a Stable Supply of Fishery Products
Duration	Approximately 3 years
C/P Agency	PFDA
Implementation Structure	A coordination framework will be established between BFAR and the relevant LGUs, with BFAR responsible for fisheries distribution and quality management, and the LGUs leading regional economic development initiatives.
Assistance Scheme	Loan Aid

Project Purpose	To construct a large-scale fish port that will serve as a landing and distribution hub in an area with strong potential demand and reducing post-harvest losses. The project will also contribute to local economic development by incorporating retail and tourism-related functions into the port concept.
Target Areas	1 priority PFDA fish port site to be selected from Bayawan, Cadiz, and Tacloban
Beneficiaries	Fish port users (fishers, traders, transport operators, processors, retailers, etc.), residents
Inputs	・ Experts (fisheries development, fish port design, fisheries civil engineering, fisheries distribution, quality management, refrigeration, marketing, and tourism development) ・ Loan financing
Project Outline	・ Prepare detailed designs for the fish port and associated facilities ・ Construct landing facilities, marketing facilities, cold storage and freezing facilities, retail/tourism facilities ・ Instalment of equiptment such as refrigerated and freezer storage units, ice-making machines and other related equipment
Potential Collaboration with Other Sectors	・ Promote an active tourism development through coordination with the tourism sector

Based on the master plan referenced above, a fishing port will be constructed at strategically selected sites considered critical for reducing post-harvest losses. The port will be designed to provide multiple functions, including: (1) provision of cold storage and ice-making services; (2) reduction of transport time between production areas and consumption areas; (3) processing of surplus catches; (4) promotion of the sustainable use of resources and livelihood support for small-scale fishers; (5) food safety testing capacity; (6) tourism; and (7) environmental education.

<Project: Fisheries 10>

Project Title	Development of a Large-Scale Fish Port to Reduce Post-Harvest Losses and Ensure a Stable Supply of Fishery Products (Attached Technical Cooperation)
Duration	Approximately 3 years
C/P Agency	PFDA
Implementation Structure	A coordination framework will be established between BFAR and the relevant LGUs, with BFAR responsible for fisheries distribution and quality management, and the LGUs leading regional economic development initiatives.
Assistance Scheme	Loan Aid (Attached Technical Cooperation)
Project Purpose	To construct a large-scale fish port that will serve as a landing and distribution hub in an area with strong potential demand and reducing post-harvest losses. The project will also contribute to local economic development by

	incorporating retail and tourism-related functions into the port concept.
Target Areas	1 priority PFDA fish port site to be selected from Bayawan, Cadiz, and Tacloban
Beneficiaries	Fish port users (fishers, traders, transport operators, processors, retailers, etc.), residents
Inputs	・ Experts (fisheries development, fish port facility management, fisheries distribution, quality management, refrigeration, marketing, and tourism development) ・ Pilot projects to establish and operationalize various management practices and techniques
Project Outline	・ For each target stakeholder group (fish port managers, traders, fishers, processors, retailers, and tourism-related operators), the project will cover the development of operational rules and procedures for fish port operations, the development of management tools, supplying necessary equiptment, and related training programs ・ Consolidate management tools, and prepare manuals
Potential Collaboration with Other Sectors	・ Promote an active tourism development through coordination with the tourism sector

Following the construction of the large-scale fishing port described above, technical cooperation will be provided to improve post-harvest loss management and enhance the livelihoods of port users. Specifically, the cooperation will target port managers, intermediaries, fishers, processors, retailers, and tourism-related operators, and will include: (1) formulation of rules and procedures for port operations; (2) development of management tools; (3) provision of necessary equipment and materials; and (4) training and related capacity-building activities for the above. With respect to tourism development, a tourism development plan will be formulated in coordination with the relevant local government units (LGUs) and the tourism industry, and an implementation arrangement led by the LGU will be established to operate after project completion.

<Project: Fisheries 11>

Project Title	Improving Fish Quality and Reducing Post-Harvest Losses at Municipal Fish Ports (MFPs)
Duration	Approximately 4 to 5 years (including detailed planning survey)
C/P Agency	PFDA
Implementation Structure	A cooperation framework will be established with LGUs regarding the management and operation of MFPs
Assistance Scheme	Loan Aid (Sector Loan)
Project Purpose	To rehabilitate and upgrade existing MFPs and strengthen the management and operation capacity of LGUs. These interventions will improve fish quality and reduce post-harvest losses.
Target Areas	MFPs will be selected based on national-level prioritization

Beneficiaries	Fish port users (fishers, traders, transport operators, processors, retailers, etc.), residents
Inputs	・ Surveys for the formulation of an implementation plan, support from experts ・ Sector Loan Financing
Project Outline	・ Conduct surveys for implementation planning (baseline assessments of selected MFPs, assessment and situation analysis of LGU implementation capacity, estimation of post-harvest losses, rehabilitation plans for each facility, cost estimation for construction, and planning of post-construction capacity building programs for LGUs and port users) ・ Select contractors and conduct bidding for the rehabilitation of each facility ・ Prepare detailed designs, cost estimates, and undertake rehabilitation for each facility ・ Select training service providers and conduct its bidding for capacity-building activities for LGUs and fish port users ・ Implement training programs at each facility to reduce post-harvest losses
Potential Collaboration with Other Sectors	During the planning phase, it is desirable to coordinate closely with DOTr and MARINA.

Municipal Fishing Ports (MFPs) are constructed by PFDA using the national budget and are operated by each LGU. Their maintenance and management are, in principle, the responsibility of the LGUs. In many cases, however, LGUs do not have sufficient budgets for maintenance. As needed, they request PFDA to carry out repairs, but given that there are 138 MFPs nationwide, it is difficult to undertake adequate maintenance within limited resources, and deterioration has become a problem at many MFPs. In addition, only about 60% of MFPs are operational for fisheries purposes. The remainder are used as hubs for water transport or are in such disrepair that they cannot be used for landing (based on interviews with PFDA). This situation reflects, among other factors, governance challenges on the part of the operating LGUs and limited budgetary and human resource capacity. It is also strongly influenced by damage from recurring typhoons, and in BARMM, many facilities have been destroyed as a result of the conflict, or have not been adequately managed due to the conflict's impact.Typical landing volumes are small, generally on the order of approximately 5 to 30 tons per day. LGUs responsible for management and operation may collect user fees equivalent to 10% of the landing value and establish a revolving fund. However, it is often difficult to collect such fees from small-scale fishers, and in many cases the fund does not function effectively. Moreover, even where ports are operational for fisheries purposes, many suffer from problems such as aging facilities for seafood trading and inadequate wastewater treatment systems. In addition, due to limited knowledge and awareness among the LGU managers and users such as fishers and intermediaries, hygiene management is often insufficient, contributing to post-harvest losses and food safety issues. Nevertheless, the actual conditions and patterns of use have not been clearly confirmed, and PFDA lacks the resources to conduct a nationwide assessment.

Accordingly, under this project, the implementation planning study will be conducted jointly with PFDA and will include: selection of the MFPs to be rehabilitated; assessment of current conditions at the selected MFPs;

review of LGUs' current implementation capacity and related issue analysis; estimation of post-harvest losses; preparation of rehabilitation plans for each facility; cost estimation for the rehabilitation works; and development of a capacity-building and training plan for LGUs and port users following completion of the works. Subsequently, in conjunction with the provision of the sector loan, the project will undertake procurement and implementation activities, including the selection and tendering of contractors for the rehabilitation works, detailed design and cost estimation, and construction supervision and execution. In addition, training aimed at reducing post-harvest losses will be delivered by the contracted local construction firms and/or consulting firms.

<Project: Fisheries 12>

Project Title	Strengthening Cold-Chain Functions at Community Fish Landing Centers (CFLCs) to Reduce Post-Harvest Losses
Duration	Approximately 4 to 5 years (including detailed planning survey)
C/P Agency	BFAR
Implementation Structure	A cooperation framework will be established with LGUs regarding the management and operation of CFLCs
Assistance Scheme	Loan Aid (Sector Loan)
Project Purpose	To rehabilitate and upgrade existing CLFCs and strengthen the management and operation capacity of LGUs. These interventions will improve fish quality and reduce post-harvest losses.
Target Areas	MFPs will be selected based on national-level prioritization
Beneficiaries	Fish port users (fishers, traders, transport operators, processors, retailers, etc.), residents
Inputs	・ Surveys for the formulation of an implementation plan, support from experts ・ Sector Loan Financing
Project Outline	・ Conduct implementation planning surveys (baseline assessments of selected CFLCs, assessment of LGU implementation capacity and situation analysis, estimation of post-harvest losses, rehabilitation plans for each facility, cost estimation for rehabilitation, instalment plan for equipment and materials, and planning of capacity-building programs for LGUs and facility users) ・ Select contractors and conduct bidding for rehabilitation for each facility ・ Prepare detailed designs, cost estimates, and undertake rehabilitation for each facility ・ Select training service providers and conduct its bidding for capacity-building activities for LGUs and fish port users ・ Implement training programs at each facility to reduce post-harvest losses
Potential Collaboration with Other Sectors	During the planning phase, it is desirable to coordinate closely with DOTr and MARINA.

Community Fish Landing Centres (CFLCs) are smaller in scale than the MFPs described above and are fish landing facilities developed by BFAR at the level of individual coastal fishing villages. To date, 529 CFLCs have been constructed nationwide; however, only 439 are operational, and only 194 are used for their intended fisheries purpose (as of August 2024). The remaining facilities are used for non-fisheries purposes, such as village meeting halls or collection and sales points for agricultural products. While CFLCs are constructed by BFAR, they are managed by LGUs and used by coastal communities. As a result, operational success necessarily depends on LGU capacity and community motivation, which is a key reason for the low rate of use for fisheries purposes. Moreover, even among facilities used for fisheries, deterioration has progressed, and many sites have experienced significant declines in port functionality due to broken freezers and ice-making machines. This has become a major contributor to post-harvest losses in small-scale fisheries. Accordingly, there is a need to implement, in an integrated manner, rehabilitation of facilities, provision of equipment and materials, and capacity building for LGUs and communities, in order to improve landing facility functions and promote their use for fisheries purposes.

Under this project, during the formulation stage of the implementation plan, the following activities will be undertaken: selection of target CFLCs through consultations with BFAR; assessment of current conditions at the selected CFLCs; review of LGUs' current implementation capacity and related issue analysis; estimation of post-harvest losses; preparation of rehabilitation plans for each facility; cost estimation for the rehabilitation works; development of a plan for the introduction of equipment and materials; and preparation of a capacity-building and training plan for LGUs and landing facility users. While providing the sector loan, the project will carry out procurement and implementation activities, including the selection and tendering of contractors for the rehabilitation works, detailed design and cost estimation, construction, and the procurement and allocation of equipment and materials. In addition, training aimed at reducing post-harvest losses at each facility will be implemented through sub-contracting to local consulting firms and similar entities. It should also be noted that, as coordination among the community, the LGU, and BFAR regional offices are important for implementation, and it is necessary to establish an advisory committee including these members at the implementation planning stage and to proceed through consensus-building.

6.1.3 Consideration of Cooperation Projects for the BARMM Region

Next, based on the support needs identified in "6.1.1 Extracting Support Needs from the Priority Issues," cooperation project concepts for the fisheries sector in the BARMM region are proposed as follows.

<Project: Fisheries (BARMM) 01>

Project Title	Master Plan Formulation Survey on the Development of Medium- to Large-Scale Fish Ports and Cold-Chain Facilities
Duration	Approximately 2 to 3 years
C/P Agency	MAFAR
Implementation Structure	A cooperation framework will be established with LGUs regarding the management and operation of fish ports
Assistance Scheme	Development Survey-Type Technical Cooperation

Project Purpose	To formulate a masterplan which will cover the assessment of options for rehabilitating the existing medium-scale fish ports and for constructing new large- and/or medium-scale fish ports, the basic design for the selected ports to be rehabilitated/developed, and planning for the placement of equipment and materials required to develop cold-chain functions at the selected site.
Target Areas	BARMM (region wide)
Beneficiaries	Fish port users (fishers, traders, transport operators, processors, retailers, etc.), residents
Inputs	・ Experts for master plan formulation
Project Outline	・ Survey the development status and current conditions of existing fish ports ・ Assess the feasibility of new fish port construction and potential sites ・ Survey the development status and current conditions of cold-chain facilities ・ Formulate a master plan for fish port and cold-chain development
Potential Collaboration with Other Sectors	During the planning phase, it is desirable to coordinate closely with MOTC.

In BARMM, eight medium-scale fishing ports (Municipal Fish Ports) exist; however, partly due to the impact of conflict, deterioration has progressed. In addition, because the development of appropriate facilities and cold-chain systems has been delayed, post-harvest losses have become a significant issue. Accordingly, this project will formulate a master plan for the development of fishing ports and cold-chain systems to improve post-harvest loss management. The scope of the master plan will cover: (1) rehabilitation of existing medium-scale fishing ports; (2) construction of new medium-scale fishing ports; and (3) construction of new large-scale fishing ports. Following a current situation assessment, the necessity and feasibility of each option will be examined, and multiple alternatives will be presented. Based on this analysis, the project will identify priority investments to be developed as post-harvest loss countermeasures. In addition, a rehabilitation plan or basic design drawings will be prepared for the selected investments. Furthermore, appropriate equipment and materials for cold-chain development to be installed at the relevant ports will be identified, and an allocation plan will be formulated. These outputs will be consolidated into a master plan.

<Project: Fisheries (BARMM) 02>

Project Title	Fish Port Rehabilitation (New Construction) and Cold-Chain Development Project
Duration	Approximately 3 years
C/P Agency	MAFAR
Implementation Structure	A cooperation framework will be established with LGUs regarding the management and operation of fish ports
Assistance Scheme	Grant Aid
Project Purpose	To rehabilitate an existing medium-scale fish port (or construct a new one) and

	provide and install the equipment and materials required for cold-chain development, which would improve the fisheries distribution in BARMM, and reduce post-harvest losses.
Target Areas	To be selected from the master plan covering the entire BARMM.
Beneficiaries	Fish port users (fishers, traders, transport operators, processors, retailers, etc.), residents
Inputs	・ Grant aid financing
Project Outline	・ Detailed designs ・ Fish port rehabilitation (or new construction) ・ Procurement and instalment of cold chain equiptment ・ Implement a soft component for the operation and management of the facilities and equipment
Potential Collaboration with Other Sectors	During the planning phase, it is desirable to coordinate closely with MOTC.

Based on the priority investments identified under the master plan described above, grant aid will be provided to implement the projects agreed upon through consultations with the BARMM autonomous government. In principle, one fishing port will be selected as the target; however, if the rehabilitation of medium-scale fishing ports is prioritized, it is envisaged that multiple ports may be covered depending on the scale of the works. In developing the facilities, due consideration will also be given to incorporating functions that can be utilized for the transport and drying and processing of seaweed, which is a key product in BARMM. The priority areas for fishing port development identified by MAFAR are Tawi-Tawi, Basilan, and Maguindanao del Norte.

<Project: Fisheries (BARMM) 03>

Project Title	Promoting Seaweed Farming in Island Communities to Achieve Both Blue Carbon and Local Economic Development
Duration	5 years
C/P Agency	MAFAR
Implementation Structure	MAFAR will lead implementation in partnership with LGUs, carrageenan processors, seaweed traders, universities (seaweed research units) and other relevant stakeholders
Assistance Scheme	Technical Cooperation Project
Project Purpose	To promote small-scale aquaculture in island communities, with a focus on seaweed farming, by integrating blue economy approaches, such as the introduction of blue carbon credits, and linkages with blue tourism. Through these interventions, the project aims to contribute to sustainable and inclusive local economic revitalization and to the Philippines' economic growth.
Target Areas	BARMM (region wide)
Beneficiaries	Coastal aquaculture enterprises and cooperatives, operators involved in the processing and distribution of seaweed and other aquaculture products, and

	private companies
Inputs	・ Experts (seaweed farming, value chain, blue carbon, finance, and gender mainstreaming) ・ Equipment/materials related to the implementation of pilot projects ・ Support for inputs in aquaculture enterprises ・ Training programs (in the Philippines, in Japan, and in third countries)
Project Outline	・ Conduct baseline surveys on the status of aquaculture (farming areas, production techniques, disease conditions, processing and value chain) ・ Planning and implementing pilot projects on appropriate seaweed farming techniques ・ Developing manuals from the results of the project ・ Providing technical training and input support (quality seedstock and small-scale farming equipment) ・ Quantifying carbon sequestration that is attributable to seaweed farming ・ Support funding through blue carbon credits and/or blue finance mechanisms. ・ Support value addition for the produced seaweed through coordination with carrageenan processors and relevant actors. ・ Develop blue tourism initiatives linked to aquaculture
Potential Collaboration with Other Sectors	・ Outcomes from the financial-sector project, which propose the development of a framework for blue carbon credits, will be applied to this project

This project is identical to the project for the Central Government of the Philippines, “Fisheries 03: Promoting Seaweed Farming in Island Communities to Achieve the Blue Carbon and Regional Development.”

<Project: Fisheries (BARMM) 04>

Project Title	Comprehensive Capacity Development for Marine and Coastal Management
Duration	5 years (tentative)
C/P Agency	MAFAR, MENRE
Implementation Structure	The project will be implemented jointly by both agencies, as MAFAR will take the lead for coastal area management, and MENRE will be responsible for the Zones of Joint Cooperation (ZJC). In the ZJC, coordination will be undertaken with the national government agencies (DENR, BFAR), while in coastal areas the project will be coordinated with the relevant LGUs.
Assistance Scheme	Technical Cooperation Project
Project Purpose	To strengthen management systems for coastal areas under the jurisdiction of the BARMM government, and for the jointly managed waters shared with the national government of the Philippines and to support the formulation of the management plans for each area.

Target Areas	BARMM (region wide)
Beneficiaries	Fishers and residents of coastal communities across BARMM
Inputs	・ Experts (coastal resource management, IUUF countermeasures, community development, database) ・ Implementation of pilot projects
Project Outline	・ Developing human resources for marine and coastal resource management ・ Support the formulation of a ZJC management which is coordinated jointly with DENR and BFAR ・ Develop human resources for coastal resource management ・ Support the formulation of coastal area management plans ・ Implement integrated coastal zone management at pilot sites (fisheries resource management, conservation and restoration of mangroves and other ecosystems, livelihood generation for coastal communities, monitoring and management of effluents, etc.) ・ Support the development of resource management database using IT based solutions
Potential Collaboration with Other Sectors	・ The formulation of coastal area management plans will be implemented through consensus-building, which is to be under a consultation framework that brings together the following sectors: ports, maritime transport, tourism, construction, and environmental conservation

This project aims to strengthen the implementation capacity of the BARMM autonomous government's blue economy policy by supporting human resource development and the formulation of management plans. The project will target (1) the coastal area from the shoreline to 15 km offshore under the jurisdiction of MAFAR, and (2) the ZJC administered by MENRE in coordination with the Government of the Philippines. Accordingly, these two agencies will serve as the C/P organizations. In addition, close coordination will be required with the relevant LGUs for the management of coastal areas, and with DENR, the competent ministry of the central government for the ZJC, as well as BFAR as a related agency. It should therefore be noted that due consideration must be given to establishing an appropriate coordination framework among these entities.

6.1.4 Selection of Priority Projects

Projects corresponding to the resolution of the priority issues have been proposed above. The next step is to set priorities for JICA's implementation of these projects.

(1) Method for Selecting Priority Projects

In selecting priority projects, the following two criteria were applied, with due consideration given to the application of the blue economy concept and the feasibility for JICA.

1) Imapct Indicators of the Ocean Impact Navigator

The Ocean Impact Navigator (OIN) was developed by 1000 Ocean Startups, a founding member of the "GEOS UN Decade Programme," with the aim of accelerating the growth of startup companies that develop innovative technologies to restore ocean health toward the achievement of SDG 14: "Life Below Water." In Japan, the Ocean Policy Research Institute of the Sasakawa Peace Foundation has been involved in the development and dissemination of the OIN.

The OIN (Japanese version v0.9) comprises six impact areas and, for each area, four to six indicators, as shown in the table below. It provides indicators to be used as investment criteria for startups seeking to launch businesses, as well as for monitoring progress toward business outcomes. The impact areas are grouped into those oriented toward "direct ocean health," "climate change," and "well-being and equity." The first two categories reflect a biodiversity-oriented perspective, such as the indicators that measure the soundness of the natural environment, whereas the last category provides indicators that measure socio-economic well-being. This framework aligns with the fundamental concept of the blue economy in the Philippines as summarized in Chapter 1.

In this study, the strength of relevance between each project concept and these indicators was qualitatively classified by impact area into three levels (◎/○/△), and the results were then synthesized into an overall evaluation using a four-tier scale (S/A/B/C).

Table 6.1-3 The Framework of the Ocean Impact Navigator

Impact Areas		KPI	
Direct Ocean Health	A. Sustainably managed ocean resources	A1	Volume of biomass preserved or restored
		A2	Volume of seafood waste reduced
		A3	Welfare of marine life
		A4	Tonnes of ocean-based seaweed and bivalves produced
	B. A clean ocean	B1	Volume of primary micro-plastics diverted from nature (or landfill)
		B2	Volume of macro-plastic diverted from nature (or landfill)
		B3	Nitrogen/Phosphorous pollution mitigated (i.e. reduced, avoided or bioremediated)
		B4	Volume of contaminated waste water from land-based sources diverted from waterways
		B5	Invasive species reduced or avoided
		B6	Reduction in [other] pollution (e.g. heavy metals, chemicals, sound etc.)
	C. Thriving and restored marine habitats	C1	Area of coral reefs protected or restored
		C2	Area of mangroves protected or restored
		C3	Area of seagrasses protected or restored
		C4	Area of salt marshes protected or restored
		C5	Area of kelp forest protected or restored
		C6	Area of [other habitat] protected or restored
Climate Change	D. Towards 1.5℃	D1	GHG emissions reduced or avoided
		D2	GHG emissions generated
		D3	Carbon sequestered
		D4	NOx emissions mitigated
		D5	SOx emissions mitigated
	E. Climate-resilient coastal communities	E1	Length of coastline protected
		E2	Use of ocean information products/services in decision-making to support climate adaptation & resilience
		E3	Number of people supported to adapt to climate change
		E4	Enhanced food security
Well Being & Equity	F. Positive socio-economic outcomes	F1	Number of jobs created
		F2	People completing education / training programmes
		F3	Share of employees that are women
		F4	Ratios of average entry level wage compared to local minimum wage at significant locations of operation
		F5	Particulate emissions mitigated

Source：The Ocean Impact Navigator - A New Impact Measurement Framework for the Ocean Innovation Ecosystem 1000 Ocean Startups

2) Feasibility of ODA

Indicators for assessing the feasibility of ODA were selected through consultations with JICA's Southeast Asia and Pacific Department, Southeast Asia Division 5. From the perspective of project formulation by JICA, four qualitative criteria were applied. These were (1) consistency with the Country Development Cooperation Policy and JICA's Global Agenda; (2) the strength of requests and needs expressed by the partner country's government; (3) the capacity of the partner country's government; and (4) technical validity. Each item was qualitatively classified into three levels (◎/○/△) and based on these results an overall assessment was conducted using a four-tier scale (S/A/B/C).

Based on the above two sets of evaluation results, a final "overall assessment" was conducted, and priority levels were determined using a four-tier scale (S/A/B/C).

(2) Results of Priority Project Selection

As a result of the above analysis, the projects that should be accorded the highest priority for the fisheries sector to promote the blue economy were identified as follows for the Philippines as a whole and for BARMM, respectively:

(1) Promotion of EAFM for Sustainable Resource Use in Coastal Areas (Technical Cooperation Project)
(2) Promoting Seaweed Farming in Island Communities to Achieve the Blue Carbon and Regional Development (Technical Cooperation Project)
(3) Development of a Large-Scale Fish Port to Reduce Post-Harvest Losses and Ensure a Stable Supply of Fishery Products (Master Plan Formulation Study / Fish Port Construction and Equipment Procurement / Attached Technical Cooperation)
(4) <BARMM> Seaweed Farming in Island Communities to Achieve the Blue Carbon and Regional Development (Technical Cooperation Project; same as project (2))

Details of the above analysis results are presented in the following table.

Table 6.1-4 Selection of Priority Projects (Fisheries Sector)

Subsector		Project Title	Impact Area (OIN)						Evaluation Using OIN Indicators	ODA Feasibility								Overall Evaluation	Priority
			Environmental Impact					Socio-Economic Impact		Consistency with Country Development Cooperation Policy and JICA Global Agenda		Requests and Needs from the Partner Government		Capacity of Partner Government (Feasibility including the operation and maintenance system and budget)		Technical Feasibility (The relevance, uniqueness, and competitiveness of Japanese technology in the project)		Rating Based on ODA Feasibility	
			A. Sustainably Manged Ocean Resources	B. A Clean Ocean	C. Thriving and Restored Marine Habitats	D. Towards a 1.5C World	E. Climate-resilient coastal communities	F. Positive Socio-economic Outcomes											
			Rating the results of hypothesis-based assessment by △/○/◎					Qualitative description (narrative)	Rate using S/A/B/C	Rate using △/○/◎	Rationale / Background	Rate using △/○/◎	Rationale / Background	Rate using △/○/◎	Rationale / Background	Rate using △/○/◎	Rationale / Background	Rate using S/A/B/C	Description in narrative form	Rate using S/A/B/C
Capture Fisheries	1	Coastal IUUF Countermeasures for Sustainable Resource Use (Loan Aid)	◎ A1,A2	◎ B3, B4			○ E4	◎F2 As part of the soft components of the grant aid, training will be provided for the operation and proper management of the donated patrol vessels. Training is expected for 60 to 80 personnel for the 20 vessels being donated.	A	◎	The Country Development Cooperation Policy contributes to addressing post-harvest losses (1-3) and strengthening maritime law enforcement capabilities (2-2). Furthermore, the JGA directly relates to the sustainable use of fishery resources (promotion of fisheries-centered BE).	◎	The deployment of small patrol vessels is essential for combating IUUF in coastal areas, but many have deteriorated and are unusable. BFAR has strongly requested support to adress this need.	○	Small enforcement vessels are deployed and operated at coastal surveillance stations under BFAR jurisdiction. Each station has a track record of operating enforcement vessels. However, budgets may sometimes be insufficient, and it remains unclear whether all vessels are being operated appropriately.	○	Japan holds a technological advantage in the construction of patrol vessels, but smaller vessels are likely to be built domestically in the Philippines. However, Japanese-made navigation and patrol equipment, such as radar and AIS, holds a competitive advantage and has high local demand.	B	Local demand and requests are extremely high, and Japan's assistance holds significant value from a Blue Economy perspective. However, there are many uncertainties regarding the operational and management capabilities of local patrol vessels, necessitating further examination into the local side in prior to the implementation of project.	B
	2	Promotion of EAFM for Sustainable Resource Use in Coastal Areas (Technical Cooperation)	◎ A1,A2	○ B1, B2, B3	◎ C1, C2, C3	○ D1, D3	◎ E1, E2, E3, E4	◎F2 LGUs, FARMCs, and community members receive training on environmental conservation and livelihood improvement activities planned for each site.	S	◎	This project, which aims to achieve both the resolution of environmental issues and sustainable economic growth, aligns with both the Development Cooperation Policy and the JGA's "Promoting the Fisheries-Centered Blue Economy" policy.	○	Each coastal LGU/FARMC is the primary entity conducting activities, but insufficient resources prevent them from carrying out activities adequately. Since the LGU is the responsible authority, there is no strong request at the BFAR level, but the need at the LGU level is high.	○	Given LGU's limited human and budgetary capacity, generating independent funding to ensure the sustainability of FARMC activities is a major challenge. Since BFAR has assigned levels to each FARMC, selecting the appropriate target level can enhance feasibility.	◎	Japan has a strong record in supporting community-based coastal fisheries development, livelihood improvement activities, and mangrove reforestation. While the FishCoRe project provides support for EAFM, this project focuses specifically on coastal fisheries and therefore does not overlap.	S	EAFM aligns with the principles of the Blue Economy, and with the establishment of FARMC as the implementing organization, the target is clearly defined. While specific challenges vary by region, the technical aspects are areas where Japan excels and are consistent with the direction of JGA's "Promoting the Fisheries-Centered Blue Economy".	S
Aquaculture	3	Promoting Seaweed Farming in Island Communities to Achieve the Blue Carbon and Regional Development (Technical Cooperation)	◎ A4	○ B3		◎ D1, D3	○ E3	◎F1, F2, F3, F4 With the spread of seaweed farming in remote island areas, training programs on production techniques would be conducted, creating employment opportunities including for women.	S	◎	When considering BARMM specifically, it aligns highly with enhancing producers' technical capabilities and livelihoods, strengthening the autonomous government's capacity as a C/P agency, reducing poverty, and addressing climate change. For similar reasons, it also aligns with the JGA's Fisheries BE Promotion.	◎	The further promotion of seaweed farming aligns with the priority initiatives of the Philippine government and the BARMM regional government, and there is high demand for it.	○	The BARMM Autonomous Government and LGUs have limited human and budgetary capacity. However, support systems exist through relevant universities, research institutions, and extension facilities. Building networks can enhance the implementation capacity. This initiative will also address capacity building for the Autonomous Government and LGUs. Furthermore, in coordination with the financial sector, blue carbon credits can be issued for the carbon sequestration function of seaweed farming, creating a framework for financing.	△	Seaweed farming techniques are already established locally, so the project will provide support to promote their adoption and expand cultivation areas. Meanwhile, ice-ice disease remains a major obstacle to improving productivity. The causes of ice-ice disease and fundamental countermeasures are yet to be identified.	A	Expanding seaweed cultivation aligns strongly with Philippine government policies, BARMM's economic development, and climate change mitigation through carbon sequestration, making it a high priority from a blue economy perspective. However, long-term expansion requires integrated measures to address ice-ice disease.	S
	4	Genetic and Breeding Validation of Seaweeds, and Development of Improved Strains for Climate Change Adaptation (SATREPS)	○ A4	○ B3		○ D1, D3	○ E3	○F1, F2 F3, F4 Collaborative research provides educational opportunities for students and researchers, and developing ice-ice disease-resistant seaweed strains will increase employment opportunities through seaweed cultivation.	A	◎	When assuming BARMM as the target, consistency with development cooperation policy remains high as described above.	◎	BFAR also recognizes ice-ice disease countermeasures as a major challenge, and the technical needs are extremely high.	○	This project is designed as a SATREPS scheme, so the C/P agency will be an university or research organization. Potential candidates include Mindanao State University, the seaweed research division of the University of the Philippines, and the National Seaweed Technology Development Center. Implementing the project jointly with multiple institutions would enhance research capacity.	△	Kochi University and Hokkaido University have notable research achievements in seaweed, and JIRCAS is currently conducting joint research on aquaculture technology with SEAFDEC. If these institutions participate jointly, they possess sufficient capability to lead collaborative research with the Philippine side. However, due to the nature of SATREPS, both research institutions must cooperate to submit a joint proposal.	B	Local demand and interest are exceptionally high, and Japan's assistance holds significant value for the long-term promotion of seaweed cultivation, particularly from a blue economy perspective. However, as the SATREPS scheme is to be applied, actual project development will require coordination between research institutions on both sides.	B

Subsector		Project Title	Impact Area (OIN)						Evaluation Using OIN Indicators	ODA Feasibility										Overall Evaluation	Priority
			Environmental Impact					Socio-Economic Impact		Consistency with Country Development Cooperation Policy and JICA Global Agenda		Requests and Needs from the Partner Government		Capacity of Partner Government (Feasibility including the operation and maintenance system and budget)		Technical Feasibility (The relevance, uniqueness, and competitiveness of Japanese technology in the project)		Rating Based on ODA Feasibility			
			A. Sustainably Manged Ocean Resources	B. A Clean Ocean	C. Thriving and Restored Marine Habitats	D. Towards a 1.5C World	E. Climate-resilient coastal communities	F. Positive Socio-economic Outcomes													
			Rating the results of hypothesis-based assessment by △/○/◎					Qualitative description (narrative)	Rate using S/A/B/C	Rate using △/○/◎	Rationale / Background	Rate using △/○/◎	Rationale / Background	Rate using △/○/◎	Rationale / Background	Rate using △/○/◎	Rationale / Background	Rate using S/A/B/C	Description in narrative form	Rate using S/A/B/C
Aquaculture	5	Promoting Investment in Marine Cage Aquaculture through IMTA and Advanced Technologies (Two-Step Loan)	◎ A4	◎ B3		○ D1, D3	◎ E3, E4	◎F1, F2, F3, F4 In addition to directly creating jobs through the promotion of private investment, fishermen receive training through attached technical cooperation projects. This also contributes to increasing the income of people in coastal communities.	A	○	This aligns with development cooperation policies in terms of establishing infrastructure and enhancing added value for milkfish farming, which is the backbone of the Philippine fisheries industry. It also highly aligns with the JGA in terms of creating income-generating opportunities for coastal communities.	△	The promotion of marine aquaculture is based on BFAR's Mariculture Park policy, and there has been a request for support. BFAR has already designated marine areas for MP development in various locations, and there are successful cases where private companies have invested and commercialized operations. While investment promotion remains a major challenge for advancing marine aquaculture, the priority for support needs is not high.	△	Given existing successful cases of private investment, BFAR's implementation capacity is considered sufficient. Furthermore, private companies possess high capabilities in milkfish farming technology, so there should be no issues with MP operation if conditions are met. However, since MP management is the responsibility of LGUs, administrative capacity issues may arise in some regions.	△	While Japanese funding holds significance for further investment promotion and risk reduction for private companies, the private sector's milkfish farming technology is sufficiently advanced. Therefore, external investment support is not necessarily required if conditions and environments are properly established.	C	Support is considered highly effective in aspects such as coastal environmental conservation, infrastructure development for aquaculture production, and improving the livelihoods of fishing communities. However, on the other hand, milkfish farming utilizing MP continues to develop independently by private companies. While intensive cage farming often places negative impact on the coastal environment, and require technical solutions in the future, Japan's priority for supporting this is not high at present.	B
	6	Promoting Investment in Marine Cage Aquaculture through IMTA and Advanced Technologies (Attached Technical Cooperation)																			
	7	Project to Revitalize Abandoned Aquaculture Ponds (AUU Ponds), and Promote Coastal Environmental Improvement (Sector Loan)	◎ A1	○ B3	◎ C2	○ D3	◎ E1, E4	◎F1, F2, F3, F4 Revitalizing currently abandoned aquaculture ponds will create opportunities for employment and increased income, while also enabling coastal communities to receive training in aquaculture techniques.	A	○	The alignment with the development cooperation policy and the JGA is high from the perspectives of environmental issues and climate change countermeasures, enhancing added value and improving the sustainability of fishery production, and developing fishery communities and improving livelihoods.	○	The revitalization of AUU fish ponds and the restoration of mangrove forests have become social issues, and there is a high demand for countermeasures.	○	AUU fish ponds are areas under BFAR's management, but their operation is based on leasing to private entities. BFAR will be responsible for management and post-operation monitoring, among other duties. However, since the department which handles AUU matters performs similar tasks, it is considerable that the capacity for this purpose is not an issue.	△	Many AUU fish ponds were likely used for shrimp farming, but visions for their reuse in shrimp farming are considered slim. Consequently, BFAR is also focusing efforts on converting them into salt farms. However, there is no clear plan yet for the method in revitalising all the vast AUU ponds.	C	Efforts to revitalize AUU fish ponds while incorporating environmental conservation functions, and from the perspective of promoting the economic development of coastal communities, the significance of support is high. However, the specific technical options by which this should be achieved are yet to be determined.	C
	8	Establishing a Strategic Aquaculture Seed Supply System to Strengthen Food Security (Loan Aid)	○ A1				◎ E4	◎F1, F2, F3, F4 Establishing multiple hatcheries for seedling production will increase employment and income. Additionally, training for seedling production will be conducted within these hatcheries.	B	○	It aligns with the development cooperation policy in terms of improving aquaculture production infrastructure, enhancing value-added products, and strengthening sustainability.	◎	Milkfish is the most poular aquaculture commidity in the Philippines, yet 60% of its fry rely on imports. Establishing hatcheries to boost production is crucial from a food security perspective. Furthermore, BFAR has expressed a strong need for support.	◎	The NFDC is located in Dagupan, the center of milkfish production, and plays a central role in seed production, including broodstock maintenance and training for producers. Building a hatchery at the NFDC as a C/P facility is expected to have no significant issues in technical support.	◎	NFDC has previously served as a JICA technical cooperation site and has a record in supporting the construction of milkfish aquaculture facilities. Furthermore, the Center possesses expertise in hatchery design, so there are no technical issues.	S	While it has high priority in terms of food security and technical feasibility, its contribution to environmental aspects is low.	A

Subsector		Project Title	Impact Area (OIN)						Evaluation Using OIN Indicators	ODA Feasibility										Overall Evaluation	Priority
			Environmental Impact					Socio-Economic Impact		Consistency with Country Development Cooperation Policy and JICA Global Agenda		Requests and Needs from the Partner Government		Capacity of Partner Government (Feasibility including the operation and maintenance system and budget)		Technical Feasibility (The relevance, uniqueness, and competitiveness of Japanese technology in the project)		Rating Based on ODA Feasibility			
			A. Sustainably Manged Ocean Resources	B. A Clean Ocean	C. Thriving and Restored Marine Habitats	D. Towards a 1.5C World	E. Climate-resilient coastal communities	F. Positive Socio-economic Outcomes													
			Rating the results of hypothesis-based assessment by △/○/◎					Qualitative description (narrative)	Rate using S/A/B/C	Rate using △/○/◎	Rationale / Background	Rate using △/○/◎	Rationale / Background	Rate using △/○/◎	Rationale / Background	Rate using △/○/◎	Rationale / Background	Rate using S/A/B/C	Description in narrative form	Rate using S/A/B/C
Post-harvest	9	Master Plan Formulation Survey for Developing a Large-Scale Fish Port to Reduce Post-Harvest Losses and Ensure a Stable Supply of Fishery Products	◎ A2				◎ E4	◎F1, F2, F3 Construction of new fishing ports and associated facilities is expected to directly create jobs and increase income. Additionall, through attached technical cooperation project, training and education will be provided on techniques such as maintaining the freshness of marine products to reduce post-harvest losses.	A	◎	It aligns extremely well with the development cooperation policy in terms of strengthening the foundation necessary for sustained economic growth and fisheries development, and with the JGA in terms of strengthening and upgrading fisheries FVCs.	◎	From the perspective of addressing post-harvest losses, which have become a social issue, there is a high demand for developing fishing ports in suitable locations. While the PFDA plans to develop them sequentially, expectations for Japan are high in the context of budgetary measures and high-quality infrastructure development.	◎	The PFDA will serve as the principal agency. This organization has the construction, management, and operation of fishing ports as its primary mission. It possesses the expertise for post-construction management and operation, and budgetary measures are also being appropriately implemented.	◎	Japan/JICA has experience in constructing fishing ports in the Philippines and other countries, and is capable of providing high-quality facilities and equipment that meet local requirements. Furthermore, there are high expectations from the local side for Japan's support.	S	The development of fishing ports in suitable locations holds significant potential as a measure to address post-harvest losses of fisheries products, which currently is as a major issue in the Philippines. Furthermore, this development is expected to bring substantial socioeconomic benefits. Expectations and the feasibility of Japanese support for this project, including construction technology and equipment procurement, are also high.	S
	10	Development of a Large-Scale Fish Port to Reduce Post-Harvest Losses and Ensure a Stable Supply of Fishery Products (Port Construction and Installment of Equiptment)																			
	11	Development of a Large-Scale Fish Port to Reduce Post-Harvest Losses and Ensure a Stable Supply of Fishery Products (Technical Cooperation)																			
	12	Improving Fish Quality and Reducing Post-Harvest Losses at Municipal Fish Ports (MFPs) (Sector Loan)	◎ A2	◎ B1, B2, B3, B4			○ E3, E4	◎F2 Conduct training and education for LGUs and users on ice-making machines, freezers, and fishing port management capabilities.	C	○	This aligns with the development cooperation policy in terms of strengthening the foundation necessary for sustained economic growth and fisheries development, and with the JGA in terms of enhancing and upgrading fisheries FVCs. However, as the primary objective is to renovate existing facilities, the impact is limited.	△	The MFP will be constructed by the PFDA, but management and operation will be handled by each LGU. Since challenges and needs vary by LGU, there are no common needs or requests at the PFDA level. For the implementation of this project, it is necessary to organize challenges and inputs based on prior surveys.	△	The management/operation of MFP is handled by the LGU, generally resulting in limited capacity (human and budgetary). While renovations can be done with the PFDA as the C/P agency, similar issues may resurface depending on the operation method. The C/P agency must find methods to ensure the sustainability of facility operations.	△	Facility renovations are technically straightforward, but require tailored renovation plans for each facility. Given their small scale, they are typically contracted to local construction companies. The technical feasibility of Japanese support is not high.	B	While the significance is substantial in terms of addressing post-harvest losses, improving drainage, and developing infrastructure that boosts coastal community incomes, the project's impact, the host country's management capacity, and technical feasibility are low.	C
	13	Strengthening Cold-Chain Functions at Community Fish Landing Centers (CFLCs) to Reduce Post-Harvest Losses	◎ A2				◎ E2, E3, E4	◎F1, F2, F3, F4 CFLC rehabilitation and functional enhancement are expected to increase user numbers and improve added value. Additionally, the soft component will provide training and education on maintaining the quality of fisheries products and the proper management of equipment and facilities.	B	○	The foundation for sustainable economic growth aligns with the development cooperation policy in the fisheries development aspect, while support for strengthening fisheries FVCs and improving coastal community livelihoods aligns with the JGA.	◎	Unlike large and medium-scale fishing ports, CFLCs are central to BFAR's coastal fisheries policy. There is a high demand and strong need for support in facilities and equipment, such as small-scale cold chain development, aimed at reducing post-harvest losses and improving community livelihoods.	○	CFLC management is handled by LGUs, while operations are community-based, both with limited human and budgetary capacity. BFAR maintains regional offices in each area, enabling extension officers to provide follow-up support. Alongside assistance for fisheries, aquaculture, and processing, support for facility and equipment management is available.	△	The required technology is not complex, and it is preferable that the equipment to be introduced consists of standard items that can be procured locally. For these reasons, the added value and technical requirements for Japan's support may be limited.	B	Addressing post-harvest losses, enhancing FVC, and improving community livelihoods are significant objectives, and there is strong local demand for these outcomes. However, the capacity of the LGU, which manages the CFLC, is limited, leaving challenges in the project management system and the post-project operations and maintenance.	B

Evaluation Index of Ocean Impact Navigator (OIN)

◎ = Each inidicator is the central objective of the project

○ = Items that are not the main objective, but are expected to produce results as a result of activities

△＝Items that can be expected to be effective depending on the plan

Evaluation Index of ODA Feasibility

◎＝High Suitability

○＝Middle Suitability

△＝Low Suitability

Evaluation Index of Overall Evaluation

S = Top Priority

A= High

B = Medium

C= Low

Source: JICA Study Team

Table 6.1-5 Selection of Priority Projects (Fisheries Sector, BARMM)

	Project Title	Impact Area (OIN)						Evaluation Using OIN Indicators	ODA Feasibility								Rating Based on ODA Feasibility	Overall Evaluation	Priority
		Environmental Impact					Socio-Economic Impact		Consistency with Country Development Cooperation Policy and JICA Global Agenda		Requests and Needs from the Partner Government		Capacity of Partner Government (Feasibility including the operation and maintenance system and budget)		Technical Feasibility (The relevance, uniqueness, and competitiveness of Japanese technology in the project)				
		A. Sustainably Manged Ocean Resources	B. A Clean Ocean	C. Thriving and Restored Marine Habitats	D. Towards a 1.5C World	E. Climate-resilient coastal communities	F. Positive Socio-economic Outcomes												
		Rating the results of hypothesis-based assessment by △/○/◎					Qualitative description (narrative)。	Rate using S/A/B/C	Rate using △/○/◎	Rationale / Background	Rate using △/○/◎	Rationale / Background	Rate using △/○/◎	Rationale / Background	Rate using △/○/◎	Rationale / Background	Rate using S/A/B/C	Description in narrative form	Rate using S/A/B/C
1	Comprehensive Capacity Development for Marine and Coastal Management (Technical Cooperation)	◎ A1, A2	○ B3, B4	◎ C1, C2, C3	○ D3	◎ E1, E2, E3, E4	○ F2	A	◎	Within the context of support to BARMM, it aligns with country development cooperation policy. Furthermore, the co-management of coastal resources initiative is also consistent with the JGA.	△	While there is a high needs for enhancing the BARMM Government's marine management capabilities, it is not a high priority within the autonomous government, and there are no active request for it.	△	The BARMM Government's MENRE is considered to have limited human and budgetary capacity. The actual project management and post-project implementation framework are unknown.	○	Japan holds a competitive advantage in human resource development for marine and coastal resource management, support for management plan formulation, and implementation of related pilot projects.	B	While it holds significant importance as a solution to challenges and aligns with BARMM support, MENRE's project implementation capacity is considered low, necessitating consideration from a long-term perspective.	B
2	Establishment of the Marine Environment and BE Research Institute (Grant Aid)	○ A1, A2	○ B3, B4	○ C1, C2, C3	○ D1, D3	○ E1, E2, E3, E4	○ F1, F2	B	○	Within the context of BARMM support, it aligns with the development cooperation policy.	○	The team reviewed the request from MENRE. The long-term needs is high.	△	The operational capacity of the research institute and the allocation of researchers, among other aspects of MENRE's capabilities, remain unclear. However, it is generally considered that the resources of the BARMM Government are insufficient.	○	Japan's expertise can be fully utilized in providing facilities and equipment for environmental surveys and blue economy research. However, its competitive advantage as compared to other donors is not particularly high.	C	The significance as a measure for addressing future challenges is substantial, and it also aligns with BARMM support. However, the autonomous government's capacity to operate the research institute remains unknown, necessitating thorough verification and consideration.	C
3	Master Plan Formulation Survey on the Development of Medium- to Large-Scale Fish Ports and Cold-Chain Facilities (Development Survey)	◎ A2	◎ B3, B4			◎ E4	◎ F1, F2, F3	A	◎	In terms of infrastructure development for sustained economic growth and support for sustainable fisheries, it aligns highly with the country development cooperation policy. Regarding the strengthening and advancement of the FVC, it aligns highly with the JGA initiative.	◎	This was considered in response to strong requests from MAFAR. Fishing ports of all sizes have suffered significant damage due to the conflict and require prompt rehabilitation. They are also expected to serve as distribution hubs for seaweed, where the production is anticipated to increase in the future.	△	It is assumed that MAFAR and LGU have limited human and budgetary capacity, necessitating the establishment of a framework for operation and management.	○	Japan has a record of developing numerous fishing ports in the Philippines. However, since this project involves rehabilitating existing facilities, construction plans must be implemented on a site-by-site basis. Therefore, while Japanese companies should handle design and construction management, it is preferable to engage local construction companies for the actual construction work.	A	It is expected to serve as a central hub for economic benefits and regional revitalization, aligning well with Japan's development cooperation policies and meeting the needs and requests of the partner government. However, challenges exist in the capacity of the C/P agency and LGU, and the methods for operating and managing the facility require thorough consideration.	A
4	Fish Port Rehabilitation (New Construction) and Cold-Chain Development Project (Grant Aid)																		
5	Promoting Seaweed Farming in Island Communities to Achieve the Blue Carbon and Regional Development (Technical Cooperation) （※Same as the national-level project idea）	◎ A4	○ B3		◎ D1, D3	○ E3	◎F1, F2, F3, F4 With the spread of seaweed farming in remote island areas, training programs on cultivation techniques would be conducted, creating employment opportunities including for women.	S	◎	When considering BARMM as the target, it is highly aligned with improving the producers' technical capabilities and livelihoods, enhancing the capacity of the autonomous government as a C/P agency, reducing poverty, and addressing climate change. For similar reasons, it also aligns with the JGA “Fisheries BE Promotion.”	◎	The further promotion of seaweed farming aligns with the priority initiatives of the Philippine government and the BARMM government, and there is also high demand for it.	○	The BARMM Government and LGUs have limited human and budgetary capacity. However, a well-established support system exists through relevant universities, research institutions, and extension facilities. Building networks can enhance implementation capacity. This initiative will also address capacity building for the Government and LGUs. Furthermore, in coordination with the financial sector, blue carbon credits can be issued for the carbon sequestration function of seaweed farming to establish a funding framework.	△	Seaweed farming techniques are already established locally, so the project will provide support to promote their adoption and expand cultivation areas. Meanwhile, ice-ice disease remains a major obstacle to improving productivity. The causes of ice-ice disease and the development of fundamental countermeasures are yet to be identified.	A	The expansion of seaweed farming aligns strongly with Philippine government policies, BARMM's economic development, and climate change adaptation through carbon sequestration, making it a high priority from a blue economy perspective. However, long-term expansion requires integrated measures to address the issues caused by ice-ice disease.	S

Evaluation Index of Ocean Impact Navigator (OIN)

◎ = Each inidicator is the central objective of the project

○ = Items that are not the main objective, but are expected to produce results as a result of activities

△＝Items that can be expected to be effective depending on the plan

Evaluation Index of ODA Feasibility

◎＝High Suitability

○＝Middle Suitability

△＝Low Suitability

Evaluation Index of Overall Evaluation

S = Top Priority

A= High

B = Medium

C= Low

6.1.5 Alignment with the Needs of Japanese Companies

(1) Business Opportunities for Japanese Fisheries Companies in the Philippines

The Philippines has a long history of exporting fishery products to Japan, with exports of tuna beginning in the 1960s and farmed shrimp in the 1970s. However, since the 1990s, Thailand and Vietnam have emerged, and sourcing destinations within Southeast Asia have become more diversified, shifting from the Philippines to other countries. At present, the Philippine fisheries sector is considered to have low competitiveness. Contributing factors include high procurement costs stemming from weak infrastructure, such as inadequate logistics and cold chain systems and unstable electricity supply, as well as the fact that the main export products are skipjack and tuna and that export destinations are heavily concentrated in the United States and the EU. As a result, Japanese seafood trading companies procure only limited volumes of fishery products from the Philippines. In addition, because transactions with the Philippines are limited, there is a lack of necessary information, such as industry trends and trade guidelines, for making investment decisions.

On the other hand, the Philippine consumer market has latent potential. Consumption is robust amid economic growth, and the middle class tends to place greater emphasis on consumption than on saving. Japanese cuisine is already familiar in Manila and considering the recent increase in the number of Filipino visitors to Japan, it can be expected that domestic demand in the Philippines for Japanese fishery products will increase going forward. From the perspective of the cold chain, while Chinese and Korean companies have already entered the Philippine market by investing in large-scale upstream freezing facilities and have strengthened their competitiveness, Japanese companies have a comparative advantage in downstream equipment such as small ice makers and freezers for kitchen use. Accordingly, there may be business opportunities for ice makers and freezers used at small-scale fishing ports and similar facilities. In addition, as indicated below, advanced technologies can also be expected to represent new fields for technology exports. To expand opportunities for Japanese fisheries companies to enter the Philippine market through exports, improved transparency in regulations, including import regulations, is required.

(2) Japanese Technologies Applicable in the Philippines

Technologies held by Japanese companies, such as DX (digital transformation) solutions for aquaculture, remote measurement technologies including remote sensing, land-based aquaculture technologies, and environmental restoration technologies (e.g., seaweed-bed creation and coral restoration) are considered potentially applicable in the Philippines in the future. A wide range of Japanese companies, from major construction consulting firms to startups, are advancing research and development in these areas.

Given the Philippines' large-scale marine aquaculture operations, demand for aquaculture DX is expected to increase. For example, in milkfish farming within mariculture parks, where operations are becoming larger and more consolidated, the introduction of smart feeding systems can improve productivity by reducing labor burdens and can reduce feed costs by optimizing feeding volumes. This also contributes to reducing environmental impacts, such as minimizing uneaten feed, thereby enabling both environmental conservation and improved productivity.

Remote measurement technologies, including remote sensing, can be applied to measuring the area of

seaweed beds and seaweed farming sites, collecting environmental data (e.g., real-time monitoring of water temperature and water quality), and selecting suitable aquaculture sites. When converting blue carbon from seaweed beds into credits, it is necessary to measure accurately and efficiently the area of seaweed beds underwater; therefore, such remote sensing technologies can also be utilized in the Philippines. Furthermore, Japanese aerial survey companies possess a variety of measurement technologies, ranging from wide-area surveys using Airborne LiDAR Bathymetry (ALB) and satellite image analysis to small-scale surveys using drones, providing a broad set of options depending on the required scale, accuracy, and cost. These remote measurement technologies can also generate baseline data for coastal spatial planning and management and are therefore expected to be effective for supporting the formulation of marine spatial plans that underpin the Blue Economy, including ports, disaster risk reduction, and maritime transport (shipping routes).

In Japan, land-based aquaculture technologies are being promoted nationwide by private companies and research institutions, particularly for species such as flounder, prawn, and salmons, and the technologies are largely established. While introducing land-based aquaculture in the Philippines may raise profitability concerns at present, it is a farming method that can reduce pressures on the marine environment and, from a Blue Economy perspective, is a technology that should be considered over the longer term. Interest in land-based aquaculture has been increasing in neighboring Thailand and Indonesia, and it has also been examined for possible introduction in the Philippines, including in Cebu City. However, there are many issues to be addressed, including high initial capital costs for facilities, ensuring sufficient profitability to recover investments, and the development of operational infrastructure such as electricity and water supply.

Japan is also advancing initiatives to conserve and restore coastal ecosystems by environmental restoration technologies, with objectives such as improving fishing ground environments and addressing loss of seaweed beds. Examples can be seen of related technologies, including algal culture technologies, being developed and put into practical use by private companies. There have also been cases where Japanese companies conducted technology demonstrations in the Philippines, including coral restoration implemented in collaboration with local universities.

(3) Synergies with JICA Projects

Based on the above, it is suggested that the Philippines has greater potential not so much as a traditional supply source for fishery products exported to Japan, but rather as a consumer market for Japanese fishery products and a destination market for exports of advanced Japanese technologies and products, including high-quality cold chain equipment, DX-based aquaculture technologies, and technologies for coastal management and environmental conservation. Accordingly, as a Japanese public institution, there is a need to support private sector companies in promoting such exports. In this context, JICA projects are expected to generate synergies with the private sector, particularly in areas such as fisheries port infrastructure development as a foundational investment for the introduction of cold chain equipment, and technical cooperation aimed at introducing advanced aquaculture technologies. In addition, cooperation with Japanese universities and research institutions, as well as startup companies, should be proactively promoted in implementing these initiatives.

6.2 Potential Cooperation Project for Ocean Transport Sector

6.2.1 Identification of the Support Needs

Project proposals are developed to address the priority issues in the maritime sector identified in the previous chapter. The rationale and points of focus for the specific project proposals are summarized below.

Table 6.2-1 Priority issues and support needs of the port sector

Priority issue		Support needs
Priority issue 1	Developing a decarbonization plan for all Philippine ports under the jurisdiction of the PPA	To develop the nationwide decarbonization plan (Blue Economy Master Plan) for all Philippine ports To identify and develop the plans for high-priority ports based on the master plan.
Priority issue 2	Strengthening the activities of PCG, which is responsible for maritime safety and resource conservation	To support the development plan for PCG's base port and operations (Coron Port)
Priority issue 3	Promoting blue economy-related regional ports in the Philippines under the jurisdiction of local governments/DOTr.	To formulate blue economy promotion plans for ports designated by DOTr as Social and Tourism Ports. To implement regional port development projects for ports that are in need of development and have high potential, by packaging multiple ports depending on their scale
Priority issue 4	Development of base ports for offshore wind power generation	The development and construction of base ports is essential for the construction of offshore wind power generation. From a medium- to long-term perspective, the Philippines is likely to see increased construction of offshore wind power generation facilities, and the possibility of supporting the development of base ports associated with these projects is conceivable.
Priority issue 5	Promoting the implementation of carbon-neutral ports (green ports)	At large international ports in the Philippines, terminal operators may receive one-off requests for technical assistance as they implement their own green port initiatives. Here, potential cooperation programs will be examined for specific technical issues, using the example of shore-based power supply to ships, which was actually approached during this study.

Source: JICA Study Team

Table 6.2-2 Priority issues and support needs of the maritime sector

Priority issue		Support needs
Priority issue 6	Strengthening the Philippine Nationwide Maritime Transportation Network (Nautical Highway System)	To review, evaluate, and revise the master plans for the Philippine Nationwide Maritime Transportation Network and the Nautical Highway System. To select ferry routes to be developed based on the revised master plan and implement them as development projects. Multiple routes will be packaged depending on the

		scale of the development.
Priority issue 7	Promoting the use and popularization of biodiesel fuel for ships	While biodiesel production and use is progressing in the Philippines, its use as marine fuel has not yet been recognized. Taking advantage of its advantage of being directly compatible with existing engines, support the use and popularization of biodiesel will be supported.
Priority issue 8	Electrification of Domestic Inter-Island Ro-Ro Ferries	In the Philippines, electric ferry experiments are currently underway, and there are goals for introducing electric ferries on short-distance routes. Given that the country possesses the technology to build small electric vessels, electrification of domestic inter-island Ro-Ro vessels, which are relatively easy to electrify and operate, will be supported.
Priority issue 9	Promoting Philippine Shipyards	To support MARINA's activities to promote domestic shipyards based on MIDP. Specifically, the project will survey and understand the current situation at Philippine shipyards, compile an implementation plan for promoting the Philippine shipbuilding industry, and implement shipbuilding promotion based on the plan.
Priority issue 10	Seafarer Training for Next-Generation Fuel Ships	The Philippines is one of the world's leading suppliers of seafarers. The safe operation of the growing number of next-generation fuel-powered ships requires seafarers who are well-versed in the safe handling of highly specialized next-generation fuels. Therefore, supporting training programs for seafarers who are essential for the operation of next-generation fueled ships will be considered.
Priority issue 11	Developing and Implementing Training Modules for Promoting the Blue Economy	Promoting the blue economy requires understanding of the importance of the oceans and their resources, the conservation of the marine environment, and the blue credit system and mechanisms among those involved in various initiatives, their users, and the general public. The development of training modules and the provision of education that MARINA is developing in accordance with the MIDP programs will be supported.

Source: JICA Study Team

The priority issues and assistance needs for the maritime sector in the BARMM region, which were also examined in the previous chapter 5.3.2, are summarized below. Details shall be referred to chapter 5.5 and 5.5.2.

Table 6.2-3 Priority issue and support needs in the BARMM ocean transport sector

Priority issue		**Priority issue**
Priority issue 12	Improving Inter-island Connectivity and Maritime Transport Capacity in the	While there are 11 commercial ports within the BARMM region, domestic vessels primarily call at ports in Basilan, Sulu, and Tawi-Tawi, resulting

	BARMM Region	in limited and inefficient maritime transport connectivity between the mainland and island provinces. This project will support the "ensuring an efficient transport system" initiative outlined in the transportation and traffic strategy of the Second Bangsamoro Development Plan, which aims to improve connectivity to market areas within and outside the BARMM region, facilitate the flow of goods and people, and strengthen inter-island connectivity.

Source: JICA Study Team

6.2.2 Study on the Potential Cooperation Project for Ports on Ocean Transport Sector

In line with the support needs, the following cooperation projects to address each priority issue are proposed.

(1) Port-related

＜Project：Ocean Transport 01＞

Project Title	Philippine National Port Decarbonization Plan (Master Plan for Blue Economy)
Duration	2 years (Short-term planning)
C/P Agency	PPA
Implementation Structure	To work with PPA and each port under its jurisdiction To coordinate and collaborate with DOTr if necessary
Assistance Scheme	Development survey
Project Purpose	To identify issues related to the nationwide decarbonization of PPA-controlled ports To establish a development and maintenance plan (National Port Decarbonization Plan/Blue Economy Master Plan) to address these issues
Target Areas	Nationwide
Beneficiaries	DOTr, PPA
Inputs	Expert dispatch (port planning, decarbonization planning, port facility planning and design, environmental and social considerations, economic and financial analysis, etc.)
Project Outline	To conduct a nationwide survey of PPA-controlled ports to identify and organize issues and challenges related to port decarbonization To establish a development and maintenance plan ("National Port Decarbonization (Carbon Neutral Port/Green Port) Plan/Blue Economy Master Plan") to address these issues.

Potential Collaboration with Other Sectors	To develop a plan aimed towards applying blue carbon credits, which will be proposed to implement by the finance sector.

＜Project：Ocean Transport 02＞

Project Title	Identified Port Decarbonization Project (multiple ports packaged depending on the scale)
Duration	2～3 years (Medium to Long term)
C/P Agency	PPA
Implementation Structure	To work with PPA and each port under its jurisdiction To coordinate and collaborate with DOTr if necessary
Assistance Scheme	Loan aid, Two-step loan (As PPA strongly intends to implement this project using its own funds or a Philippine domestic fund, a two-step loan is also proposed.)
Project Purpose	To develop and improve selected/designated ports based on the development plan formulated in Proposal Program 1.
Target Areas	Selected/designated ports
Beneficiaries	PPA, target port managers, and users
Inputs	・Expert dispatch (port facility planning/design, construction planning/cost estimation, environmental and social considerations, bidding document preparation, other related civil engineering and architectural experts, etc.) ・Facility construction, machinery and equipment, etc. ・Training (domestic, Japan)
Project Outline	To identify and select ports with the highest urgency and need, and support specific decarbonization efforts based on the master plan. Support for decarbonization efforts will be tailored to the circumstances and needs of each port, drawing on the efforts of CNP and Green Ports in Japan and the Philippines. These efforts will include improving the efficiency of port cargo handling operations through port infrastructure development, reducing the carbon footprint of cargo handling equipment, utilizing carbon-free electricity, utilizing next-generation energy sources, and creating bio-symbiotic facilities.
Potential Collaboration with Other Sectors	There is a possibility that the results of a project to create a blue carbon credit framework proposed for implementation by the finance sector can be utilized in this project.

Rationale：PPA has presented the GRaSPS Framework in its Port Environmental Policy (PEP). This outlines various measures aimed at greening ports, and each PPA PMO is formulating its own action plan and implementing them based on the PEP. Based on the PEP, PPA is currently formulating the "Green Code," which is currently in the draft stage as a legal document.

At major international ports in the Philippines, terminal operators are taking the lead in implementing

proactive initiatives based on the GPAS, which was established by APSN, a group of APEC members, to evaluate port greening efforts within each country's unique circumstances.

However, PPA has not yet established a national "Port Decarbonization Plan" or a set of "benchmarks" and "guidelines" for each port in the country. PPA aims to develop these code and plans, and then promote decarbonization as a whole.

Issues and Objectives (Points of Focus): Formulate a master plan (including a national-level "Port Decarbonization Plan" and benchmarks and guidelines for each domestic port to refer to) to further strengthen activities in line with GPAS within the Philippine National Port Decarbonization Plan, and support the implementation of decarbonization at each port based on the master plan within the port decarbonization project. The scope and content of support will be investigated and considered within the master plan, and will be specified based on the actual conditions in Japan and the Philippines.

Note that PPA has a strong intention to implement port development using its own funds or domestic funds, rather than relying on overseas loans. For this reason, we envision and propose a two-step loan that can essentially be replaced by a Philippine domestic fund, along with a conventional yen loan.

＜Project：Ocean Transport 03＞

Project Title	PCG Base Port Development in Coron, Northern Palawan
Duration	2～3 years (Short to Medium term)
C/P Agency	DOTr、PCG
Implementation Structure	To coordinate and cooperate with DOTr/PCG and other relevant organizations as necessary.
Assistance Scheme	Loan aids
Project Purpose	To develop and improve a base port for PCG in Coron, Northern Palawan.
Target Areas	Coron, Palawan
Beneficiaries	PCG, fishermen, local residents, and other Filipino citizens
Inputs	・Expert dispatch (port facility planning/design, construction planning/estimation, environmental and social considerations, bidding document preparation, and other related civil engineering and architectural expertise, etc.) ・Facility construction, machinery and equipment, etc. ・Training (domestic and Japanese)
Project Outline	To implement the basic design, detailed design, and construction work by reviewing PCG's feasibility study.
Potential Collaboration with Other Sectors	This project is expected to contribute to addressing IUU fishing, an issue in the fisheries sector, for sustainable resource use. The results of a project to develop a blue carbon credit framework proposed for implementation by the finance sector may be utilized in this project.

Rationale: PCG is developing a new port in Coron, North Parwan Province. A feasibility study is currently underway, and efforts are underway to secure funding for implementation. We welcome funding and

cooperation for this project.
Issues and Objectives (Points of Focus): To support PCG's development of a new port in Coron, Palawan Province.

＜Project：Ocean Transport 04＞

Project Title	Blue Economy Promotion Plan (Social and Tourism Port) of LGU/Municipal Ports
Duration	2 year (Short term)
C/P Agency	DOTr, LGU, PPA
Implementation Structure	To coordinate with DOTr and local government units of each target port To coordinate with PPAs as necessary
Assistance Scheme	Development survey
Project Purpose	To conduct a nationwide study of LGU ports related to the Social and Tourism Port initiative promoted by DOTr To develop a master plan for decarbonizing LGU ports.
Target Areas	Nationwide
Beneficiaries	DOTr, LGU
Inputs	Expert dispatch (port planning, decarbonization planning, port facility planning and design, environmental and social considerations, economic and financial analysis, etc.)
Project Outline	To conduct a nationwide study of LGU ports, identify and organize issues and challenges for decarbonizing LGU ports, and develop a national plan and master plan.
Potential Collaboration with Other Sectors	To develop a plan aimed towards applying blue carbon credits, which will be propose to implement by the finance sector.

＜Project：Ocean Transport 05＞

Project Title	Identified LGU/Municipal Port Development Project (multiple ports packaged depending on the scale)
Duration	2～3 years (Medium to Long term)
C/P Agency	DOTr, LGU, PPA
Implementation Structure	To coordinate with DOTr and local government units of each target port To coordinate with PPAs as necessary
Assistance Scheme	Loan aids, Two-step loans, Technical cooperation
Project Purpose	To implement development and improvement related to the decarbonization of selected/designated ports based on the development plan formulated in Proposed Program 4.
Target Areas	Selected/designated ports

Beneficiaries	LGUs, target port managers and users, and local residents
Inputs	・Expert dispatch (port facility planning/design, construction planning/estimation, environmental and social considerations, bidding document preparation, and other related civil engineering and architectural expertise, etc.) ・Facility construction, machinery and equipment, etc. ・Training (domestic and Japanese) ・Technical Cooperation Project (post-completion maintenance, management, and operation)
Project Outline	Based on the master plan, LGU ports with the highest urgency and need will be identified and selected for specific development projects. (Port facility improvements will reduce post-harvest losses of agricultural and marine products, promote social tourism, reduce energy consumption in yard and port lighting (solar and LED), develop bio-symbiotic seawalls, and cultivate seaweed beds, etc.) In addition to port construction, it is also important to ensure sustainability by improving port facility management and operation capabilities and providing technical assistance on business continuity plans.
Potential Collaboration with Other Sectors	The results of a project to develop a blue carbon credit framework proposed for implementation in the finance sector may be useful in this project.

Rationale: Based on the General Appropriations Act (GAA CY) of 2016, DOTr identified 293 ports as social and tourism ports. The ports are selected based on the local government unit's (LGU) income tier (Tier 5 or Tier 6). Construction financing for approximately 25 ports will be provided by the Asian Development Bank (ADB). For port construction loans, PPA or LGU may be responsible for loan and project management. For sector loans, DOTr may manage the loan and select the target ports.

Challenge and Objective (Point of View): To support the development of the 293 social tourism ports identified by DOTr based on the GAA CY 2016. The development of these ports is expected to promote eco-tourism, an important sector of the blue economy, and revitalize local social and economic activities.

＜Project：Ocean Transport 06＞

Project Title	Development of Base Ports for Offshore Wind Farms
Duration	2～3 years (Long term)
C/P Agency	DOTr, DOE, PPA
Implementation Structure	To coordinate with DOTr, DOE, PPA and other relevant agencies as necessary
Assistance Scheme	Loan aids, Two-step loans
Project Purpose	To support the development and construction of a base port required for the construction of an offshore wind farm.
Target Areas	Selected regions

Beneficiaries	DOTr, DOE, PPA, Power recipients
Inputs	・Expert dispatch (port facility planning/design, construction planning/cost estimation, environmental and social considerations, bidding document preparation, other related civil engineering and architectural experts, etc.) ・Facility construction, machinery and equipment, etc. ・Training (domestic, Japanese)
Project Outline	To support the development of a base port for the construction of an offshore wind farm. To execute surveys, design, and construction.
Potential Collaboration with Other Sectors	The results to develop a blue carbon credit framework proposed for implementation by the finance sector may be utilized in this project.

Rationale: PPA has currently identified three locations—Mercedes, Batangas, and Curimao—as potential offshore wind farm sites. Of these, except for Curimao, Mercedes will be self-financed, while Batangas will be constructed through a PPP scheme. Feasibility studies are currently underway for other potential offshore wind farm sites. The offshore wind farm project is a long-term strategic project that will continue beyond 2028, and DOTr has indicated the possibility of utilizing financing to develop offshore wind power in the future.

Challenges and Objectives (Points of View): If offshore wind farm development proceeds, the development of a base port will be necessary for the construction of the wind farm. Given the high potential for wind power development in the long term, supporting the development of a base port is proposed as part of the cooperation program.

＜Project：Ocean Transport 07＞

Project Title	Technical Cooperation on Port Decarbonization at a Specific Port
Duration	2～3 years (Long term)
C/P Agency	Port administrators such as SBMA and PPA, and private terminal operators.
Implementation Structure	To cooperate and coordinate with relevant agencies such as DOTr, DOE, and PPA as necessary.
Assistance Scheme	Technical cooperation, Loan aids/Two-step loans
Project Purpose	Technical cooperation for individual elemental technologies in green port/carbon-neutral port initiatives at ports
Target Areas	Selected/requested ports
Beneficiaries	DOTr, PPA, port administrators, port operators
Inputs	・Expert dispatch (port facility planning/design, cargo handling equipment, power equipment, ships, and other technical experts required depending on the request/implementation, etc.) ・Facility construction, machinery and equipment, etc.

	・Training (domestic/Japanese)
Project Outline	In carbon-neutral port (green port) initiatives at ports in the Philippines, comprehensive technical cooperation will be provided for research, planning, design, procurement, and installation of individual elemental technologies (shore-based power supply to ships, LNG bunkering, electric ships (tugboats, bunkering ships, etc.), introduction of low-carbon cargo handling equipment, construction of bio-symbiotic facilities, etc.). This cooperation could be implemented comprehensively by identifying or incorporating it into proposed cooperation programs 1 and 2, or by taking it out and implementing it as a standalone project.
Potential Collaboration with Other Sectors	The results of creating a framework for blue carbon credits, which is proposed for implementation by the finance sector, could potentially be utilized in this project.

Rationale: Onshore power supply systems (OPS) for ships at ports are estimated to reduce CO_2 emissions by up to 95%.
In the Philippines, shore-based power supply equipment for ferries has already been installed at Cagayan de Oro Port. Furthermore, at Subic Bay Port, SBMA is working toward becoming the Philippines' first carbon-neutral special economic zone. As part of this effort, plans are underway to install OPS at the container terminal and Naval Supply Depot, and technical assistance was sought.
Challenges and Objectives (Points of Focus): Each international port in the Philippines is independently working toward becoming a green port, and there is a possibility that one-off requests for technical assistance may arise during these efforts. OPS is one such example, and is listed as a potential cooperation program.

(2) Maritime on Ocean Transport Sector

＜Project：Ocean Transport 08＞

Project Title	Assessment and Master Plan Review of the Nautical Highway System
Duration	2 years (Short term)
C/P Agency	DOTr, MARINA, PPA
Implementation Structure	To coordinate with DOTr, MARINA, and port authorities along each target route. To coordinate with PPA as necessary.
Assistance Scheme	Development survey
Project Purpose	To Conduct a nationwide study to evaluate existing routes and develop a master plan, including proposals for the development of new routes.
Target Areas	Nationwide
Beneficiaries	DOTr, MARINA, Port authorities along the target route
Inputs	Expert dispatch (logistics, maritime, shipping, port planning, decarbonization planning, port facility planning and design, environmental and social considerations,

	economic and financial analysis, etc.)
Project Outline	To conduct a nationwide study of the nautical highway system being implemented by MARINA in accordance with the MIDP. Under this study, the current status of existing routes will be assessed t crea a master plan, including proposals for new routes.
Potential Collaboration with Other Sectors	The project will be aimed towards applying blue carbon credits, which are proposed for implementation by the finance sector.

＜Project：Ocean Transport 09＞

Project Title	Identified Ferry Route Development Project
Duration	2～3years (Medium to Long term)
C/P Agency	DOTr, MARINA, PPA
Implementation Structure	To coordinate with DOTr, MARINA, and port authorities along each target route. To coordinate with PPA as necessary.
Assistance Scheme	Loan aids, Two-step loans, Technical cooperation
Project Purpose	To develop a maritime transport network (Ro-Ro) for selected routes based on the master plan developed in Proposed Program 8
Target Areas	Selected routes
Beneficiaries	LGUs, target port managers and users, and local residents
Inputs	・Expert dispatch (logistics, maritime, shipping, port planning, decarbonization planning, port facility planning and design, environmental and social considerations, economic and financial analysis, etc.) ・Facility construction, machinery and equipment, etc. ・Training (domestic and Japanese) ・Technical cooperation projects (post-completion maintenance and operation)
Project Outline	Based on the master plan developed in Proposed Program 8, routes with the highest urgency and need will be identified and selected for development projects. Developing and strengthening maritime transport routes is expected to shorten logistics lead times and contribute to reducing post-harvest loss of agricultural and marine products.
Potential Collaboration with Other Sectors	This project will contribute to reducing post-harvest loss, a major issue in the fisheries sector. The results of developing a blue carbon credit framework by the finance sector may be utilized in this project.

Rationale: The Philippines has three nautical highway systems: Western, Central, and Eastern, consisting of 181 Ro-Ro shipping routes. As part of the MIDP, MARINA is planning to extend the Western Nautical

Highway to Southwest Mindanao. Furthermore, Lucena Port, located on the east-west transect, is gaining potential as an important port through its connection with Masbate, which is part of the Central Nautical Highway, creating significant needs.

Challenges and Objectives (Points of Focus): In addition to supporting the development of nautical highways undertaken by MARINA in accordance with the MIDP program, this project will also provide support for the strengthening and development of the nautical highway system at the national level, focusing on nautical highway Ro-Ro shipping connections, route capacity and utilization, and the potential for the addition of new routes.

＜Project：OceanTransport 10＞

Project Title	Promotion of Biodiesel Fuel Use as a Marine Fuel
Duration	1～3 years (Short to Medium term)
C/P Agency	DOTr, DOE, MARINA, DOST, Private Sector
Implementation Structure	To coordinate with DOTr, DOE, MARINA, and DOST and other relevant agencies.
Assistance Scheme	Technical cooperation
Project Purpose	To provide support for promoting the use and spread of biodiesel fuel toward decarbonization.
Target Areas	Nationwide
Beneficiaries	DOTr, DOE, PPA, Power Recipients
Inputs	・Expert dispatch (ships, fuels, chemicals, internal combustion engines, etc.) ・Technical cooperation, including laboratory and research facilities ・Training (domestic, Japanese, third-country)
Project Outline	To investigate the current situation of biodiesel in the Philippines (production volume, available supply, demand, potential, challenges, relevant laws, etc.) and consider support measures for its use and spread. Implement inputs based on the considered support measures to support the use and spread of biodiesel.
Potential Collaboration with Other Sectors	The results of developing a blue carbon credit framework proposed for implementation by the finance sector may be utilized in this project.

Rationale: The Biofuels Act of 2006 mandates the use of biodiesel fuel in land transportation. However, its application to ships has not yet been concretely implemented.

Challenges and Objectives (Points of View): The Philippines produces 20 million liters of biodiesel fuel per month, which is less than 50% of its production capacity. Biodiesel has the potential to reduce GHG emissions by 80%, and its low sulfur content can reduce SOx emissions by 90%. Unlike other alternative fuels, biodiesel has the advantage of being compatible with conventional diesel engines without requiring modification of existing engines. Therefore, widespread use of biodiesel fuel could lead to rapid decarbonization. For these reasons, promoting the use of biodiesel fuel in domestic shipping and supporting the establishment of a supply

chain to promote the replacement of conventional fossil fuels with biodiesel is expected to contribute to decarbonization.

<Project：Ocean Transport 11>

Project Title	Feasibility Study/Implementation/Technical Cooperation for the development/introduction of Domestic Inter-island EV Ro-Ro Vessels
Duration	1～3 years (Medium to Long term)
C/P Agency	DOTr, MARINA, DOST, UP
Implementation Structure	To coordinate with DOTr, MARINA, DOST, UP and other relevant agencies
Assistance Scheme	Loan aids + Technical cooperation
Project Purpose	To support the operation of electric vessels through the construction of electric vessels and the installation of power supply facilities.
Target Areas	Nationwide/Specific Routes/Specific Ports
Beneficiaries	DOTr, MARINA, DOST, UP, ferry users, local residents
Inputs	・Expert dispatch (ships, power, electrical equipment, port facilities, etc.) ・Conducting ODA loans for surveys, design, construction and procurement of RO-RO vessels, and installation of power supply facilities, including technical cooperation as needed. ・Training (Domestic, Japan, Third Country)
Project Outline	Planning, design, construction, and operation of electric vessels will be carried out. In addition, planning, design, and installation of charging stations will be carried out for target routes and facilities. This can be implemented upon request in line with the country's plans, or proposals can be fleshed out and implemented as part of the survey and cooperation for nautical highway development proposed in Proposal Programs 8 and 9.
Potential Collaboration with Other Sectors	The launch of Ro-Ro vessels will shorten logistics lead times and contribute to reducing post-harvest loss, a major issue in the fisheries industry.

Rationale: The World Bank (WB) is supporting a pilot project to decarbonize inter-island ferries to develop a national strategy.

With funding from the Department of Science and Technology (DOST), the University of the Philippines (UP) is trialing one electric ferry on the Pasig River and conducting a demonstration project by installing three charging stations. DOTr is planning the "MAPALLA (Manila-Pasig River-Laguna Lake) Ferry System," which will use at least 75 electric ferries, with a completion date of 2026. To complement and support the electrification of ferries, a feasibility study on the electrification of inter-island Ro-Ro ships will be supported.

Challenges and Objectives (Points of View): EV ship technology is established and is easily applicable to bunkering ships and Ro-Ro ships, which have established operational bases. Based on examples such as the

demonstration experiment on the Pasig River and the DOTr's MAPALLA project currently underway in the Philippines, it is possible to popularize and utilize electric ships with appropriate support, which is expected to contribute to decarbonization.

This project could be implemented in conjunction with proposed programs 8 and 9, and could also be linked to the promotion of the Philippine shipbuilding industry (programs 12 and 13).

<Project：Ocean Transport12>

Project Title	Study on Master Plan for Promotion of Philippine Domestic Shipbuilding Industry
Duration	2 years (Short term)
C/P Agency	MARINA, DOTr, DOF, DBP, LBP, and other financial institutions
Implementation Structure	MARINA will lead the study of measures to promote the shipbuilding industry. In the process, MARINA will collaborate and cooperate with related organizations as necessary.
Assistance Scheme	Development survey
Project Purpose	To investigate the current status of shipyards in the Philippines and develop a master plan and specific action plans to promote the shipbuilding industry.
Target Areas	Natiownwide
Beneficiaries	DOTr, MARINA
Inputs	・Expert dispatch (shipbuilding, marine, civil engineering, architecture, socio-economics, industrial park planning, finance, etc.) ・Conduct a social development study to investigate the current status of shipyards in the Philippines and develop measures, policies, and plans to promote the shipbuilding industry in the Philippines.
Project Outline	To investigate the current status of shipyards in the Philippines, consider specific directions for promoting the shipbuilding industry, and develop a master plan and specific action plans.
Potential Collaboration with Other Sectors	MARINA is also considering the construction of an industrial park that will include a shipyard. When planning an industrial park, the possibility of utilizing the results of a project on creating a blue carbon credit framework proposed for implementation by the finance sector will be considered.

<Project：Ocean transport 13>

Project Title	Project for Promotion of the Philippine Domestic Shipbuilding Industry
Duration	2～3 years (Medium to long term)
C/P Agency	DOTr, MARINA, DOST, UP
Implementation Structure	To coordinate with DOTr, MARINA, DOST, UP and other relevant agencies
Assistance Scheme	Loan aids + Technical cooperation

Project Purpose	To implement projects in line with the master plan and action plan (domestic shipbuilding industry promotion plan) developed in Proposal Program No. 12.
Target Areas	Nationwide
Beneficiaries	DOTr, MARINA, DOST, UP
Inputs	・Expert dispatch (shipbuilding, marine, civil engineering, ・architecture, socio-economics, industrial park planning, finance, etc.) ・Financing programs such as low-interest loans to promote the shipbuilding industry, construction of industrial parks, attraction of shipyards, etc., will depend on the results of Proposal Program No. 12. ・Training (domestic, Japan, third country)
Project Outline	The content will depend on the master plan and action plan (domestic shipbuilding industry promotion plan) developed in Proposal Program No. 12, but expected projects include: Implementation of low-interest loan financing programs to promote the shipbuilding industry Construction of eco-industrial parks, attraction of shipyards, etc.
Potential Collaboration with Other Sectors	In the case of industrial park construction, etc., it may be possible to utilize the results of a project to create a framework for blue carbon credits proposed for implementation in the financial sector.

Rationale: The Philippine shipbuilding industry (SBSR) is the fourth largest in the world, employing more than 9,000 people. The SBSR Development Bill (SBSR Act of 2025) is currently in draft form, and MARINA is promoting its passage. The Bill calls for progress assessment of domestic shipbuilding capabilities, research and development, and the development of maritime industrial parks.

In 2021, 357 ships were built domestically, while 476 were imported for domestic use. The slowdown in domestic shipbuilding stems from high taxes on ships built for domestic service (20% corporate tax, 12% value-added tax, and 5-12% customs duties). In addition to the enactment of the SBSR Act, MARINA is working to improve shipyard incentives and financial support for domestic shipbuilding through the Corporate Recovery and Tax Incentives for Enterprises Act (CREATE Act). In addition, the project targets not only domestically operated ships but also the construction of green ships (low-carbon ships), including for export, and is working to support shipyards in increasing their shipbuilding capacity and promote shipbuilding in the Philippines.

Challenges and Objectives (Points of Focus): Based on a request from MARINA, we will conduct a survey on the current situation at domestic shipyards. Based on the survey, we will understand the state of the SBSR industry and make any necessary assessments, as well as formulate a promotion plan to promote the Philippine shipbuilding industry and support its implementation. MARINA is working to promote shipbuilding in the Philippines, and by cooperating with MARINA's efforts to provide financial support for shipbuilding, we hope to contribute to decarbonization by promoting the construction of low-carbon ships.

<Project：Ocean Transport 14＞

Project Title	Seafarer Training Program for Safe Operation of Next-Generation Vessels
Duration	2～3 years (Medium to Long term)
C/P Agency	MARINA, PMMA
Implementation Structure	To coordinate with MARINA, PMMA and other relevant agencies
Assistance Scheme	Technical cooperation
Project Purpose	DOTr, MARINA, private shipping companies, maritime industry
Target Areas	To support the development and implementation of seafarer training and education programs.
Beneficiaries	DOTr, MARINA, private shipping companies, maritime industry
Inputs	・Expert dispatch (ship handling, marine, internal combustion engine, chemical, security, etc.) ・Developing and implementing seafarer education programs. ・Training (domestic, Japan, third country)
Project Outline	To support the implementation of education and training programs to develop seafarers with the specialized knowledge and skills required to handle next-generation fuels such as LNG, methanol, and hydrogen, which are essential for operating next-generation fuel ships.
Potential Collaboration with Other Sectors	-

Rationale: As part of the MIDP, MARINA is promoting the introduction of environmentally friendly fuel vessels and related technologies in domestic shipping, and is working on various technological solutions, including GHG emission countermeasures, marine pollution prevention, conversion of existing ships, and the use of green fuels on domestic routes. In particular, the operation of next-generation fuel lines using LNG, methanol, hydrogen, etc. requires specialized knowledge and skills to handle these fuels from a safety perspective. Therefore, to promote these action plans, it is necessary to promote seafarers' training through programs on the safe operation of ships using green fuels and related technologies.
Challenge and Objective (Point of View): Contribute to the decarbonization of shipping by supporting seafarers' education and training, which is necessary for the introduction of next-generation fuel vessels into domestic shipping, as part of MARINA's efforts.

<Project：Ocean Transport 15＞

Project Title	Development of E-Learning Materials (Information, Education and Communication) on Blue Economy and Marine Environmental Conservation
Duration	1～2 years (Short term)
C/P Agency	MARINA, other relevant agencies

Implementation Structure	To coordinate wtih MARINA and other relevant agencies
Assistance Scheme	Technical cooperation
Project Purpose	To develop e-learning content for education, training, and awareness-raising on blue economy and marine environmental conservation.
Target Areas	Nationwide
Beneficiaries	DOTr, MARINA, private shipping companies, and the maritime industry
Inputs	・Various experts appropriate to the content ・Policy-based e-learning modules ・Hardware for creating and operating e-learning modules as needed ・Training (domestic and in Japan)
Project Outline	To support the development of e-learning content implemented by MARINA as part of the MIDP program. While the content will primarily be for maritime-related education and training conducted by MARINA, it is possible to extend this to content related to the blue economy. Smaller components based on themes are also possible, including policy-based content alone, or a program that includes hardware and training. Flexible components are possible depending on the content being produced.
Potential Collaboration with Other Sectors	-

Rationale: MARINA is working on developing e-learning materials in accordance with the MIDP program, as it believes there is a need to strengthen skills and knowledge related to marine environmental conservation. The Blue Economy Bill also requires compliance with international maritime conventions such as MARPOL 73/78 and OPRC 1990 (International Convention on Oil Pollution Preparedness, Response and Co-operation). The development of e-learning materials will contribute to improving the technical capabilities and capacity building of stakeholders related to the maritime industry and the blue economy.
Challenge and Objective (Point of View): To support the development of e-learning materials that MARINA is promoting.

6.2.3 Study on the Potential Cooperation Project for BARMM on Ocean Transport Sector

Based on the support needs identified in Section 6.2.1, the following cooperation project for the maritime sector in the BARMM region is proposed.

＜Project：Ocean Transport 16＞

Project Title	Ferry Route Development Project in BARMM between the Mindanao Island Provinces

	and the Island Provinces
Duration	3～5 years（Medium to Long term）
C/P Agency	BMARINA, BPMA, MOTC
Implementation Structure	BMARINA, BPMA, MOTC, and port authorities responsible for ports along each target route.
Assistance Scheme	Grand aids, Loan aids
Project Purpose	To survey the current status of ferry routes, ship operations, and port facilities in BARMM To formulate a development plan, and implement development based on the plan.
Target Areas	BARMM Region
Beneficiaries	BMARINA, BPMA, MOTC, ferry users and local residents
Inputs	・Expert dispatch (logistics, maritime, shipping, port planning, decarbonization planning, port facility planning and design, environmental and social considerations, economic and financial analysis, etc.) ・Facility construction, machinery, etc. ・Training (domestic and Japanese) ・Technical cooperation project (post-completion maintenance, management, and operation)
Project Outline	The following will be implemented ・ Identifying passenger demand and cargo trends along the proposed route ・ Assessing the current ferry operation status and port facilities in BARMM ・ Identifying potential ports and facilities and considering expansion and improvement options ・ Developing a plan for a safe, efficient, and sustainable inter-island Ro-Ro transport and operation system Identifying the potential for cold chain logistics using maritime transport to support the fisheries and aquaculture industries Based on the above, a ferry route development plan will be developed and implemented.
Potential Collaboration with Other Sectors	This project will contribute to reducing post-harvest loss of seafood, a challenge in the fisheries sector. The results of a proposed project to develop a blue carbon credit framework in the financial sector may be utilized in this project.

Rationale: The Second Bangsamoro Development Plan prioritizes the transport and transportation sector, including ensuring an efficient transportation system and improving connectivity to market areas within and outside BARMM, with the aim of strengthening inter-island connectivity to facilitate the flow of goods and

people. While there are 11 commercial ports in the BARMM region, domestic vessels primarily call at these ports in the provinces of Basilan, Sulu, and Tawi-Tawi. This results in limited and inefficient maritime connectivity between the mainland and island provinces. This project supports this priority strategy.
Challenges and Objectives (Points of Focus): BARMM is comprised of the main island of Mindanao and its island provinces, surrounded by water. With 36% of the total population residing in the island provinces, maritime transport is an important mode of transportation in the region. Strengthening maritime transport between the island provinces and the mainland requires the development of a regional transport network, including port facilities, ferry routes, and Ro-Ro shipping. This will not only contribute to the relocation of residents, but is also expected to promote economic activity in Tawi-Tawi, the largest seaweed-producing province, Basilan, the largest natural rubber-producing province, and the ecotourism hubs of Tawi-Tawi and Sulu. Furthermore, improving access to the islands of Sulu and Tawi-Tawi will more broadly integrate the region's maritime transport system.

6.2.4 Setting of Priority Projects

(1) Overviews on Evaluation Methods and Results

Each of the proposed projects based on the identified priority issues and support needs was evaluated using the same method as in the fisheries sector, and support needs were identified. The summary of the evaluation results is as follows:

1) Overview of Evaluation on the Port Sector

In the OIN assessment of projects in the ocean transport sector, initiatives that directly contribute to decarbonization (achieving the 1.5° C target) consistently receive extremely high ratings (◎). Specifically, master plan development projects such as the "Philippine National Port Decarbonization Plan" and the " Blue Economy Promotion Plan of LGU/Municipal Ports (Social and Tourism Ports)" received an overall rating of "A" due to their expected wide-ranging environmental and socioeconomic benefits. Meanwhile, the "Development of Base Ports for Offshore Wind Farms" project, while potentially significant for decarbonization, received only an overall rating of "C" due to its limited scope. All projects reported positive socioeconomic benefits (○ F1) through job creation during the construction and operation phases.
After considering their feasibility as ODA projects, projects focused on decarbonization and tourism promotion were deemed highly feasible due to their high alignment with Philippine development policy and local needs. The " Blue Economy Promotion Plan of LGU/Municipal Ports" in particular received an overall rating of "A," reflecting strong support from the DOTr. Projects under the jurisdiction of the PPA, such as the "Philippine National Port Decarbonization Plan," are assessed as having relatively low feasibility as ODA projects due to the PPA's policy of prioritizing self-financing implementation, and receive an overall rating of only "B" or "C." While Japan's superiority in port development technology is highly rated for all projects, the ultimate feasibility is assessed as being heavily dependent on the financing policies and financial capacity of the recipient government.
In the overall priority assessment, the "Blue Economy Promotion Plan of LGU/Municipal Ports" received

the highest rank of "S." This is a result of the plan's high evaluation of its contribution to regional revitalization, its maintenance of essential lifelines for remote island residents, and its strong commitment from DOTr. In contrast, general port development projects (priority "B") were given a low priority because they were likely to be implemented using PPA's own funds, and the development of Coron Port (priority "C") was judged to be of low urgency because it was necessary to closely monitor the progress of similar projects by other donors. In conclusion, the priority in this sector depended on strategic alignment with regional development and a clear support stance from the responsible government agency.

2) Overview of Evaluation on the Maritime Sector

When evaluating maritime projects using OIN parameters, decarbonization-related initiatives receive high marks (◎). Examples include the "Assessment and Master Plan Review of the Nautical Highway System," "Promotion of Biodiesel Fuel Use as a Marine Fuel," and "Feasibility Study on Electrification of Domestic Inter-island Ro-Ro Vessels." Of particular note is the "Development of E-Learning Materials on Blue Economy and Marine Environmental Conservation," which was assessed as having the potential to have multi-layered and broad-based positive impacts on all socioeconomic dimensions (F1-F5) through investment in human resources, resulting in the only project to receive an "S" overall rating. This suggests that while technology-driven projects promise significant environmental outcomes, education initiatives have the potential to deliver the deepest and broadest socioeconomic benefits.

Analysis of the determinants of ODA feasibility in the maritime sector revealed that the "Assessment and Master Plan Review of the Nautical Highway System" received the highest rating of "S." This high feasibility is supported by the strong request from MARINA, continuity with past JICA studies, and Japan's technological superiority. In contrast, two projects of "Promotion of Domestic Shipbuilding Industry" and "Development of E-Learning Materials" received only a "C" rating for feasibility, despite strong local needs, due to concerns about the uncertainty of coordination across multiple government agencies. The feasibility of these areas was assessed as being heavily dependent on the clarity of the lead agency's execution capabilities and a direct connection to Japan's past assistance.

In the overall priority assessment, "Assessment and Master Plan Review of the Nautical Highway System," a fundamental issue for the logistics network of the archipelago nation of the Philippines, received the highest priority rating of "S." Next was "Feasibility Study / Implementation / Technical Cooperation for the development/ introduction of Domestic Inter-island EV Ro-Ro Vessels" (Priority "A"), which is rated as strategically important in terms of modernizing transportation methods. Furthermore, "Development of E-Learning Materials" (priority "A") is flexible enough to be adapted for small-scale cooperation packages on specific themes, such as "Explanation of the Blue Carbon System," and is considered to have a wide range of uses as a versatile capacity-building tool. On the other hand, two projects of "Promotion of Domestic Shipbuilding Industry" and "Seafarer Training Program for Safe Operation of Next-Generation Vessels" require detailed current situation surveys and depend on the future introduction of technology, so they were not necessarily evaluated as being of high urgency at the moment, and were therefore rated a priority of "C." Overall, it is considered better to prioritize projects that have a ripple effect on the entire system, such as the formulation of master plans and the electrification of ships, rather than long-term, organizationally complex interventions.

(2) Priority Project Selection Results

As a result of the above analysis, the following projects were identified as top priorities for the maritime sector to promote the blue economy.

① Blue Economy Promotion Plan (Social and Tourism Port) of LGU/Municipal Ports (Social Development Survey)
② Identified LGU/Municipal Port Development Project (Sector Loan)
③ Assessment and Master Plan Review of the Nautical Highway System
④ Identified Ferry Route Development Project (Yen Loan/Sector Loan)

Proposed projects in the BARMM region were not evaluated as top priorities due to a lack of relevant information and potential uncertainties regarding the implementation capacity of the counterpart.
Details of the above analysis are shown in Table 6.2-4 and Table 6.2-5.

Table 6.2-4 Selection of Priority Projects (Ocean Transport Sector)

Sector	Sub-sector		Project	Impact Analysis using Ocean Impact Navigator							ODA Feasibility										Overall Evaluation	Priotiy Setting
				Environmental					Socio-economic	OIN Evaluation	Consistency with the Country Development Cooperation Policy and JGA		Strength of the recipient government's requests and needs		Recipient government capacity (Feasibility, including operation and maintenance system and budget)		Technical relevance (Relevance, uniqueness, and competitiveness of Japanese technology in the project)		ODA Evaluation			
				A. Sustainably managed ocean resources	B. A clean ocean	C. Thriving and restored marine habitats	D. Towards a 1.5℃ world	E. Climate-resilient coastal communities	F. Positive socio-economic outcomes													
Ocean Transport	Port	1	Philippine National Port Decarbonization Plan (Master Plan 1 for Blue Economy)		○ B3	○ C2, C3	◎ D1～D5	○ E2	○ F1 Implementation of some of the port development projects outlined in the Master Plan has the potential to create jobs during the construction period or within the newly developed port facilities. Furthermore, improvements in cargo handling efficiency and energy consumption at the newly developed port facilities could stimulate economic activity and have a positive impact on the socio-economic situation.	A	◎	As an initiative aimed at decarbonizing ports, it is consistent with climate change countermeasures and environmental management. Furthermore, from the perspective of port facility development, it will contribute to the development of high-quality infrastructure for sustainable economic growth and further improve the business investment environment in the newly developed ports, thereby also aligning with industrial promotion and investment environment improvement.	○	There is a need from the PPA.	◎	As the implementing body, the PPA has strong project implementation capabilities and will have no problems with operation and maintenance capabilities after the facilities are completed. For projects identified through the study, the PPA is strongly willing to implement them using its own funds or local funds, and is less willing to utilize Japanese yen loans.	○	Japan has experience and know-how in carbon-neutral port (equivalent to a green port) initiative. In Japan, the Ministry of Land, Infrastructure, Transport and Tourism amended the Port and Harbor Act and established "Port Decarbonization Promotion Councils" at each port, and national efforts are being implemented.	B	Currently, each port is pursuing its own initiative, so it is necessary to clarify overall policies and priorities. From that perspective, this is a high priority. However, the specific port developments planned as an output of this study will likely be implemented by the PPA using its own budget.	A
		2	Identified Port Decarbonization Project (multiple ports packaged depending on the scale)										△	While there is a development need, PPA is strongly willing to invest its own funds.			△	The Philippines has a strong advantage in experience and technology related to port facility construction and development. The country's major international ports have carbon-neutral port (green port) initiatives at a level comparable to those of Japan's ports.	C	While there is a high demand and need, the PPA, which oversees the port, is likely to undertake these projects using its own budget, making this a low priority.	B
		3	PCG Base Port Development in Coron, Northern Palawan			○ C1,C3	○ D2		○ F1 There is a possibility that jobs will be created during the construction period for the base development.	B	○	Because the project involves the development of maritime security-related facilities, it is consistent with disaster prevention and environmental management from the perspectives of strengthening law enforcement capabilities through security and counter-terrorism measures, and IUU countermeasures.	○	A feasibility study has been conducted by the PCG, and cooperation is expected.	○	While the PCG has experience in implementing similar base development plans and procuring patrol boats, its skills and budgetary capacity for maintaining and managing the PCG-owned base port are unknown.	○	Japan has considerable experience and technical superiority in port facility construction and development.	C	A base port is currently being constructed in South Palawan (Buliluyan) with U.S. assistance, and a base development project is underway in Subic Bay with Japanese assistance. We believe it is necessary to assess the progress of these projects, and have therefore lowered their priority.	C

Sector	Sub-sector		Project	Impact Analysis using Ocean Impact Navigator						OIN Evaluation	ODA Feasibility								ODA Evaluation	Overall Evaluation	Priotiy Setting
				Environmental					Socio-economic		Consistency with the Country Development Cooperation Policy and JGA		Strength of the recipient government's requests and needs		Recipient government capacity (Feasibility, including operation and maintenance system and budget)		Technical relevance (Relevance, uniqueness, and competitiveness of Japanese technology in the project)				
				A. Sustainably managed ocean resources	B. A clean ocean	C. Thriving and restored marine habitats	D. Towards a 1.5℃ world	E. Climate-resilient coastal communities	F. Positive socio-economic outcomes												
Ocean Transport	Port	4	Blue Economy Promotion Plan (Social and Tourism Port) of LGU/Municipal Ports		○ B3	○ C2, C3	◎ D1～D5	○ E2	○ F1 Implementation of some of the routes outlined in the Master Plan could potentially create jobs during construction or within the developed port facilities. Furthermore, port-centered tourism development will generate tourism revenue, potentially contributing to socio-economic development, such as regional revitalization.	A	◎	This initiative addresses tourism development in conjunction with decarbonization of the port, and is therefore consistent with climate change countermeasures and environmental management. Furthermore, from the perspective of port facility development, it is consistent with the development of high-quality infrastructure for sustainable economic growth. Furthermore, from the perspective of tourism development, it is consistent with industrial promotion and investment climate improvement.	◎	DOTr is strongly committed to implementing the project. Regional development through ecotourism and the role of the port as a lifeline on remote islands are in high demand for development and maintenance.	○	Since the LGU will be responsible for project implementation and maintenance after completion, it does not have a large human and budgetary capacity. Therefore, when selecting an implementation site, consideration must be given to tourism potential and sustainability. However, given that the DOTr has already implemented projects at approximately 50 LGU ports, we can expect a reasonable level of experience and capacity.	◎	Japan has experience and technology in areas such as remote island shipping routes and inter-island ferries. It has a strong advantage in experience and technology in port facility construction and maintenance.	A	LGU ports serve as lifelines for remote islands and are key to transporting agricultural products and fishery products from rural areas to nearby markets. The DOTr, the supervisory agency, is actively working on these issues. Given these factors, we believe that LGU ports are a priority issue for contributing to regional development in the Philippines, including promoting eco-tourism.	S
		5	Identified LGU/Municipal Port Development Project (multiple ports packaged depending on the scale)																	Through the nationwide survey described above, we can identify areas, ports, and projects with many challenges and high potential for development and renovation, and prioritize them as high-priority projects, thereby further enhancing the effectiveness of aids.	
		6	Development of Base Ports for Offshore Wind Farms				◎ D1,D2, D4,D5		○ F1、F5 The implementation of several of the routes outlined in the master plan could potentially create jobs during construction or within the port facilities. The shift to renewable energy sources will reduce particulate matter emissions.	C	○	Developing port facilities for offshore wind power generation will contribute to the development of high-quality infrastructure for sustainable economic growth. Furthermore, contributing to the construction of clean energy offshore wind power generation is consistent with climate change countermeasures and environmental management.	○	Currently, plans are limited to three existing locations, but the introduction of offshore wind power generation is being considered everywhere, so there is significant potential future demand.	○	Depending on the port management entity. Ports under PPA jurisdiction are likely to have sufficient capacity.	○	Japan has also constructed base ports for offshore wind power generation, and has the technology and experience.	C	Currently, three locations - Mercedes, Batangas, and Currimao - have been selected as base ports for offshore wind power generation, and specific surveys and construction are underway. DOE and DOTr are jointly considering locations for offshore wind power generation to be constructed after 2028. Therefore, although this is considered a promising cooperation plan for the future, it is not currently considered a high priority or urgent project.	C
		7	Technical Cooperation on Port Decarbonization at a Specific Port				◎ D1,D2, D4,D5		○F5 By supplying shore-based power, it will be possible to switch from diesel-fueled ship engines to renewable energy, thereby reducing particulate matter (such as NOx) emissions.	C	○	Because it involves the development of a power supply system for ships within port facilities, it will contribute to the development of high-quality infrastructure for sustainable economic growth. Furthermore, by supplying power to moored ships, it will eliminate diesel engine power generation and replace it with clean energy, achieving decarbonization, which is consistent with climate change countermeasures and environmental management.	○	There is a need for cooperation on specific and unique technologies within the unique Green Port initiatives being implemented at major international ports.	○	It depends on the port management entity. Ports under the jurisdiction of PPAs are likely to have sufficient capacity.	○	Japan has experience in carbon-neutral port initiatives.	C	Currently, large international ports are actively working toward becoming Green Ports based on the APSN's GPAS. While specific efforts are being made to reduce carbon emissions at port facilities, introduce solar power, and switch to LED lighting, there is potential for technical support for elemental technologies such as shore power, hydrogen utilization, and the use of next-generation energy.	C

Sector	Sub-sector		Project	Impact Analysis using Ocean Impact Navigator						OIN Evaluation	ODA Feasibility								ODA Evaluation	Overall Evaluation	Priotiy Setting
				Environmental					Socio-economic		Consistency with the Country Development Cooperation Policy and JGA		Strength of the recipient government's requests and needs		Recipient government capacity (Feasibility, including operation and maintenance system and budget)		Technical relevance (Relevance, uniqueness, and competitiveness of Japanese technology in the project)				
				A. Sustainably managed ocean resources	B. A clean ocean	C. Thriving and restored marine habitats	D. Towards a 1.5℃ world	E. Climate-resilient coastal communities	F. Positive socio-economic outcomes												
Ocean Transport	Maritime	8	Assessment and Master Plan Review of the Nautical Highway System	○ A2			◎ D1,D2, D4,D5		○ F1、F5 Implementing the development of some of the routes outlined in the Master Plan could potentially create jobs during the construction period or within the newly developed port facilities. Furthermore, the development of maritime transport routes could lead to seamless and streamlined movement of people and goods, shortening logistics lead times and creating positive economic effects. At the same time, the introduction of electric vessels and next-generation energy vessels on ferry routes could lead to reduced particulate matter and CO2 emissions.	B	◎	This initiative aims to facilitate maritime traffic and decarbonize ships and ports, thereby aligning with climate change countermeasures and environmental management. Furthermore, from the perspective of developing port facilities for Ro-Ro ships, it will lead to the development of high-quality infrastructure for sustainable economic growth, and the improvement of the business investment environment through further developed ports and shorter logistics lead times, thereby also aligning with industrial promotion and investment climate development.	◎	This is a program that MARINA is promoting based on the MIDP program. JICA conducted the "Master Plan Study for Strategic Development of the National Port Network" in 2004, and MARINA is eager to review and update this master plan. MARINA also emphasizes the need for the development of a maritime transport network in the relatively underdeveloped southern Philippines, demonstrating a strong awareness and need for development.	◎	MARINA has experience in similar studies and projects in the past, so it is believed to have the capacity.	◎	A review and update of the "Master Plan Study for Strategic Development of the National Port Network" conducted by JICA in 2004 will contribute to the sustainable contribution of Japan's ODA. Furthermore, Japan has an advantage in terms of experience and technology in the development of inter-island ferries and port facilities, making the project highly relevant.	S	As the Philippines is an island nation, the development of a maritime transport network, along with the development of road networks, is a key challenge for building the country's logistics network. MARINA, which is responsible for shipping and maritime-related policies, is actively promoting the development of nautical highways nationwide under the MIDP program, and therefore considers this a high priority.	S
		9	Identified Ferry Route Development Project																	MARINA is particularly focused on developing transportation networks that connect the islands surrounding Mindanao in the southern Philippines. The aforementioned national master plan study will identify necessary maritime transport routes, and these will be prioritized based on their importance.	
		10	Promotion of Biodiesel Fuel Use as a Marine Fuel		○ B3		◎ D1,D2, D4,D5		○ F1、F5 Because biodiesel can be directly applied to existing diesel engines, there is no need for engine replacement or modifications. This allows biodiesel to be procured inexpensively, promoting sales and potentially creating jobs through market development. Furthermore, using a fuel with low CO2 emissions leads to reduced particulate matter and CO2 emissions.	B	○	This project promotes the widespread use of biodiesel fuel and aims to decarbonize ports from shipping, thereby aligning with climate change countermeasures and environmental management. Furthermore, since it supports the production and sales of biodiesel fuel, it is consistent with industrial development and investment climate improvement.	◎	There is a strong desire to increase the biodiesel blend rate (3%) in currently sold diesel fuel. Furthermore, there is a strong desire for its application to marine fuel, which has not yet been introduced, and there is a high need for it.	◎	In the Philippines, the Bio Fuels Act requires the use of biodiesel fuel at a blend rate of 3% for land vehicles. Biodiesel is produced domestically in the Philippines, and its production capacity is reportedly sufficient to cover a 7% blending rate. However, its application to ships has yet to be realized. Cooperation between MARINA, DOE, and other relevant agencies is essential for its introduction to ships.	○	Although production volumes are small, biodiesel fuel has already been commercialized in Japan and is being used in decarbonization efforts at construction sites and elsewhere. Japan has also demonstrated the use of biodiesel fuel in coastal and ocean-going vessels, and is currently conducting demonstration experiments on a small, hybrid passenger ship powered by biodiesel and hydrogen fuel. Japan has the technological capabilities to do so.	B	Efforts are underway to use next-generation fuels such as methanol, ammonia, and hydrogen on ships, but widespread adoption will take time due to numerous challenges, including fuel procurement and engine compatibility. Biodiesel, on the other hand, has the advantage of being directly compatible with existing engines. The Philippines has a monthly production capacity of approximately 40 million liters of biodiesel using coconuts, but production remains at around 50% due to low demand. Biofuel for land vehicles (with a 3% blend) is already commercially available and in practical use, but has not yet been adopted for ships, so promoting its use is considered effective.	B

Sector	Sub-sector		Project	Impact Analysis using Ocean Impact Navigator							ODA Feasibility										Overall Evaluation	Priotiy Setting
				Environmental					Socio-economic	OIN Evaluation	Consistency with the Country Development Cooperation Policy and JGA		Strength of the recipient government's requests and needs		Recipient government capacity (Feasibility, including operation and maintenance system and budget)		Technical relevance (Relevance, uniqueness, and competitiveness of Japanese technology in the project)		ODA Evaluation			
				A. Sustainably managed ocean resources	B. A clean ocean	C. Thriving and restored marine habitats	D. Towards a 1.5℃ world	E. Climate-resilient coastal communities	F. Positive socio-economic outcomes													
Ocean Transport	Maritime	11	Feasibility Study/Implementation/Technical Cooperation for the development/introduction of Domestic Inter-island EV Ro-Ro Vessels		○ B3		◎ D1,D2, D4,D5		○ F5 The introduction of electric vessels will lead to reduced particulate matter and CO2 emissions.	B	○	Because the introduction of electric vessels is an initiative aimed at decarbonization, it is consistent with climate change countermeasures and environmental management. Furthermore, because it supports the promotion of the manufacture and sales of electric vessels, it is consistent with industrial development and investment environment improvement.	◎	With demonstration experiments of electric ferries currently being conducted on the Pasig River, there is high potential for future development and introduction. Furthermore, as mentioned in the MIDP, there is a high demand for their introduction.	◎	The Philippines has the capacity to develop and build small ferries, and as part of the MIDP, MARINA is promoting the decarbonization of inter-island ferries on short-distance routes, demonstrating sufficient capacity.	◎	In Japan, electric vessels for bunkering are currently in operation in Tokyo Bay. Furthermore, in domestic shipping, trial operations of diesel-electric hybrid bulk carriers have been conducted, demonstrating ample experience and technology.	A	UP is conducting demonstration experiments of electric ferries on the Pasig River in Manila. For the operation of EV ships, it is essential that charging facilities are available at ports of entry and call, but this can function effectively for Ro-Ro ships and ferries that follow fixed routes. Therefore, in conjunction with the development of maritime transport networks proposed in points 8 and 9, converting Ro-Ro ships between domestic islands to EVs is an extremely high priority and could be an effective cooperation project.	A
		12	Study on Master Plan for Promotion of Philippine Domestic Shipbuilding Industry				○ D1,D2, D4,D5		○ F1 By promoting and revitalizing the Philippine shipbuilding industry through this current situation survey, new jobs could be created and society and the economy could be revitalized.	C	○	From the perspective of promoting the Philippine shipbuilding industry, this project is consistent with industrial promotion and investment climate improvement.	◎	This project is being promoted by MARINA under the MIDP program, and MARINA strongly requested it in order to promote the shipbuilding industry. The country has many shipyards, so there is a high need.	○	MARINA is working to promote the domestic shipbuilding industry in accordance with the MIDP program and is proposing the introduction of a financial support and incentive system for the domestic shipbuilding industry under the framework of the SBSR Development Bill. This program is expected to involve multiple relevant organizations, but the capacity of these organizations to collaborate is unknown.	○	In Japan, the development of next-generation ships is being systematically promoted through projects such as the "Next-Generation Ship Development" project by NEDO utilizing the Green Innovation Fund and the "Zero-Emission Ship Project" by the Nippon Foundation. Japan also has considerable experience and technological advantages in the development and promotion of shipbuilding facilities.	C	While MARINA is implementing this initiative in accordance with the MIDP program, one issue is the lack of an accurate understanding of the current state of the Philippine shipbuilding industry. This will be addressed through an initial survey of the current situation, and specific support measures will be considered in consultation with MARINA based on the information obtained from the survey. While this project is expected to contribute significantly to the promotion of shipbuilding in the country, it has been given a low priority due to the unknown capacity for collaboration among related organizations.	C
		13	Project for Promotion of the Philippine Domestic Shipbuilding Industry																			

Sector	Sub-sector		Project	Impact Analysis using Ocean Impact Navigator							ODA Feasibility										Overall Evaluation	Priotiy Setting
				Environmental					Socio-economic	OIN Evaluation	Consistency with the Country Development Cooperation Policy and JGA		Strength of the recipient government's requests and needs		Recipient government capacity (Feasibility, including operation and maintenance system and budget)		Technical relevance (Relevance, uniqueness, and competitiveness of Japanese technology in the project)		ODA Evaluation			
				A. Sustainably managed ocean resources	B. A clean ocean	C. Thriving and restored marine habitats	D. Towards a 1.5℃ world	E. Climate-resilient coastal communities	F. Positive socio-economic outcomes													
Ocean Transport	Maritime	14	Seafarer Training Program for Safe Operation of Next-Generation Vessels				○ D1,D2, D4,D5		◎ F1, F2, F5 As the world's number one supplier of seafarers, increasing the number of people trained in seafarer education and training programs will lead to new job creation. Increasing the number of people trained in handling next-generation fuels, such as LNG, ammonia, hydrogen, and metallocarbons, will contribute to decarbonization and reduce particulate matter emissions from ships. C	C	○	Because it is a seafarer training and human resource development program, it is consistent with promoting human and social development. Furthermore, since it will promote the safe operation of next-generation fuel ships, it is consistent with climate change countermeasures and environmental management.	◎	As the world's number one supplier of seafarers, there is high demand from around the world.	△	Collaboration between MARINA and PMMA will be an issue.	○	Based on its track record in developing next-generation ships, Japan possesses advanced technology, know-how, and implementation capabilities for coastal shipping operations.	C	Although there are still challenges in using next-generation fuels such as methanol, ammonia, hydrogen, LNG, and biodiesel on ships, these ships have already begun operating and are expected to increase in number in the future. As all fuels require special handling and are dangerous, seafarers who are familiar with and well-versed in how to handle them are essential for operating next-generation fuel ships. As the Philippines is the world's number one supplier of seafarers, it is important to train seafarers with the skills necessary for the safe operation of next-generation fuel ships. Although this is not a high priority, it is necessary to respond to potential future needs.	C
		15	Development of E-Learning Materials (Information, Education and Communication) on Blue Economy and Marine Environmental Conservation	○ A1～A4	○ B1～B6	○ C1～C6	○ D1～D5	○ E1～E4	◎ F1～ F5 Depending on the content of the e-learning program materials, they can contribute to the necessary human resource development and education. By appropriately selecting the content and target audience, the materials can be used for a wide range of purposes, resulting in a significant social and economic impact through education.	S	○	Because the e-learning materials are related to the marine environment, they are consistent with climate change countermeasures and environmental management. Furthermore, because they are materials aimed at human resource development, they are consistent with promoting human and social development.	◎	MARINA is actively promoting this program. Because e-learning content can be tailored to a wide range of needs, we can expect to see demand from various stakeholders.	○	Because this is a program based on the MIDP, MARINA is the lead agency, but many other ministries and agencies will be involved depending on the content. It is unknown to what extent MARINA will be able to coordinate and coordinate with other relevant ministries.	○	From the perspective of the blue economy, Japan has a wide range of experts, experience, and know-how in areas such as coastal and marine ecosystem conservation, carbon-neutral ports, and promoting the decarbonization of ships using next-generation fuels.	C	Based on the MIDP program, MARINA is developing and maintaining e-learning systems, teaching materials, and e-libraries. As part of blue economy-related educational programs, various content can be created, provided, and utilized according to the program's objectives and target audience. Relatively small-scale cooperation is also possible, depending on the selected theme and target audience, and various initiatives are possible. For example, developing and providing content that explains and teaches the blue carbon credit system could contribute to the dissemination of the system, making it a high priority.	A

Evaluation Index of Ocean Impact Navigator (OIN)

◎ = Each inidicator is the central objective of the project

○ = Items that are not the main objective, but are expected to produce results as a result of activities

△＝Items that can be expected to be effective depending on the plan

Evaluation Index of ODA Feasibility

◎＝High Suitability

○＝Middle Suitability

△＝Low Suitability

Evaluation Index of Overall Evaluation

S = Top Priority

A= High

B = Medium

C= Low

Source: JICA Study Team

Table 6.2-5 Selection of Priority Projects (Ocean Transport Sector, BARMM)

Sector	Sub-sector		Project	Impact Analysis using Ocean Impact Navigator							ODA Feasibility										Overall Evaluation	Priotiy Setting
				Environmental					Socio-economic	OIN Evaluation	Consistency with the Country Development Cooperation Policy and JGA		Strength of the recipient government's requests and needs		Recipient government capacity (Feasibility, including operation and maintenance system and budget)		Technical relevance (Relevance, uniqueness, and competitiveness of Japanese technology in the project)		ODA Evaluation			
				A. Sustainably managed ocean resources	B. A clean ocean	C. Thriving and restored marine habitats	D. Towards a 1.5℃ world	E. Climate-resilient coastal communities	F. Positive socio-economic outcomes													
Ocean Transport	BARMM	16	Ferry Route Development Project in BARMM between the Mindanao Island Provinces and the Island Provinces	○ A2			◎ D1,D2, D4,D5	○ E4	○ F1、F5 The implementation of route development is expected to create jobs during the construction period and within the developed port facilities. Furthermore, as shipping routes are developed, it is expected that the movement of people and goods will become more seamless and smoother, and that positive economic effects will be created by shortening logistics lead times. At the same time, the introduction of electric ships and next-generation energy ships on ferry routes will lead to a reduction in particulate matter and CO2 emissions.	B	◎	Facilitating maritime traffic will contribute to the decarbonization of ships and ports, thereby aligning with climate change countermeasures and environmental management. Furthermore, from the perspective of developing port facilities for Ro-Ro ships, the development of high-quality infrastructure for sustainable economic growth and improved connectivity to neighboring markets will lead to shorter logistics lead times and a more favorable business investment environment, thereby aligning with industrial promotion and investment climate development.	○	It is listed as a priority strategy for the transportation sector in the Second Bangsamoro Development Plan. The strategy aims to strengthen inter-island connectivity to facilitate the flow of goods and people, ensuring an efficient transportation system and improving connectivity to market areas within and outside BARMM. This is thought to be a high need for the local government, but sufficient information is unavailable.	△	Due to incomplete follow-up and responses after the web meetings and the lack of face-to-face meetings, the implementation capacity and management structure are unknown.	◎	Japan has an advantage in terms of experience and technology in the development of inter-island ferries and port facilities, making the project highly relevant.	B	In the BARMM, an island region, the development of a maritime transport network is considered a key issue for building a logistics network. It appears that this is positioned as a priority strategy for the transportation sector in the Second Bangsamoro Development Plan. However, due to a lack of surrounding information, there are potential uncertainties regarding the relevance of the needs and the capacity for implementation.	B

Evaluation Index of Ocean Impact Navigator (OIN)
◎ = Each inidicator is the central objective of the project
○ = Items that are not the main objective, but are expected to produce results as a result of activities
△＝Items that can be expected to be effective depending on the plan

Evaluation Index of ODA Feasibility
◎＝High Suitability
○＝Middle Suitability
△＝Low Suitability

Evaluation Index of Overall Evaluation
S = Top Priority
A= High
B = Medium
C= Low

Source: JICA Study Team

6.2.5 Alignment with the Needs of Japanese Companies

(1) The Position of Japanese Companies in Green Port Activities in the Philippines

As seen in this survey, large international ports, such as Manila North-South Port, Batangas Port, and Subic Port, are independently advancing decarbonization (green port) initiatives in line with APEC's GPAS, led by private terminal operators. Green port initiatives include low-carbon port equipment, electric vehicle fleets, LED yard and interior lighting, energy-saving inverter air conditioners, solar power generation, shore-based power supply to ships (switching from power generated by ship engines while berthed in port to power supplied from shore using renewable energy), wind power generation, mangrove planting, and seaweed bed development, similar to those implemented at carbon-neutral ports in Japan.

While the Port of Manila, the Port of Batangas, and the Port of Subic were all previously constructed with Japanese ODA loans, green port initiatives are largely driven by private companies that operate terminals under concession agreements with port authorities, leaving little room for ODA cooperation.

Many Japanese companies are also actively involved in these green port/carbon-neutral port initiatives, and many of them possess the necessary products and technical capabilities. There are even examples of Japanese manufacturers introducing products to Philippine ports. However, because the procurement of related materials and equipment is carried out through international bidding conducted by private terminal operators, price competitiveness is a major factor, making it difficult for Japanese manufacturers to compete.

(2) Potential for Japanese Corporate Participation through Loan Aid

Since many of the Philippines' ports are under the jurisdiction of PPA, the proposed cooperation programs compiled in this study take these ports into consideration. Considering the possibility of loan aid for infrastructure development through green port/carbon-neutral port initiatives related to port decarbonization, the proposed programs include the "Philippine National Port Decarbonization Plan (Blue Economy Master Plan Development)" (Proposed Program 1) and the "Port Decarbonization Project (Packaging Multiple Ports Based on Size)" (Proposed Program 2). These programs are not targeted at the large international ports mentioned above, but rather at medium- to small-scale ports under PPA's jurisdiction that are thought to have not made significant progress toward green port development. However, PPA receives stable revenue from the operation of the international ports under its jurisdiction and is believed to have relatively ample financial resources. Based on interviews conducted in this study, PPA appears reluctant to pursue port development using Japanese yen loans or foreign loans, preferring to focus on self-financing or domestic Philippine-funded development and construction.

Therefore, it is becoming increasingly difficult to establish a flow in which port development is carried out through yen loan projects, as has been done in the past, and, as an extension of this, encourages Japanese companies to procure equipment and materials related to decarbonization.

(3) Challenges Related to Next-Generation Fuels and the Needs of Japanese Companies

Carbon-neutral port/green port initiatives include the use of next-generation fuels (e.g., hydrogen, methanol,

ammonia, biodiesel) in vehicles and vessels. While the technologies for utilizing these fuels are generally well-established, challenges remain in fuel procurement and supply chains, and widespread adoption is expected to take time.

Among next-generation fuels, hydrogen is expected to be used relatively widely in automobiles, trucks, cargo handling equipment, ships, and other applications. Hydrogen vehicles, fuel cell-powered cargo handling equipment, and hydrogen ships are already in practical use, and products exist. However, hydrogen production costs are high, the supply chain is underdeveloped, and widespread adoption is taking time. The issue exists in both Japan and the Philippines. While many Japanese manufacturers possess hydrogen-related technologies and products, for the reasons mentioned above, their current opportunities are extremely limited.

6.3 Potential Cooperation Project for Financial Sector

6.3.1 Identifying Cooporation Needs from Priority Issues

To develop potential cooperation project proposals addressing the priority issues identified in the financial sector in the previous chapter, it organizes the rationale and key considerations for formulating specific projects as follows.

Table 6.3-1 Cooperation Needs by Priority Issues in the Financial Sector

Priority Issue		Cooperation Needs
Priority Issue 1	Promotion of Blue Finance	Fostering the market and creating creditworthy and investment-grade projects to promote the issuance of Blue Bonds and so on.
Priority Issue 2	Establishing Blue Carbon Credit Systems	Developing projects that generate blue carbon credits and establishing methods and systems for credit evaluation.

Source: JICA Study Team

6.3.2 Consideration of Potential Cooperation Projects in the Financial Sector

In line with the above cooperation needs, it proposes the following potential cooperation project proposals to address each priority issue.

(1) Potential Cooperation Projects on Blue Finance

The following table outlines the proposed potential cooperation project “Promoting Blue Finance.” While blue finance achievements in the Philippines remain limited at present, significant interest and demand have been expressed by private banks, the central bank, the SEC, and other entities. To expand the market going forward, it is necessary to promote awareness of the significance of blue finance among stakeholders and

establish incentives. Furthermore, there is no confirmed precedent of government agencies or LGUs taking the lead in issuing blue bonds. Therefore, it is a critical challenge for the public sector to demonstrate a proactive stance in promoting blue finance.

This project aims to support the dissemination of blue finance's significance, the development of institutional frameworks to facilitate blue bond issuance, and the creation of an environment where LGUs and financial institutions can effectively utilize blue finance. This is expected to deepen stakeholder understanding of blue finance, advance the development of an implementation environment encompassing institutional and incentive aspects, and promote the utilization of blue finance. Furthermore, proactive promotion of blue finance by the national government and LGUs will signal their commitment to the blue economy both domestically and internationally, and leads encouraging private financial institutions and corporations to engage in blue finance initiatives.

New financing options for the program are expanding, and it is expected that this will contribute to the sustainable promotion of the Blue Economy.

<Project: Finance 01>

Project Title	Promoting Blue Finance
Duration	Three years
C/P Agency	DOF
Implementation Structure	DOF, BOP, SEC, DBM, LGU, Private Banks (potentially with BDO and BPI)
Assistance Scheme	Technical Assistance
Project Purpose	Promote blue finance, which mobilizes funds for projects contributing to the blue economy.
Target Areas	Manila-centered
Beneficiaries	Direct Beneficiaries: DOF, BOP, SEC, DBM, LGU, Private Banks (BDO, BPI) Ultimate Beneficiaries: Blue Economy-related businesses eligible to issue Blue Bonds
Inputs	Dispatch of experts (finance, public finance, policy/institutional design, local government)
Project Outline	**Outcome 1: Dissemination of Blue Finance Significance to LGUs, Financial**

	Institutions, Corporations, and General Investors ・Conduct dissemination seminars for stakeholders with C/P (including investor-perspective case studies (covering risk sharing, return structures, and guarantees) and mock structuring using domestic Philippine projects) ・Share case studies from Japanese local governments, private corporations, and private financial institutions **Outcome 2: Establish systemsto promote Blue-Qualified Projects** ・Establish a certification system for companies contributing to the Blue Economy ・Develop reporting and monitoring methodologies aligned with the SEC's "Blue Project Eligibility Guidelines" (in collaboration with Agrabah) and compile a case study collection of projects in the Philippines **Outcome 3: Create a roadmap for LGUs to issue Blue Bonds.** ・Holding seminars to introduce case studies from Japanese local governments ・Creating a roadmap for blue bond issuance (selection of pilot LGUs, technical support package for LGUs, consideration of credit enhancement schemes by the national government or government-affiliated banks) ・Reviewing LGU systems and strengthening capacities for blue bond issuance **Outcome 4: Development of a Blue Microfinance Framework for Government-Owned Banks** ・Develop a Blue Microfinance Framework for government-owned banks aligned with the BE Law (designing incentives linked to blue carbon/conservation outcomes, integration with existing social service/community development project financing) ・Create a simplified impact assessment indicator (livelihood improvement + environmental enhancement)
Potential Collaboration with Other Sectors	Through support to LGUs, local blue economy-related projects (fisheries, shipping, etc.) will gain easier access to funding.

(2) Potential Cooperation Project on Blue Carbon Credits

The table below outlines the proposed Blue Carbon Credit Cooperation Projects: “Blue Carbon Credit Generation through MSMEs Support” and “Support for Establishing Blue Carbon Credit Assessment and Management Systems.” While discussions on blue carbon credits are being led primarily by the DENR, cooperation is needed for establishing quantification (MRV) methodologies for blue carbon, collecting baseline data, and activating the carbon credit trading market. Through J-Blue Credit, Japan possesses expertise and experience in institutional design, system operation, market formation, and credit generation for blue carbon credits. This makes the blue carbon credit sector an area where Japan can leverage its strengths for cooperation.

Furthermore, once the blue carbon credit system is established in the Philippines, projects that can generate

credits will be essential. Therefore, alongside institutional development, fostering business entities capable of generating blue carbon credit is a critical challenge. Particularly in blue carbon-related fields such as mangrove restoration and seagrass bed conservation/restoration, private companies possessing relevant technologies and business models are expected to play a role. However, scaling up these projects remains a challenge.

The "Blue Carbon Credit Generation through MSMEs Support" project aims to promote blue carbon credit generation by supporting MSMEs. It will collaborate with DOST's existing support framework[28] to provide scale-up support for MSMEs related to the blue economy. While DOST offers diverse programs funded by the Philippine government budget to support MSMEs and startups, it does not sufficiently address challenges MSMEs face when aiming for business expansion (achieving sustainability sufficient to generate carbon credits), such as scaling up support and corporate valuation. This indicates room for complementary cooperation.

This project will complement existing support by providing scale-up assistance to blue economy-related MSMEs in their business expansion phase, aiming to cultivate enterprises that could become future generators of blue carbon credits. Furthermore, aligned with the business growth of MSMEs, it will implement pilot projects for blue carbon credit generation. By verifying and systematizing credit valuation methods and generation processes, it also aims to contribute to enhancing the effectiveness of the blue carbon credit system.

<Project: Finance 02>

Project Title	Blue Carbon Credit Generation through MSMEs Support
Duration	Three years
C/P Agency	DOST
Implementation Structure	DOST, MOST
Assistance Scheme	Technical Assistace
Project Purpose	By fostering the development of more blue economy-related MSMEs, the number of enterprises capable of issuing blue carbon credits in the future will increase.
Target Areas	Manila, BARMM Region
Beneficiaries	Direct beneficiaries: DOST, MOST Ultimate beneficiaries: MSMEs businesses
Inputs	Dispatch of experts (Industry Development, MSMEs Support, Social Impact Assessment)

[28] SETUP Program: Provides interest-free funds for equipment purchases, particularly for MSMEs, with repayment required within three years. Through SET-UP in particular, it supports approximately 8,000 MSMEs nationwide.

Project Outline	**Outcome 1: Establishing a support scheme within the SETUP program for MSMEs in the blue sector with potential for carbon credit generation** ・Establish an MSMEs support scheme specialized for the blue sector by leveraging the existing SETUP program ・Introduce Japanese companies with potential synergies and facilitate matching **Outcome 2: Support for carbon credit generation projects** ・Establish evaluation methods for companies contributing to the blue sector, collaborating with PCAARRD and referencing the "Ocean Impact Navigator" ・Implement carbon credit calculation pilot projects with companies supported in Outcome 1 ・Promote the concept of carbon credits in the BARMM region and create a list of potentially eligible projects
Potential Collaboration with Other Sectors	Utilize new technologies from Blue Economy-related MSMEs in fisheries and shipping projects. For example, Fish-i technology (for monitoring and analyzing underwater ecosystems) can be applied to monitor the outcomes of fisheries and shipping projects.

The “Support for Establishing Blue Carbon Credit Assessment and Management Systems” project aims to support the creation of blue carbon credits for seagrass and seaweed, covering everything from establishing scientific evidence and building systems to connecting to international credit systems (JCM).To assess the feasibility of introducing blue carbon credits, it is essential to understand the distribution status and carbon sequestration potential of seagrass and seaweed nationwide. Establishing an inventory is therefore a critical task.

This project will first conduct baseline surveys to understand the nationwide distribution and scale of seagrass and seaweed. Based on these results, it will calculate inventories, thereby establishing the scientific and technical foundation necessary for blue carbon credit creation. Furthermore, by supporting the establishment of an operating body responsible for evaluating, certifying, issuing, and managing blue carbon credits, the project aims to establish a system for the continuous and transparent operation of these credits. Furthermore, the project will leverage the outcomes of these surveys and institutional development to pursue registration under the Joint Crediting Mechanism (JCM). Interviews also indicate that the ADB’s existing Policy-Based Loan program includes pilot projects for blue carbon credit generation, making co-financing for the next phase a potential option.

Advancing the establishment of a carbon credit market through this program is expected to create incentives for businesses engaged in blue economy-related projects, thereby expanding initiatives in the blue economy sector.

<Project: Finance 03>

Project Title	Support for Establishing Blue Carbon Credit Assessment and Management Systems
Duration	Three years
C/P Agency	DENR-CCS

Implementation Structure	DENR-CCS, DENR-BMB, DOF, BFAR, PSA
Assistance Scheme	Technical Assistance, Grant Aid (Cooperative Financing)
Project Purpose	The trading of blue carbon credits will add value to blue economy-related projects and enhance their recognition.
Target Areas	Manila-centered
Beneficiaries	Direct Beneficiaries: DENR-CCS, DENR-BMB, DOF, BFAR, PSA Ultimate Beneficiaries: Blue Carbon Credit Generating Businesses
Inputs	Dispatch of experts (Blue Carbon Credits, Social Impact Assessment)
Project Outline	**Outcome 1: Nationwide baselinesurvey for seagrass and seaweed inventory utilizing BlueCARE results** ・Conduct baseline survey ・Perform inventory calculation **Outcome 2: Support for establishing credit evaluation and management systems (evaluation/management bodies,evaluation systems)** ・Collaborate with existing TWGs to develop credit evaluation frameworks and select (establish) evaluation bodies ・Support the establishment of a credit management body (for Blue Credit certification, issuance, and management) in coordination with existing TWGs **Outcome 3. Project Development under the JCM** ・Utilize the assessment methodologies and systems established in Outcomes 1 and 2 to select projects for JCM registration ・Register projects under the JCM **Outcome 4. Collaborative Support with ADB through PBL Sub-Program 2** ・Support implementation of pilot projects for blue carbon credit generation
Coordination with Other Donor Projects	ADB's PBL Subprogramme 2
Potential Collaboration with Other Sectors	Increased value-added for blue economy-related projects (fisheries, shipping, etc.) boosts implementers' motivation.

6.3.3 Selection of Priority Potential Cooperation Project

For each potential cooperation project proposal based on the identified priority issues, an evaluation was conducted using the same methodology as for the fisheries sector. This process selected the projects that the financial sector should prioritize (Table 6.3-2). The selection criteria were twofold: the “Ocean Impact Navigator Impact Indicators” and “ODA Feasibility.” For details on the evaluation approach and methodology, refer to “6.1.4 Selection of Priority Projects, (1) Method for Selecting Priority Projects.”

Project 1 is the “Promoting Blue Finance” project as technical assistance; Project 2 is the “Blue Carbon Credit Generation through MSMEs Suppoert” project as technical assistance; Project 3 is the “Support for

Establishing Blue Carbon Credit Assessment and Management Systems" project as a grant aid and accompanying technical assistance. For Project 3, it is envisaged as a co-financing arrangement with the ADB's current project and accompanying technical assistance.

For projects in the financial sector, regarding OIN indicators, all projects aim to indirectly amplify the impact of environmental indicators (as the impact depends on the content of the financed/invested projects). Therefore, the primary expected outcomes are direct socioeconomic effects. However, Projects 2 and 3, related to blue carbon credits, are considered particularly effective as climate change measures, so an impact on Indicator D is also anticipated.

Regarding the feasibility of ODA, Project 1 is evaluated positively because it can leverage the expertise of Japanese private-sector financial institutions, private companies, and local governments, in addition to meeting the needs expressed by the partner country. Project 3 is also evaluated positively because Japan already has an institutionalized and operational blue carbon credit market, allowing the utilization of its experience and technology. Compared to these, Project 2 does not offer significant advantages in terms of Japanese expertise. However, it is highly feasible because DOST already possesses numerous schemes for supporting MSMEs, and DOST's needs are clearly focused on enterprise scaling up.

Therefore, in the overall evaluation, all Projects 1, 2, and 3 could be rated as priority S. However, for Project 2, since the MSME support scheme itself already exists, it is not considered highly urgent. In terms of supporting the growth of companies that can generate future blue carbon credit creation projects, establishing the blue carbon credit system under Project 3 is more time sensitive. Therefore, Project 2 was rated priority A.

Table 6.3-2 Analysis of Pripority Project (Financial Sector)

Area	Project Title	Ocean Impact Navigator (OIN) Impact Areas							Feasibility of ODA										Comprehensive Evaluation	Priority
		Environmental Impact					Social and Economic Impact	Evaluation using OIN indicators	Consistency with Country Development Cooperation Policy and JGA		Strength of Requests/Needs from the Country Government		Country Government's Capacity (Feasibility including operational maintenance management systems and budget)		Technical Feasibility (Appropriateness, Uniqueness, and Competitiveness of Japanese (Technology) in the Project)		Evaluation based on ODA feasibility			
		A. Sustainably Managed Marine Resources	B. Clean oceans	C. Thriving and restored marine habitats	D. Realizing a 1.5° C World	E. Resilient coastal communities	F. Positive Socioeconomic Impacts													
Blue Finance	Promotion of Blue Finance [Medium-to-Long Term]						◎ The project itself contributes to expanding environmental impact effects (indirectly), so only socioeconomic effects can be measured as direct effects.	A	◎	Promoting blue finance, including LGUs, and supporting microfinance for small-scale fishers and others, primarily in rural areas, aligns highly with the medium-term objective "Strengthening Foundations for Sustainable Economic Growth" in the cooperation policy.	◎	There is high demand from private banks such as BDO and BPI, as well as government agencies like the central bank and SEC.	◎	While discussions with the DOF are pending, favorable opinions have been obtained from the central bank and SEC, indicating high capacity (receptivity) on the part of the country government.	◎	Japan has multiple precedents from financial institutions, private companies, and local governments, indicating high technical feasibility for support.	S	In addition to the needs expressed by the country, the highest priority is given because it allows Japan to leverage the expertise of its private companies and local governments.	S
Blue Carbon Credit	Creation of Blue Carbon Credit through Startup Support [Medium-to-Long Term]						◎ The project itself contributes to expanding environmental impact effects (indirectly), so only socioeconomic effects can be measured as direct effects.	A	◎	Supporting new technologies related to the blue economy and future carbon credit creation to address social issues aligns highly with the sub-goal "Ensuring Human Security for Inclusive and Resilient Growth" in the cooperation policy.	○	DOST already has support schemes for MSMEs, but there is high demand, particularly due to challenges in scaling up the businesses of startups.	◎	DOST already has support schemes for MSMEs, indicating high capacity (acceptance potential) on the part of the country government.	◎	Although limited in number, there are organizations that support MSMEs specialized in the blue economy. Therefore, the technical feasibility is considered high	A	Although the scope of Japanese support is limited, the resolution of needs is high, making this project as a high priority.	A
	Support for the establishment of blue carbon credit evaluation and management systems [Medium-to-Long Term]				○ D3		◎ The project itself contributes to expanding environmental impact effects (indirectly), so only socioeconomic effects can be measured as direct effects.	S	◎	Supporting the creation of future carbon credits to help solve social issues is highly aligned with the sub-goal "Ensuring Human Security for Inclusive and Resilient Growth" in the cooperation policy.	◎	The DENR is taking the lead in developing the framework, indicating high demand.	◎	As DENR is leading the development of the framework, the country government's capacity (acceptability) is high.	◎	The blue carbon credit market is already institutionalized and operational in Japan, so technical feasibility is high.	S	In addition to the needs expressed by the country, Japan can leverage its leading-edge technologies, making the priority level the highest. It can be implemented as an associated technical project under the ADB project's enhanced financing.	S
					○ D3		◎ The project itself contributes to expanding environmental impact effects (indirectly), so only socioeconomic effects can be measured as direct effects.	S	◎	Supporting the creation of future carbon credits to help solve social issues is highly aligned with the sub-goal "Ensuring Human Security for Inclusive and Resilient Growth" in the cooperation policy.	◎	The ADB has invited JICA to participate in this project, indicating high demand.	◎	The ADB has already invited JICA to participate in this project, indicating high capacity (acceptability) on the part of the partner country government.	◎	The blue carbon credit market is already institutionalized and operational in Japan, and Japan possesses expertise in credit projects, so technical feasibility is high.	S	With an offer from the ADB, it is high demand and can be utilized Japan's leading technologies. Therefore, it is the highest priority.	S

Evaluation Index of Ocean Impact Navigator (OIN)

◎ = Each inidicator is the central objective of the project

○ = Items that are not the main objective, but are expected to produce results as a result of activities

△＝Items that can be expected to be effective depending on the plan

Evaluation Index of ODA Feasibility

◎＝High Suitability

○＝Middle Suitability

△＝Low Suitability

Evaluation Index of Overall Evaluation

S = Top Priority

A= High

B = Medium

C= Low

Source: JICA Study Team

6.3.4 Consideration of Potential Cooperation Projects for the BARMM Region

Regarding cooperation project proposals specific to the financial sector, projects targeting the entire country can also be effective in the BARMM region. Therefore, as an activity included within the "Blue Carbon Credit Generation through MSMEs Support" project targeting the entire country, it proposes collaborating with DOST and MOST, which are responsible for technological innovation, to disseminate the concept of carbon credits in the BARMM region and create a list of potentially eligible businesses.

However, blue economy initiatives are not yet active in the BARMM region, promoting the significance of the blue economy to stakeholders and establishing blue finance and carbon credit markets are likely to require time. In the short term, cross-sectoral cooperation could include promoting loans to fishermen and fishermen's associations using the Philippine government's Special Fund[29] for the region and implementing blue finance from the Philippine government for cooperative projects in the fisheries and maritime transport sectors.

6.3.5 Alignment with the Needs of Japanese Companies

For the proposed financial sector project "Promoting Blue Finance," the expertise of Japanese financial institutions in blue finance is required. The interview with financial institutions during this survey also indicated that their experience in Southeast Asia, India, and other regions could be applied to the Philippines. Furthermore, for "Blue Carbon Credit Generation through MSMEs Support," cooperation from Japanese companies with a track record of supporting blue economy-related projects would be effective. These companies suggested that coordinated financing (investment) with JICA for Philippine MSMEs, along with introducing Japanese fisheries-related companies to the Philippine side, could foster collaboration between private enterprises in both countries, contributing to industrial development and technological advancement in both nations.

Furthermore, for "Support for Establishing Blue Carbon Credit Assessment and Management Systems," expertise from JBE and private companies involved in blue carbon credit projects is anticipated. Establishing carbon credit evaluation methods particularly requires accumulating results from demonstration studies. Collaborating on blue carbon credit creation projects in the Philippines would be meaningful for both JBE and Japanese companies.

Therefore, all proposed potential cooperation projects are considered to align with the needs of Japanese companies and represent attractive support for both the Philippines and Japan.

6.4 Cross Sectoral Program

Based on the project concepts developed in the three sectors (fisheries, maritime transport, and finance), a

[29] Banks in the Philippines are required to lend 25% of their total credit to the agriculture and fisheries sectors, but many banks fail to meet this requirement and pay fines. The government has established a Special Fund using these fines as a source of capital, and AAIIBP, LBP, and DBP are eligible to receive funds from this fund. The loan terms are an annual interest rate of 4% or less, a maximum loan amount of PHP 1.2 million, and the target borrowers are publicly registered fishermen or fishermen's associations. The funds can be used for purchasing goods and labor costs. AAIBP has a track record of supporting seaweed businesses.

cross-sectoral program to promote the Blue Economy was examined. This section covers all projects proposed in this report, including those not ranked as high priority, where they are considered effective as part of a program when combined with other projects. In setting the program, due consideration was given to defining Blue Economy issues that constitute broader social challenges, regardless of sector, and to proposing programs aimed at addressing these challenges. The program was also designed to generate synergies among the combined projects, thereby enabling a cross-sectoral and comprehensive approach to solving social issues.

6.4.1 Setting the Program Issues

The program issues are defined as four areas that constitute broad social challenges related to the Blue Economy in the Philippines, which are the reduction of post-harvest losses, development of coastal communities, promotion of seaweed farming, and promotion of decarbonization. In selecting these issues, findings from surveys conducted in the Philippines and Japan were used to comprehensively consider whether each issue represents a major social challenge that hinders the promotion of the Blue Economy in the Philippines as a whole, is cross-sectoral in nature, encompassing the fisheries, maritime transport, and finance sectors, and can be effectively addressed through the application of Japanese knowledge and technologies. The background to the selection of each issue and the overall direction for addressing them are described below.

(1) Reduction of Post-Harvest Losses

Post-harvest losses of fishery products are widely recognized as a major social issue in the Philippines. Excessive disposal of landed catch wastes fishery resources and runs counter to achieving their sustainable use; it also increases the cost ratio relative to fishing effort, resulting in substantial economic losses for operators. In this sense, reducing post-harvest losses is a key challenge for promoting the Blue Economy in the Philippines. According to a prior study on Northern Zamboanga, 6.8% of the annual landed volume of sardines was discarded. In addition, although the basis and scope are not clearly specified, the CNFIDP 2006–2025 states that losses may be as high as 25–40%. Considering these circumstances, the Ministry of Agriculture set a target in the CNFIDP 2021–2025 to reduce post-harvest losses to up to 10%, positioning this as the most important issue within the post-harvest sub-sector.

Addressing this issue requires ensuring that landed fish are properly handled and marketed to prevent resource waste, while also contributing to Blue Economy promotion by increasing value addition and maximizing profits for producers and distributors. This program will address the issue by comprehensively developing distribution infrastructure from fish ports through transport to market and enhancing its sustainability. Japan has advanced initiatives and capabilities in areas such as freshness preservation technologies for landed fish, related facilities and equipment, fish port facilities suited to high-level hygienic management, and cold-retention technologies for transport, and cooperation that applies these strengths is feasible.

(2) Development of Coastal Communities

As an archipelagic country, the Philippines has a coastline of approximately 18,000 km, along which more than 1,500 LGUs, equivalent to about 70% of all LGUs, are located. Numerous small-scale communities are scattered throughout coastal areas, including many isolated settlements that are not connected to road networks, basic utilities, or mobile phone networks. Of the 42,047 communities (barangays) nationwide, as many as 10,875 are geographically and socioeconomically isolated (MOH, 2019), and the development of these communities constitutes a major social challenge. In such isolated coastal settlements, fisheries are a primary source of income. However, adequate income cannot be secured due to factors such as environmental degradation, natural disasters, and declines in fishery resources caused by overfishing, while the conditions necessary for realizing sustainable fisheries, such as resource management and infrastructure development, are also insufficient. Ensuring appropriate coastal management and the sustainable use of coastal resources is therefore a major challenge for promoting the Blue Economy in the Philippines.

To address these challenges, the Government of the Philippines has introduced the concept of EAFM and supports the organization of FARMCs under LGUs as implementing bodies. FARMCs have been established in 97% of coastal municipalities nationwide; however, in many cases, their level of activity remains low. For example, in the list of FARMCs compiled by BFAR for Region 1 (four provinces) as of March 2022, of a total of 95 FARMCs, 93 are classified as Level 1, the lowest activity level, while only one FARMC each is classified as Level 3 and Level 4.

In view of the above, EAFM initiatives implemented through FARMCs, including fisheries resource management, environmental conservation, and livelihood improvement support, should be implemented in an integrated manner together with related infrastructure development and the establishment of financing mechanisms, thereby achieving both coastal conservation and economic development. JICA has extensive experience in providing similar technical cooperation to coastal communities in various countries and also has a strong track record in the Philippines in developing infrastructure such as fisheries ports and ports. These experiences and knowledge can be leveraged to address this issue.

(3) Promotion of Decarbonization

The Philippines' greenhouse gas (GHG) emissions in 2020 totaled 204.33 teragrams of CO2 equivalent (Tg CO2e). The breakdown is as follows: energy sector 99.85, transport sector 29.43, agriculture sector 54.08, forestry and land use sector -25.94, industrial processes and product use sector 16.77, and waste sector 30.12. Efforts to reduce emissions are therefore required across all sectors. In addition, under the Nationally Determined Contribution (NDC 2021), the Philippines has set a target of a 75% reduction from the projected cumulative emissions of 3,340.3 Tg CO2e for the period 2020–2030.

Reducing GHG emissions is also a challenge in the maritime transport sector. In the maritime field, the Maritime Industry Development Plan (MIDP) includes an "Action Plan for a Sustainable Marine Environment and Protection." This action plan covers the development of low-emission and decarbonization technologies and alternative fuels for domestic shipping, the transition of vessels to green shipping, electrification of vessels for short-distance voyages, seafarer training on the safe operation of vessels using zero- or near-zero GHG-emission fuels and technologies, and education on marine environmental protection. Decarbonization efforts are positioned as a key issue within this framework.

In relation to ports, major international ports in the Philippines have been undertaking initiatives toward green ports (carbon-neutral ports) based on the Green Port Award System (GPAS) developed by the APEC Port Service Network (APSN). To date, Batangas Port, Cagayan de Oro Port, Manila International Container Terminal (MICT), Manila South Harbor, Surigao Port, and General Santos Port have received GPAS Awards under this system. Furthermore, ports under PPA jurisdiction are implementing activities in line with the Port Environmental Policy (PEP) established by the PPA, and the PPA is in the process of formulating the Green Code, which is intended to serve as the foundation for green port initiatives, including environmental measures.

However, in the maritime transport sector, an overall greenhouse gas (GHG) reduction plan or guideline, including specific quantitative targets, has not yet been developed. Indicators and concrete methods for monitoring emissions to achieve the national reduction target also remain unclear. Although efforts have been made toward realizing the action plan presented in the Maritime Industry Development Plan, many elements have yet to be translated into concrete measures.

Decarbonization efforts must address not only the reduction of GHG emissions but also proactive initiatives for absorption and sequestration. The negative value shown above for the forestry and land use sector reflects reduced deforestation and the introduction of REDD+ (Reduce Emissions from Deforestation and Forest Degradation) (JETRO, 2024), which contributes to overall emissions reduction through enhanced GHG absorption. In the context of the Blue Economy, options include the creation of seaweed beds, the expansion of seaweed farming, mangrove planting, and the creation of tidal flats. To promote such initiatives, it is desirable to develop methods for evaluating carbon sequestration volumes and to establish mechanisms such as a blue carbon credit scheme to finance related activities.

In response to these issues, it is important for the maritime transport sector to formulate GHG reduction plans for ports and vessels, while promoting decarbonization initiatives in the maritime domain. These include the low-carbon and decarbonized upgrading of port cargo-handling machinery and port facilities, switching to electricity generated from clean energy sources, converting seawalls, breakwaters, and other structures to nature-inclusive infrastructure, and creating seaweed beds as part of efforts toward green ports or carbon-neutral ports. In addition, it is important to promote the development, introduction, and operation of next-generation fuel vessels and EV vessels, as well as seafarer training for operating next-generation fuel vessels. Together with these measures, implementing a package of complementary actions, such as environmental education, the dissemination and scaling-up of seaweed farming, and the development and promotion of carbon credit schemes, is expected to advance a Blue Economy related to the decarbonization of ports and the marine environment.

In Japan, initiatives toward carbon-neutral ports, like the green port concept, are being actively promoted under the leadership of the Ministry of Land, Infrastructure, Transport and Tourism. Port authorities across Japan have experience in formulating “Port Decarbonization Promotion Plans.” In addition, through participation in carbon-neutral port initiatives, many private companies in Japan have developed high-quality products and advanced technologies that contribute to port decarbonization. These include low-carbon cargo-handling machinery, clean energy–related products such as forklifts, tractor heads, and energy-efficient port equipment, next-generation energy vessels, the construction of EV vessels, and technologies for supplying shore-side electricity to vessels at ports.

In the fisheries sector, approaches such as seaweed farming and mangrove planting can be pursued from the

perspective of greenhouse gas sequestration. Seaweed farming is a core fisheries activity in the Philippines, with an exceptionally large production scale, and further promotion of the subsector is considered to have significant potential for enhancing greenhouse gas sequestration. As described below, Japan has extensive experience and knowledge in seaweed farming and its dissemination to coastal communities through research institutions and JICA technical cooperation. In addition, Japan's track record in developing methodologies for blue carbon assessment and issuing related credits constitutes a major strength.

(4) Promotion of Seaweed Farming

Seaweed farming is a major sub-sector of the fisheries industry and is also one of the Philippines' key industries. In the BARMM Region, where production is particularly high, it is among the most important industries, and the Bangsamoro Government places strong expectations on its further development as a driver of BARMM's economic growth. The potential area suitable for seaweed aquaculture development nationwide is estimated to be largest in the former ARMM area centered on Tawi-Tawi Island at 26,000 ha, followed by the Zamboanga Peninsula at 17,000 ha and Palawan Island at 8,200 ha. This indicates that BARMM has the greatest development potential in the Philippines for scaling up seaweed production. Seaweed farming is also expected to deliver significant blue carbon benefits. JBE has experience in issuing blue carbon credits in Japan for seaweed aquaculture, including species such as kombu, wakame, mozuku, and aonori. In other words, seaweed farming in the Philippines is expected to contribute to promoting the Blue Economy through both regional economic development and proactive sequestration of greenhouse gases.
Seaweed farming accounts for 68.2% of total aquaculture production in the Philippines, and 69% of this seaweed production is generated in the BARMM Region, centered on Tawi-Tawi Island. Approximately 75% of produced seaweed is destined for carrageenan processing, with Cebu serving as the main processing hub. This means that a value chain has formed in which large volumes of seaweed produced in BARMM undergo staged drying and processing before being shipped to Cebu. While seaweed production is an important industry for BARMM, much of the processing takes place outside the region, limiting opportunities to increase value added within BARMM. The Bangsamoro Government recognizes this as a serious issue and considers the development of processing conditions within the region, together with the necessary distribution and logistics infrastructure, to be an urgent priority.
In addition, many producers are small, family-run operators. Because their production scale is limited, the profits they earn are also modest. Expanding production scale is necessary to increase household income; however, financing for such expansion is insufficient.
Moreover, although seaweed production increased steadily from the 1980s onward, it shifted to a sharp decline after peaking at around 1.8 million tons around 2010, reaching 1.62 million tons in 2023. This decline is speculated to be caused by genetic degradation due to continuous cropping, poor growth associated with warming conditions, and the spread of ice-ice disease. Increasing production in the future will therefore require not only expansion of farming scale but also scientific responses to these issues.
To address these challenges, comprehensive support is required in the BARMM Region. This includes further dissemination and expansion of seaweed farming, infrastructure development for processing and transport hubs, improved efficiency of transport capacity, development of climate-resilient seedstock, and the establishment of mechanisms for carbon sequestration and financing through the dissemination of blue

carbon credits. In Japan, as noted above, there is extensive experience from JICA in disseminating technologies to small-scale coastal communities and in developing infrastructure such as fish ports in the Philippines. Japan also has advanced examples of seaweed strain improvement and disease-related research, as well as JBE's leading cases in the assessment and issuance of blue carbon credits for seaweed aquaculture. These strengths can be applied to address the above challenges.

6.4.2 Setting the Cross-Sectoral Program

To address the issues defined above, four program proposals are presented as outlined below. The overall program structure is shown in Table 6.4-1. During the third field visit (January 2026), positive feedback on these program proposals was obtained from key government agencies relevant to the Blue Economy, including BFAR, PFDA, DOTr, PPA, MARINA, DENR, DOF, and DOST. They expressed expectations for the development synergies that can be achieved through cross-ministerial programs that are difficult for the Government of the Philippines to promote on its own, as well as for sustained, longer-term support.

(1) Program for Reducing Post-Harvest Losses

This program aims to reduce post-harvest losses occurring after landing by developing fish ports and landing sites of various scales, and by establishing a cold chain through ice-making and cold storage facilities together with maritime transport infrastructure. It also utilizes a blue finance framework to support LGUs in maintaining and sustaining cold chain systems. Through these efforts, the program can provide continuous support across the landing, transport, and market segments of the value chain and can address post-harvest losses in a comprehensive manner.

<National-level initiatives>

There are only nine large-scale fish ports nationwide where a substantial share of commercial fisheries landings are handled and where fishery products transported from other ports also concentrate. This limited number is one factor contributing to longer transport times from fishing grounds and production areas to distribution hubs and onward to consumption areas. Accordingly, this program will address post-harvest losses in a comprehensive manner by placing the development of large-scale fish ports as core landing and distribution hubs, together with related supporting interventions. First, a "Master Plan Formulation Survey for Developing a Large-Scale Fish Port to Reduce Post-Harvest Losses and Ensure a Stable Supply of Fishery Products Project" will be conducted, with PFDA serving as the counterpart agency. The study will include an assessment of the status, including surveys on fishery logistics and distribution, identification of key issues, and formulation of a basic plan for the fish port infrastructure to be developed. Based on the results, the "Development of a Large-Scale Fish Port to Reduce Post-Harvest Losses and Ensure a Stable Supply of Fishery Products Project" will construct large-scale fish ports at appropriate locations, considering the spatial relationship between fishing grounds and markets. In addition, under the "Development of a Large-Scale Fish Port to Reduce Post-Harvest Losses and Ensure a Stable Supply of Fishery Products (Attached Technical Cooperation)," capacity development on quality management of landed fish will be provided for fish port users, including fishers and traders. These three projects will be implemented as a long-term, integrated

package over approximately eight to nine years.

In parallel, the program will develop a maritime transport network linking fish ports nationwide, including those developed under the above projects, with consumer markets. In the Philippines, fishery products are typically transported from landing sites by truck using a combination of road networks and ferry routes to reach consumer markets and then transported again by truck from the point of sale to final consumption areas. Maintaining freshness during transportation is therefore a critical factor in reducing post-harvest losses. As a preparatory development study, a "Assessment and Master Plan Review of the Nautical Highway System" will be conducted, with MARINA serving as the counterpart agency, to identify priority issues and basic policies for improving maritime transport routes. Based on the results, support for ferry route development will be provided through loan assistance under the "Identified Ferry Route Development Project" for routes with high urgency and necessity in terms of reducing post-harvest losses. In addition, in parallel with the associated technical cooperation for fish port development described above, technical cooperation titled "Development of E-Learning Materials (Information, Education and Communication) on Blue Economy and Marine Environmental Conservation" will be implemented using the e-learning platform developed by MARINA, to strengthen efforts to improve the quality management capacity of fish port users.

<Municipal-level initiatives>

To enhance the effectiveness of the above initiatives, the program will be expanded to the municipal LGU level. Medium-scale municipal fish ports and CFLCs fall under the jurisdiction of LGUs and are smaller in scale; accordingly, the volume handled at each facility is not large. In line with this, small-scale ice-making machines and related equipment will be introduced to multiple facilities to strengthen grassroots cold chain development. At the same time, the program will aim to build an efficient and synergistic value chain by establishing cold chain linkages connected to the large-scale fish ports described above. Specifically, in parallel with the fish port development and ferry route development described above, two projects will be supported through sector loans to develop municipal-level infrastructure: the "Improving Fish Quality and Reducing Post-Harvest Losses at Municipal Fish Ports (MFPs) Project," with PFDA as the counterpart agency, and the "Strengthening Cold-Chain Functions at Community Fish Landing Centers (CFLCs) to Reduce Post-Harvest Losses Project" with BFAR as the counterpart agency. In addition, many LGUs face budget constraints and are unable to adequately operate and maintain fish ports and CFLCs and therefore depend on national government support. In practice, however, it often takes several years from application to actual construction, which can prevent timely and appropriate operation and maintenance. To implement activities for reducing post-harvest losses effectively and sustainably, it is necessary to establish a framework that enables each LGU to mobilize financing on its own. For this reason, a "Promoting Blue Finance Project," with DOF as the counterpart agency, will be implemented at an early stage of the program to establish blue finance schemes, such as blue bonds and microfinance, for reducing post-harvest losses.

In addition, according to interviews with PFDA and BFAR, expectations are high for support from Japan with respect to cold chain technologies and equipment. PFDA highly values the performance and durability of Japanese-made freezers and ice-making machines based on experience in fish port development and expects that similar equipment could be introduced. However, according to Japanese trading companies handling fishery products, in recent years, as a broader trend in Southeast Asia, the performance gap between large-scale freezing equipment installed at fish ports and products manufactured in China and the Republic

of Korea has narrowed, making higher-priced Japanese equipment less likely to be selected. By contrast, for smaller freezers used in retail outlets and similar applications, Japanese products retain a competitive advantage and are therefore well suited as cold chain equipment to be introduced at municipal fish ports and CFLCs.

(2) Coastal Community Development Program

This program aims to achieve sustainable fisheries production and promote local economic development by supporting FARMC-led EAFM activities, including livelihood improvement, environmental conservation, and fisheries management in coastal communities. The program will also develop financing mechanisms to support these activities and will improve the surrounding enabling environment through the development of local medium and small-scale fish ports and port facilities, thereby strengthening distribution and transport functions.

< Initiatives targeting LGUs and FARMCs>

In this program, EAFM activities implemented through FARMCs constitute the core intervention. Accordingly, technical cooperation titled the "Promotion of EAFM for Sustainable Resource Use in Coastal Areas Project," implemented with BFAR as the counterpart agency, will be positioned as the central component of the program. However, in areas where IUU fishing is prevalent, it may hinder FARMC-led fisheries management activities. Therefore, it is desirable to sufficiently strengthen monitoring and enforcement capacity prior to implementing technical cooperation targeting FARMCs. For this reason, before implementing the above technical cooperation project, a grant aid project titled "Coastal IUUF Countermeasures for Sustainable Resource Use Project," with BFAR as the counterpart agency, will be implemented. If target sites are selected where IUU fishing is not a significant issue, the need for this project would be limited.

For the implementation of the above two components, educational and outreach support for EAFM activities will be strengthened through the development of education modules on environmental conservation and EAFM using MARINA's e-learning platform, under the "Development of E-Learning Materials (Information, Education and Communication) on Blue Economy and Marine Environmental Conservation" These materials are intended to be used in capacity development training for communities under the technical cooperation targeting FARMCs described above. In addition, prior to implementing technical cooperation targeting FARMCs, a financing mechanism will be established for environmental conservation activities, such as mangrove planting, to secure future funding for FARMC activities. Securing funding for FARMC activities is recognized as a key challenge, and BFAR also recommends establishing independent financing mechanisms. FARMCs that succeed in doing so are recognized as Level 4 or above. Establishing independent methods for mobilizing funds can therefore be regarded as one of the key pillars of FARMC support. Accordingly, technical cooperation titled "Promoting Blue Finance Project," implemented with DOF as the counterpart agency, will be provided to establish schemes such as blue bonds or micro-blue finance to support relevant activities undertaken by each FARMC.

<Related Infrastructure and Other Developments>

To sustain the livelihoods of coastal communities, it is essential to develop fish port and port infrastructure to support water transport, the landing, sale, and shipment of fish catch, and the transport of daily necessities and other goods. Construction of fish ports and ports for many communities has already progressed, and, across municipal LGUs nationwide, 138 fish ports and 194 CFLCs have been developed, along with more than 1,500 ports. These ports play an extremely important role as infrastructure supporting FARMC activities, including livelihood improvement activities such as the shipment of processed fishery products and transport hubs for tourists, as well as environmental conservation activities such as transport hubs for environmental management and the shipment of seedlings for mangrove planting. However, many of these facilities have not been adequately developed or rehabilitated due to budget constraints at the LGU level. PFDA is rehabilitating fish ports sequentially based on requests from LGUs, but demand outpaces the pace of implementation. Among local ports developed by PPA, 293 ports have been designated as Social and Tourism Ports, aimed at promoting decarbonization and enhancing their functions as tourism hubs; however, rehabilitation and improvement works have not progressed.

Accordingly, with respect to fish ports and ports developed at the target sites, infrastructure that serves as the foundation for FARMC activities will be developed from the earliest stage of the program, ahead of technical cooperation targeting FARMCs. For fish ports, this will be undertaken through either the "Improving Fish Quality and Reducing Post-Harvest Losses at Municipal Fish Ports (MFPs) Project," with PFDA as the counterpart agency, or the "Strengthening Cold-Chain Functions at Community Fish Landing Centers (CFLCs) to Reduce Post-Harvest Losses Project," with BFAR as the counterpart agency. For ports, this will be undertaken through either the "Blue Economy Promotion Plan (Social and Tourism Port) of LGU/Munincpal Port" or the "Identified Port Decarbonization Project," with DOTr and PPA as the counterpart agencies.

By implementing these activities in an integrated manner, FARMC-led EAFM activities can be revitalized, while also promoting the utilization of municipal-level fish ports and ports. It should be noted that the EAFM concept defined in the CNFIDP is described as "an integrated approach applied within an ecologically meaningful boundary to improve fisheries management and balance diverse social objectives, considering ecological and socio-economic components and their interactions. Therefore, it aims to balance diverse social objectives based on knowledge and uncertainty regarding the biotic, abiotic, and human components of a specific ecosystem and their interactions (FAO, 2003)." Considering this concept, it is desirable to address coastal livelihood improvement, coastal environmental conservation, fisheries management, and the infrastructure development necessary for these activities in a comprehensive and cross-sectoral manner. Japan has a strong comparative advantage for cooperation, given its track record in numerous technical cooperation projects and in fish port and port development projects[30] related to JICA's Global Agenda "Promoting a Fisheries-Centered Blue Economy." In addition, regarding cold chain development such as ice-making machines, Japanese refrigeration equipment has a competitive advantage, as noted above.

[30] Examples include the "The Project for Promotion of the Grace of the Sea in Coastal Village in Vanuatu," "The Project for Promotion of Blue Economy in the Fishery Sector in Maldives," "Project for Promoting Sustainable Fisheries Development in Outer Islands of Indonesia"

(3) Decarbonization Promotion Program

This program aims to support efficient decarbonization efforts across relevant sectors by pursuing greenhouse gas emission reductions in parallel with proactive initiatives for absorption and sequestration. With respect to greenhouse gas sequestration, the program envisages introducing a blue carbon credit approach and using it as a source of financing and an incentive for related activities.

< Greenhouse gas emission reductions>

In the maritime transport sector, efforts to address Blue Economy challenges are fundamentally centered on reducing greenhouse gas emissions from ports and vessels. Under this program, multiple projects will be implemented in an integrated manner, drawing from the cooperation initiatives proposed for the maritime transport sector based on discussions with PPA, the status of ongoing initiatives, and progress in addressing the issues identified in the maritime industry development plan under the MIDP. Through this integrated implementation, the program seeks to enhance greenhouse gas reduction impacts across the sector. At the initial stage of the program, a development study titled "Philippine National Port Decarbonization Plan (Master Plan for Blue Economy)," with PPA as the counterpart agency, will be conducted. In addition, technical cooperation projects will be implemented, with DOTr and MARINA serving as counterpart agencies, including "Promotion of Biodiesel Fuel Use as a Marine Fuel," "Seafarer Training Program for Safe Operation of Next-Generation Vessels," and "Development of E-Learning Materials (Information, Education and Communication) on Blue Economy and Marine Environmental Conservation" These components will prepare the basis for subsequent, concrete greenhouse gas reduction measures. Subsequently, based on the above master plan, a port development initiative for decarbonized ports will be implemented through the "Port Decarbonization Project," with PPA as the counterpart agency, together with "Technical Cooperation on Port Decarbonization Project," with SBMA, PPA, and other relevant agencies serving as counterpart agencies. In the latter half of the program, as longer-term initiatives, the "Feasibility Study/Implementation/Technical Cooperation for the development/introduction of Domestic Inter-island EV Ro-Ro Vessels," with DOTr, MARINA, DOST, and the University of the Philippines as counterpart agencies, will be implemented through loan assistance. Further, if feasible, the "Development of Base Ports for Offshore Wind Farms," with DOTr, DOE, and PPA as counterpart agencies, will also be implemented through loan assistance. It should be noted that the timing of the latter initiative will depend on national policy, as it assumes that offshore wind power will be deployed in the Philippines beyond the three sites currently under development.

<Greenhouse gas absorption and sequestration>

In parallel, proactive initiatives for greenhouse gas absorption and sequestration are envisaged to be implemented through the BARMM-focused "Promoting Seaweed Farming in Island Communities to Achieve the Blue Carbon and Regional Development Project," described below. As detailed in the next section, the program will begin with a "Genetic and Breeding Validation of Seaweeds, and Development of Improved Strains for Climate Change Adaptation Project," which will address biological challenges such as genetic degradation caused by continuous cropping of Eucheuma, poor growth associated with warming conditions, and ice-ice disease. Subsequently, using the improved eucheuma seedstock and ice-ice disease

countermeasures developed through this cooperation, dissemination of seaweed farming to increase production will be supported under the "Promoting Seaweed Farming in Island Communities to Achieve the Blue Carbon and Regional Development Project," with MAFAR as the counterpart agency. If this initiative is implemented outside BARMM, the overall implementation arrangements and activities will remain essentially the same, except that part of the counterpart role would shift from MAFAR to BFAR.

In parallel with the above, efforts will be made to develop and operationalize a blue carbon credit scheme and to issue credits, with the objectives of mobilizing finance for expanding seaweed farming and increasing the income of seaweed-farming households. As described in the next section, technical cooperation titled the "Support for Establishing Blue Carbon Credit Assessment and Management Systems," with DENR as the counterpart agency, will be implemented at an early stage of the program. Subsequently, overlapping with the latter half of that project, a "Blue Carbon Credit Generation through MSMEs Support," aimed at social implementation, will be implemented as technical cooperation with DOST as the counterpart agency. By implementing these two projects in sequence, it will be possible to provide continuous support from system development through to social implementation.

(4) BARMM: Seaweed Farming Promotion Program for Blue Carbon and Island Economy Development

This program is envisaged to be implemented in the BARMM Region, where the need for seaweed farming development is the highest. It will pursue comprehensive promotion of sustainable seaweed farming and an expansion of blue carbon benefits by implementing, in parallel, measures to improve the quality and production volume of farmed seaweed, disseminate seaweed farming, establish financing mechanisms for production, and develop infrastructure to enhance distribution and value addition.

< Initiatives on technology development and dissemination>

The program will be centered on two technical cooperation projects related to seaweed farming technology development and dissemination. First, at the earliest stage of the program, the "Genetic and Breeding Validation of Seaweeds, and Development of Improved Strains for Climate Change Adaptation Project" will be implemented to address biological challenges affecting the main cultured species, Eucheuma, including genetic degradation due to continuous cropping, poor growth associated with warming conditions, and ice-ice disease. This project is envisaged to be implemented under the SATREPS scheme, with research institutions that have strong capacity in seaweed farming research, such as Mindanao State University Tawi-Tawi College, the University of the Philippines Visayas, and NFRDI, as well as MAFAR, serving as counterpart organizations, and with cooperation from Japanese universities with established expertise in seaweed research, such as Hokkaido University and Kochi University. Subsequently, using the improved eucheuma seedstock and ice-ice disease countermeasures developed through the above cooperation, the "Promoting Seaweed Farming in Island Communities to Achieve the Blue Carbon and Regional Development" will support the dissemination of seaweed farming to increase production, with MAFAR as the counterpart agency. It is difficult to specify concrete dissemination methodologies and production increase targets based on the results of this survey; however, together with the various enabling environment measures described below, the program will establish mechanisms that enable autonomous and sustainable

expansion of production to continue even after program completion. In addition, the dissemination project will implement various initiatives aimed at improving fishers' livelihoods. These include marketing-related activities such as price stabilization and improved distribution in collaboration with carrageenan processing companies, development of blue tourism that utilizes seaweed farming sites themselves as tourism resources, the introduction of the blue carbon credit approach described below, and the development of aquaculture for species other than seaweed, such as sea cucumbers and shellfish.

Blue tourism development is attracting particular attention within the Bangsamoro Government as a means of promoting the Blue Economy, and initiatives will need to involve the Ministry of Trade, Investments and Tourism (MTIT). According to the results of interviews with MTIT, community-level tourism initiatives are considered feasible, such as study tours to learn about seaweed farming sites, and cases of university students visiting these sites have already been increasing. Tawi-Tawi Island has also been gaining attention as a tourist destination among Filipinos in general, with the number of visitors reportedly increasing by 300 percent over the one-year period from 2024 to 2025, and hotel openings and related investments also showing an upward trend. The Bangsamoro Government is seeking further promotion, and the potential for development as a supplementary income source for seaweed-farming households is considered high.

< Establishment and generation of a blue carbon credit scheme>

Another key pillar of this program is to translate the blue carbon benefits of seaweed farming into investment financing for the expansion of seaweed farming and into improved livelihoods for producers. Seaweed farming is recognized as having a blue carbon function that proactively sequesters greenhouse gases, and in Japan it is eligible for the issuance of blue carbon credits. Applying this approach to the Philippines, the program will develop a mechanism for issuing blue carbon credits and feeding the proceeds back to producers as financing. In the first half of the program, to establish a nationwide scheme, technical cooperation titled the "Support for Establishing Blue Carbon Credit Assessment and Management Systems," with DENR as the counterpart agency, will be implemented. Overlapping with the latter half of this project, technical cooperation titled the "Blue Carbon Credit Generation through MSMEs Support," with DOST as the counterpart agency, will be implemented to promote social implementation. Implementing these two projects in sequence will enable continuous support from system development through to social implementation and will also allow the scheme to be refined based on knowledge and lessons learned during the social implementation process. Subsequently, in the middle to later stages of the program, similar initiatives will be implemented through two corresponding projects targeting the Bangsamoro Government. In this case, by supporting carbon credit issuance for the sites covered under the seaweed farming dissemination project described above, the program can contribute to mobilizing finance and improving livelihoods for seaweed-farming households. At both the national level and the BARMM level, as dissemination tools, learning modules using MARINA's e-learning platform will be developed through the technical cooperation project titled "Development of E-Learning Materials (Information, Education and Communication) on Blue Economy and Marine Environmental Conservation" and will be utilized in the projects for social implementation of blue carbon credits and for seaweed farming dissemination.

<Related infrastructure development>

Seaweed distribution involves multiple intermediaries, and the drying process is carried out in stages along

the distribution chain. Because seaweed passes through several transport stages before reaching Cebu Island, where carrageenan processing plants are concentrated, there are also challenges in quality management. Accordingly, the program will develop fish ports as distribution hubs, including facilities that enable drying to be conducted in a consolidated, efficient, and hygienic manner, and will also develop ferry routes to improve transport efficiency. At the initial stage of the program, a "Master Plan Formulation Survey on the Development of Medium- to Large-Scale Fish Ports and Cold-Chain Facilities Project," with MAFAR as the counterpart agency, will be conducted to prepare a basic plan for infrastructure development. The study will formulate plans for improving the transport of fishery products, including seaweed, and for enhancing the cold chain and value addition through the introduction of processing facilities. Based on the results, a "Fish Port Rehabilitation (New Construction) and Cold Chain Development Project" will be implemented. This project is envisaged to include the establishment of processing facilities that can conduct advanced drying processes in a consolidated manner to enhance the value added of seaweed.

In addition, using the baseline information obtained through the master plan study, a loan assistance project titled "Ferry Route Development Project in BARMM between the Mindanao Island Provinces and the Island Provinces," with BMARINA, BPMA, and MOTC as counterpart agencies, will be implemented to improve seaweed transport efficiency.

Table 6.4-1 Structure of the Cross-Sectoral Program

Programs to Reduce Post-Harvest Losses
The program will address key social challenges by comprehensively developing infrasturctures related to logistics (fish ports-transportation-

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
National-level Initiatives	Fish Port Development MP for Reducing Post-Harvest			Fish Port Development (Construction & Equipment Provision) for Reducing						
						Post-Harvest Loss Reduction Fish Port Project (Attached Technical				
				Ferry Route Development Project (Loan Aid / Sector Loan)						
		Assessment and Master Plan Review of the Nautical Highway System (Development Survey)				Development of E-Learning Materials (Technical Cooperation)		(content on reducing post-harvest losses)		
LGU-level Initiatives	Improving Fish Quality and Reducing PHL at Municipal Fish Ports (Sector Loan)									
	Strengthening CFLC Cold-Chain Functions to Reduce PHL (Sector Loan)									
	Promoting Blue Finance (Technical Cooperation Project)									

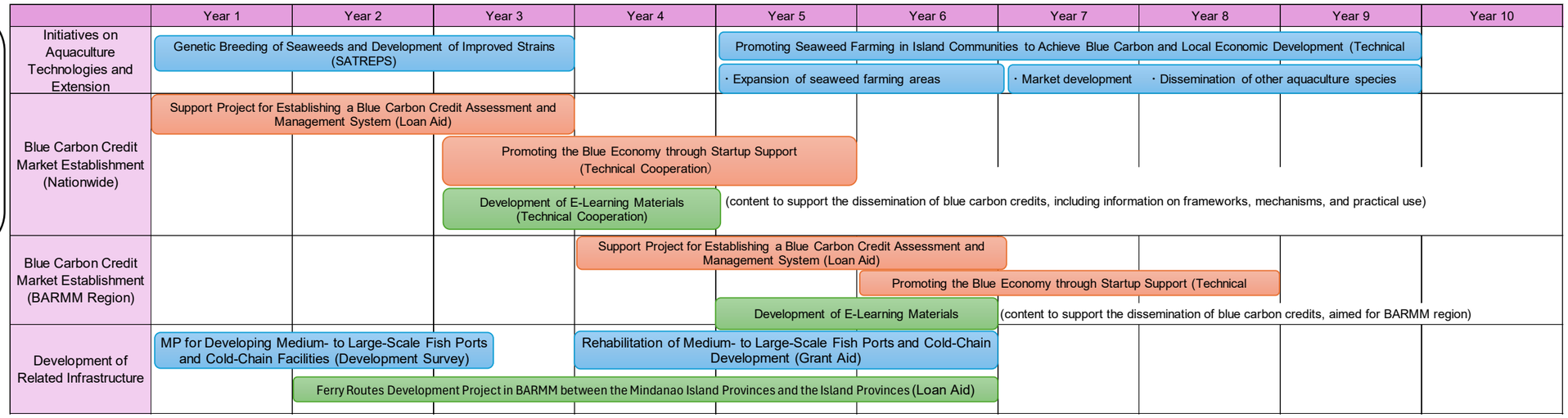
Coastal Community Development Program
By the hollistic implementation of fisheries resource management, environmental conservation, and livelihood improvement support, the program will compatibly achieve coastal conservation and local economic development.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Initiatives Targeting LGUs and FARMCs	Coastal IUU Fishing Countermeasures (Grant Aid)									
			Promoting the Ecosystem Approach to Fisheries Management for Sustainable Resource Use in Coastal Areas (Technical							
			・Restoration of mangrove forests and coral reefs ・Livelihood improvement (fisheries processing)		・Creating funding sources for FARMC activities (mangrove seedlings and Blue Carbon Credits)					
	Promoting Blue Finance (Technical Cooperation)									
	Development of E-Learning Materials (Technical Cooperation)		(content related to coastal community development programs, including fisheries resource management and environmental conservation)							
Development of Related Infrastructures and Facilities	Improving Quality and Reducing PHL at Municipal Fish Ports (Sector Loan)									
	Strengthening CFLC Cold-Chain Functions to Reduce PHL (Sector Loan)									
	BE Promotion Plan of LGU/Municipal Ports (Development Survey)			LGU/Municipal Port Development Project (Sector Loan)						

Decarbonization Promotion Program
To achieve the national greenhouse gas reduction target, efforts will be pursued on both fronts: reducing emissions and promoting proactive sequestration.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Reduction of Greenhouse Gas Emissions	National Port Decarbonization Plan (Development Study)		Port Decarbonization Project (Loan Assistance / Two-Step Loan)							
			Technical Cooperation on Port Decarbonization (Technical Cooperation / Loan Assistance)							
	Promotion of Biodiesel Fuel Use as a Marine Fuel (Technical Cooperation)					Development of Base Ports for Offshore Wind Farm (Loan Assistance / Two-Step Loan)				
	Seafarer Training for Safe Operation of Next-Generation Vessels (Technical Cooperation)					Feasibility Study for the development of Domestic Inter-island EV Ro-Ro Vessels (Loan aids)				
	Development of E-Learning Materials on the Blue Economy and Marine Environment Conservation (Technical Cooperation)									
Greenhouse Gas Absorption and Sequestration	Genetic Breeding of Seaweeds and Development of Improved Strains (SATREPS)				Promoting Seaweed Farming in Island Communities to Achieve Blue Carbon and Local Economic Development (Technical Cooperation)					
					・Expansion of seaweed farming areas ・Introduction of other aquaculture species ・Pilot demonstration of improved seaweed		・Market development ・Dissemination of other aquaculture species ・Distribution and dissemination of improved seedstock ・Introduction of carbon credits			
	Support Project for Establishing a Blue Carbon Credit Assessment and Management System (Loan Aid)									
			Blue Carbon Credit Genreation Through MSMEs Support (Technical Cooperation)							

BARMM: Seaweed Farming Promotion Program to Advance Blue Carbon and Strengthen Island Economies
Targeting the BARMM region, the program will take an integrated approach to developing climate-resilient seedstock, establishing mechanisms for carbon sequestration and financing through the promotion of blue carbon, developing logistics hubs; and improving the efficiency of



Source: JICA Study Team

6.4.3 Selection of Priority Programs

(1) Method for Selecting Priority Programs

Next, riority programs to be addressed are selected from the four cross-sectoral programs described above. The selection criteria are the same as those used for selecting priority projects: the "impact indicators of the Ocean Impact Navigator" and "ODA feasibility." Each program was assessed against these criteria, and priority programs were selected accordingly. For the underlying approach and methodology for the evaluation, please refer to "6.1.4 Selection of Priority Projects, (1) Method for Selecting Priority Projects."
Below, the evaluation approach and selection results for each of the four cross-sectoral programs are summarized.

(2) Program for Reducing Post-Harvest Losses

<Ocean Impact Navigator Indicators>
With respect to environmental impact, the indicator "volume of avoided seafood waste" is expected to receive a particularly high rating. Although no study has quantitatively assessed the total volume of post-harvest losses nationwide in the Philippines, if the 25–40% figure cited in CNFIDP 2006–2025 is assumed to be accurate, then even using the lower bound, 1,065,248 tons would be discarded out of the total catch of 4,260,994 tons in 2023. If this could be reduced to 10%, which is the target set in CNFIDP 2021–2025, the total discarded volume would be 426,099 tons, implying a reduction of approximately 640,000 tons. Viewed at the level of individual ports, this would correspond to a reduction of roughly 30,000 tons at Navotas Fish Port in Manila (annual throughput: 205,251 tons) and roughly 4,000 tons at Iloilo Fish Port (annual throughput: 28,233 tons). While it is difficult to accept at face value that 25% of the total catch is discarded, observations of the limited cold-storage conditions for landed fish at ports and markets suggest that post-harvest losses are likely occurring at a considerable rate. There is little doubt that addressing this issue would generate substantial impact. Significant improvements are also expected in relation to "resilient coastal communities." Reducing post-harvest losses requires changes in awareness among stakeholders involved from catch to distribution and sales, including fishers, intermediaries, transport operators, and market administrators, as well as the dissemination of methods for maintaining freshness. In this process, information provision and training opportunities will be offered on the importance of freshness preservation and the proper use of cold-chain equipment. This will strengthen stakeholder capacity and, ultimately, contribute to food security by reducing waste of catches. Although the total number of beneficiaries is unknown, observations at Navotas Fish Port in Manila, which handles approximately 200,000 tons annually, suggest that during peak auction hours the combined number of fishers, intermediaries, distributors, buyers, various workers, and market staff likely reaches several thousand. Similarly, observations at Cebu City's central market, which is relatively smaller in scale, indicate that the number of people working within the market alone is no fewer than 200 to 300. The final number of beneficiaries at the national level is expected to reach tens of thousands.
"Positive socio-economic effects" are also expected across numerous indicators, including the number of jobs created, the number of people receiving education and training, women employed, and wage levels.

Newly developed fishing ports, port facilities, and maritime transport routes will directly contribute to increased employment. For example, if a new fishing port on the scale of Iloilo Fish Port, whose landing volume is about one-tenth that of Navotas Fish Port, were to be developed, employment increases on the order of 1,000 to 2,000 people could be expected, including related processing facilities developed in the hinterland. If waste can be reduced and the saved portion can be redirected to sales or processing, a net increase in revenue can be expected for the same amount of labor and effort. For the portion of losses that occurs when supply during peak fishing seasons exceeds consumer demand and processing capacity, it is also necessary to consider developing processed products for uses that have not been utilized to date, such as raw material for fishmeal. The total production value corresponding to the total catch in 2023 is PHP 328.7 billion. If the discarded volume is assumed to be 25% as above, the associated economic loss would be PHP 82.1 billion. If the discarded volume were reduced to 10%, the loss would be PHP 32.8 billion, yielding an economic effect of PHP 49.3 billion (approximately JPY 130 billion).
Given the scale of the expected effects described above, the evaluation under the Ocean Impact Navigator indicators was assigned “highest priority: S.”

<Feasibility of ODA>
It was assessed as having high compatibility across all five evaluation criteria. Under “Consistency with the Country Development Cooperation Policy and the JGA,” the program strongly aligns with the development cooperation policy in terms of infrastructure development for sustainable economic growth and support for the fisheries sector aimed at increasing value added and strengthening sustainability. It also aligns closely with the JGA “Fisheries Blue Economy Promotion” cluster strategy in terms of strengthening and upgrading the food value chain through measures such as fish port development. Under “Strength of Requests and Needs from the Partner Government,” fish port development is consistent with the Philippine Government’s basic policy as set out in the CNFIDP, and nautical highway development is consistent with the basic policy set out in the MIDP. Measures to address post-harvest losses are also recognized as a priority issue in the Department of Agriculture’s development plan. In addition, interviews conducted locally indicated strong requests from relevant institutions for support in these areas. With respect to “Partner Government Capacity,” both PFDA and PPA, the agencies responsible for fish port development and maritime transport infrastructure development respectively, have strong project implementation capacity based on past track records, and, insofar as can be observed from the operational status of existing fish ports and ports, there are no apparent issues with post-completion operations and management. “Technical validitiy” is extremely high. Japan has implemented numerous preceding projects related to the development of fish ports, freezing and cold storage facilities, and ports, and therefore has strong technical advantages; the same applies to technologies and equipment for maintaining the freshness of fishery products.
Based on the above assessment, feasibility of ODA was also rated as “highest priority: S.”

<Overall Assessment>
The expected socio-economic benefits are very high, as are the rationale for implementation, policy consistency, sustainability, and Japan’s technical comparative advantage. In addition, in developing the infrastructure, incorporating multiple functions such as tourism, environmental education, and retail services will also contribute to stimulating the local economy. For these reasons, the program’s priority level was

assessed as “highest priority: S.”

(3) Coastal Community Development Program

<Ocean Impact Navigator Indicators>

With respect to environmental impact, a high rating was obtained overall. This reflects the significant effects expected from FARMC-led EAFM activities, particularly initiatives related to coastal environmental conservation and fisheries management. The specific activities to be undertaken will vary depending on local issues and environmental conditions. For example, in Malolos City, Bulacan Province, which was visited during the field survey, coastal environmental management activities included the production and planting of mangrove seedlings. Annual production is on the order of 20,000 to 30,000 seedlings, and a portion is planted in environmental protection zones established on abandoned aquaculture pond sites. Mangrove forests provide a range of benefits, including high biomass, habitat for diverse species, improved water quality, sequestration of greenhouse gases, and protection of coastlines and housing from strong winds and waves. Accordingly, broad-based effects can be expected across the environmental impact indicators. In the Philippines, where large areas of mangroves have been converted into milkfish ponds, restoring mangrove forests over as wide an area and as long a stretch of coastline as possible can generate a substantial environmental impact. In addition, high environmental impacts can also be expected from initiatives such as the restoration of coral reefs and seagrass beds, and seaweed farming. However, quantitative projections of impacts will require case-specific studies.

With respect to “positive socio-economic effects,” because the program targets small-scale coastal communities, economic benefits can be expected from livelihood improvement activities such as the development of fishery processing products and tourism-related initiatives. Social benefits are also anticipated through improved living environments and strengthened disaster risk reduction functions resulting from environmental conservation activities. FARMC activities include measures to improve livelihoods in coastal communities, and in various locations efforts are being undertaken to add value to catches through fish processing. In the Malolos City case, a portion of the mangrove seedlings produced has been sold to neighboring LGUs and other entities, generating approximately PHP 1 million in revenue between 2020, when the initiative began, and 2024. This revenue is returned to producers and is also used for other livelihood improvement and environmental conservation activities. It is further utilized for investments aimed at increasing income and for environmental improvements necessary for sustainable fisheries production. These activities also tend to enable active participation by women’s groups within the community, thereby contributing to increased income opportunities for women. In addition, developing small-scale municipal-level fishing ports and port facilities as enabling infrastructure to support these livelihoods and environmental initiatives can facilitate logistics and human exchanges. This can improve opportunities to sell products and support the development of new income sources, such as blue tourism.

Given the scale of the expected effects described above, the evaluation under the Ocean Impact Navigator indicators was assigned “highest priority: S.”

<Feasibility of ODA>

Under “Consistency with the Country Development Cooperation Policy and the JGA,” the program aligns

with the development cooperation policy in terms of infrastructure development for sustainable economic growth, increasing the value added of fishery products and strengthening sustainability, and efforts for environmental conservation. It also aligns closely with the JGA "Fisheries Blue Economy Promotion" cluster strategy in terms of improving community incomes and co-management of fisheries with government authorities. Regarding "strength of requests and needs from the partner country's government," there is strong demand for support to FARMCs and for the development and multi-functional upgrading of municipal ports; however, because LGUs will serve as the implementing entities, direct requests from the central government are not strong. With respect to "capacity of the partner country's government," since LGUs will be the principal implementers of the activities, their human and budgetary capacity is limited. If the program is to be implemented, careful attention must be given to the selection of target LGUs, taking sustainability into account. As for "technical validity," while rehabilitation of small and medium-sized local fish ports and ports is expected to be carried out mainly by local construction companies, Japan has substantial experience in providing livelihood improvement support and environmental conservation support to coastal communities, which constitutes a strong technical advantage.
Overall, while "consistency with the Country Development Cooperation Policy and the JGA" was rated highly, the other criteria were assessed as moderate to low. Accordingly, the program's feasibility of ODA was rated as "moderate: B."

<Overall Assessment>
The program has high significance in terms of promoting coastal environmental conservation and the sustainable use of resources, as well as improving incomes in coastal communities. By combining these efforts with the multi-functional upgrading of small- and medium-scale municipal ports, effects can be expected that enable the achievement of both environmental conservation and sustainable resource use, alongside livelihood improvement. On the other hand, because LGUs will serve as the implementing entities, the scale of activities will be limited, and there is also capacity constraints associated with managing multiple projects concurrently. In implementing the program, careful consideration will be required in selecting the target LGUs. For these reasons, the program's priority level is assessed as "moderate: B."

(4) Decarbonization Promotion Program

<Ocean Impact Navigator Indicators>
With respect to environmental impact, high effects are anticipated, primarily through the dual contribution of reducing greenhouse gas emissions and enhancing absorption and sequestration. While the specific amounts of reductions and sequestration will need to await future research outcomes, it is considered highly significant from a blue economy perspective for the fisheries sector and the maritime transport sector, which are the principal industries that utilize the ocean as a venue for economic activity, to pursue carbon neutrality jointly. According to the seaweed aquaculture area survey conducted in 2018, the national seaweed farming area was 96,192 ha, of which 69,303 ha was in the BARMM region. The potentially developable area is estimated at 61,519 ha nationwide and 26,359 ha in BARMM (BFAR, Seaweed Aquaculture Roadmap). If these potential areas could all be utilized for seaweed farming, greenhouse gas absorption effects are expected to increase by 64% nationwide and by 38% in BARMM alone. In addition, by shifting the energy used at

ports and on vessels to renewable energy and similar sources, reductions in air pollutants such as nitrogen oxides and sulfur oxides can also be expected.

With respect to "positive socio-economic effects," substantial economic benefits for coastal communities can be expected through the dissemination and expansion of seaweed farming and initiatives related to blue carbon credits. The production value of seaweed aquaculture nationwide in 2023 was PHP 12.7 billion (approximately JPY 34 billion). Using this value as a base, a simple estimate assuming development of the above potential areas suggests growth to PHP 20.8 billion (approximately JPY 56 billion). While greenhouse gas reduction initiatives across various segments of the maritime transport sector are not expected to generate direct economic benefits, they are not considered to entail negative impacts.

Given the scale of the expected effects described above, the evaluation under the Ocean Impact Navigator indicators was assigned "highest priority: S."

<Feasibility of ODA>

With respect to "consistency with the Country Development Cooperation Policy and the JGA," the program aligns strongly with the development cooperation policy in terms of infrastructure development for sustainable economic growth, support for the fisheries sector to achieve higher value addition and enhanced sustainability, environmental conservation, and assistance to BARMM. It also aligns strongly with the "Fisheries Blue Economy Promotion" cluster strategy in terms of strengthening and upgrading the food value chain through improved community incomes driven by the promotion of seaweed farming. Regarding "strength of requests and needs from the partner country's government," initiatives for decarbonization of ports and the maritime sector defined under the maritime transport sector are consistent with the partner government's policy. At the same time, individual ports have already been pursuing "green port" initiatives on their own. By contrast, there is strong demand from the BARMM government for support to disseminate seaweed farming and promote higher value addition. With respect to "capacity of the partner country's government," port decarbonization can already be advanced by each port operator using its own budget. On the other hand, the BARMM autonomous government, which is envisaged as the counterpart for seaweed aquaculture activities, is considered to lack sufficient human and budgetary resources. As for "technical validity," Japan has a comparative advantage in decarbonization-related technologies; however, for ports, initiatives are also being advanced independently in the Philippines. Japan's technical advantage is considered high because JICA has implemented technical cooperation projects in relevant areas, including a SATREPS project in Indonesia on technology development for seaweed farming and numerous similar technical cooperation projects on the dissemination of fisheries technologies in coastal communities.

Overall, while "consistency with the Country Development Cooperation Policy and the JGA" was rated highly, the other criteria were assessed as moderate to low. Accordingly, the program's feasibility of ODA was rated as "moderate: B."

<Overall Assessment>

Efforts toward decarbonization, encompassing both the reduction of greenhouse gas emissions and the active absorption and sequestration of carbon, are expected to generate high impacts from the perspective of the Ocean Impact Navigator indicators. In addition, the economic benefits associated with seaweed farming are significant. On the other hand, initiatives to reduce emissions in the maritime transport sector have already

begun at individual ports, and the need for ODA support in this area is not considered high. Nevertheless, with respect to future challenges that require advanced technologies, Japan is considered to have a strong comparative advantage in providing support, including through potential collaboration with the private sector. For these reasons, the program's priority level was assessed as "moderate: B."

(5) BARMM: Seaweed Farming Promotion Program for Blue Carbon and Island Economy Development

<Ocean Impact Navigator Indicators>

With respect to environmental impact, as described above, seaweed farming is expected to deliver strong effects through the absorption and sequestration of greenhouse gases. As noted above, if all of the potentially developable seaweed farming area were utilized, the greenhouse gas absorption effect in the BARMM region alone is considered to increase by 38%. BARMM's seaweed production amounts to 1.12 million tons (2023), accounting for 69% of national production, and the seaweed farming area is 69,303 ha, representing 72% of the national total. Even if the improvement is 38%, the absolute volume of greenhouse gas absorption in BARMM would be far greater than in other regions.

Similarly, "positive socio-economic effects" are expected to be substantial. Since the program will pursue integrated interventions centered on the dissemination of seaweed farming, including efforts such as improving transport efficiency and enhancing access to financing through blue carbon credits, both direct economic benefits from aquaculture production and blue carbon credits, as well as indirect economic benefits through the development of fishing ports and port facilities, can be expected. In particular, the economic effect of increased seaweed production is expected to be significant. If BARMM's share of national production (69%) is applied to the national seaweed aquaculture production value in 2023 (PHP 12.7 billion), the seaweed production value in BARMM is estimated at PHP 8.7 billion (approximately JPY 23 billion). If this were to increase by 38% simply through expansion of production area, it would rise to PHP 12.1 billion (approximately JPY 32 billion), implying an economic effect of PHP 3.4 billion (approximately JPY 9 billion).

Based on the above assessment, the evaluation under the Ocean Impact Navigator indicators was assigned "highest priority: S."

<Feasibility of ODA>

With respect to "consistency with the Country Development Cooperation Policy and the JGA," the program aligns strongly with the development cooperation policy in terms of infrastructure development for sustainable economic growth, support for the fisheries sector to achieve higher value addition and enhanced sustainability, environmental conservation, and assistance to BARMM. It also aligns highly with the JGA "Fisheries Blue Economy Promotion" cluster strategy in terms of improving community incomes through seaweed farming and strengthening and upgrading the food value chain through interventions such as fishing port development. "Strength of requests and needs from the partner country's government" is also assessed as highly compatible. In BARMM, there is a need for support for the dissemination and higher value addition of seaweed farming, as well as for the rehabilitation of fishing ports and port facilities that have been degraded by conflict, and the autonomous government's requests for support are particularly strong. With respect to "capacity of the partner country's government," the situation cannot be considered sufficient. The BARMM

autonomous government is considered to still lack adequate human and budgetary resources. While significant donor inputs continue to be provided, challenges are expected to remain in terms of impact and sustainability, including on the technical side. Capacity development efforts are required at multiple levels, including administrative officials, researchers, and extension workers. “Technical validity” is assessed as high. Japan has a comparative advantage in the core technologies and know-how related to fishing ports and port facilities, cold-chain equipment, and research, development, and extension for seaweed farming. However, rehabilitation of fishing ports and port facilities is expected to be implemented by local construction companies. In addition, with respect to nautical highway development, ferry route development, and institutional arrangements for blue carbon credits, it is desirable that these be implemented as part of support to the central government.
Overall, since all criteria except “capacity of the partner country’s government” were rated highly, the feasibility of ODA was assessed as “high: A.”

<Overall Assessment>
While there are challenges in the BARMM autonomous government’s project implementation capacity and in ensuring sustainability, the program is assumed to warrant a high level of priority in view of the proactive environmental improvement effects generated by the blue carbon function of seaweed farming, the anticipated economic benefits, and the policy rationale and consistency between the two countries. At the same time, it is desirable that capacity development for the relevant ministries and agencies of the autonomous government be undertaken as a key component of the program. For these reasons, the program’s priority level was assessed as “highest priority: S.”

(6) Selection Results of the Priority Program

The details of the selection results are presented in Table 6.4.1. The analysis indicates that, under the Ocean Impact Navigator indicators, the various projects achieved high ratings in a complementary manner, and all programs were assessed as S. In contrast, under the feasibility of ODA, “Program for Reducing Post-Harvest Losses” was rated S and “BARMM: Seaweed Farming Promotion Program for Blue Carbon and Island Economy Development” was rated A, while “Coastal Community Development Program” and “Decarbonization Promotion Program” were rated B. Based on a comprehensive review of these results, the following two programs were assessed as “highest priority: S,” and are therefore selected as the priority programs of this study.

(1) Program for Reducing Post-Harvest Losses
(2) BARMM: Seaweed Farming Promotion Program for Blue Carbon and Island Economy Development

The former is expected to make a major contribution to the promotion of the blue economy by addressing post-harvest losses, which constitute a significant nationwide social problem, and by incorporating multiple functions into fishing port infrastructure itself, thereby generating substantial environmental and resource conservation benefits as well as economic benefits for users.
The latter aims, in the BARMM region where support is currently most urgently needed in the Philippines, to further disseminate seaweed farming with high development potential and to develop infrastructure for

fisheries and maritime transport. It is likewise expected to deliver environmental conservation benefits and significant economic returns.

Some of the projects that constitute these programs were not selected as priority projects. However, it was assumed that combining multiple projects would generate synergy effects and enhance overall program effectiveness. Conversely, even for projects that were not included in the priority programs, their expected impacts remain unchanged. Accordingly, it is desirable to consider their implementation as standalone projects, in parallel with the priority programs.

Table 6.4-2 Selection of Priority Programs

	Project Title	Impact Area (OIN)							ODA Feasibility										Rating Based on ODA Feasibility	Overall Evaluation	Priority
		Environmental Impact					Socio-Economic Impact	Evaluation Using OIN Indicators	Consistency with Country Development Cooperation Policy and JICA Global Agenda		Requests and Needs from the Partner Government		Capacity of Partner Government (Feasibility including the operation and maintenance system and budget)		Technical Feasibility (The relevance, uniqueness, and competitiveness of Japanese technology in the project)						
		A. Sustainably Manged Ocean Resources	B. A Clean Ocean	C. Thriving and Restored Marine Habitats	D. Towards a 1.5C World	E. Climate-resilient coastal communities	F. Positive Socio-economic Outcomes														
1	Programs to Reduce Post-Harvest Losses	◎ A2	◎ B1, B2, B3, B4		○ D1, D2	◎ E2, E3, E4	◎ F1, F2, F3, F4 Post-harvest losses of fishery products constitute a major social issue. If this situation is improved, the impact will be significant from the perspective of effective resource utilization. In addition, development of fisheries port and maritime transport infrastructure is expected to generate substantial direct economic benefits.	S	◎	The program is strongly aligned with the Development Cooperation Policy, particularly in terms of infrastructure development for sustainable economic growth and support for the fisheries industry to increase value added and strengthen sustainability. It is also highly consistent with the JGA in terms of strengthening and upgrading the fisheries value chain (FVC) through fish port development and related initiatives.	◎	Fish port development and Nautical Highway development are consistent with the basic policy of the Government of the Philippines. Measures to address post-harvest losses are also recognized as a priority issue in the DA's development plan, and there is strong demand from relevant agencies for support in these areas.	◎	The implementing agencies have strong capacity to carry out projects related both to fish port development and to maritime transport infrastructure development, and there are no major concerns regarding operational functions after completion.	◎	Japan has implemented many precedent projects in the development of fish ports and ports, and therefore holds a strong technical advantage in this area. The same applies to technologies and equipment for maintaining the freshness of fishery products.	S	The expected socioeconomic benefits, as well as the validity and coherence of implementing the project, sustainability, and Japan's technical advantages, are all very high. In addition, in developing infrastructure, incorporating multiple functions such as tourism, environmental education, and retail activities can also contribute to stimulating the local economy.	S
2	Coastal Community Development Program	◎ A1, A2, A3	◎ B1, B2, B3, B4	◎ C1, C2, C3	○ D1, D3	◎ E1, E2, E3, E4	◎ F1, F2, F3, F4 As the program targets small-scale coastal communities, it is also expected to yield economic benefits through livelihood improvement activities, including the development of fish ports and ports, production of processed products, and tourism-related initiatives. Social benefits are also anticipated through improvements in the living environment and disaster risk reduction functions resulting from environmental conservation activities.	S	◎	Although smaller in scale, it is aligned with the Development Cooperation Policy with respect to infrastructure development for sustainable economic growth, increasing value added and strengthening sustainability of fishery products, and environmental conservation efforts. It is also highly consistent with the JGA in terms of improving community incomes and fisheries management implemented jointly with relevant government authorities.	○	While needs are high for support to FARMCs and for the development and multifunctionalization of local ports, direct requests from the central government are not as strong because implementation is led by LGUs.	△	As the implementing entities for the respective activities are LGUs, their human resource and budgetary capacity is limited. If these activities are implemented, careful consideration is required in selecting the target LGUs, with due attention to sustainability.	○	Rehabilitation of small and medium-sized local fish ports and ports is assumed to be implemented primarily by local construction companies. Meanwhile, Japan also has technical strengths in livelihood improvement support and environmental conservation support for communities.	B	The initiative is highly meaningful as an effort to conserve the coastal environment and to improve incomes in coastal communities. When combined with the multifunctional enhancement of small and medium-sized ports, it is expected to generate benefits that achieve both environmental conservation and livelihood improvement. However, because LGUs serve as the implementing entities, the scale will be limited, and there may be capacity constraints in managing multiple projects simultaneously. Careful consideration is therefore required in selecting the target LGUs.	B
3	Decarbonization Promotion Program	◎ A4	○ B3		◎ D1, D3, D4, D5	◎ E3	◎ F1, F2, F3, F4, F5 High economic benefits for coastal communities are expected through the dissemination and expansion of seaweed farming and the implementation of blue carbon credit initiatives. Efforts will also be made to reduce greenhouse gas emissions across subsectors of the maritime transport sector, without adversely affecting economic outcomes.	S	◎	It is strongly aligned with the Development Cooperation Policy across the areas of infrastructure development for sustainable economic growth, fisheries support to increase value added and strengthen sustainability, environmental conservation, and support for BARMM. It is also strongly consistent with the JGA in terms of strengthening and upgrading the FVC through improvements in community incomes.	○	Decarbonization initiatives for ports and maritime activities defined in the maritime transport sector are consistent with the counterpart government's policy, while individual ports are also promoting green port initiatives on their own. In addition, there is strong demand from the BARMM Government for support related to the dissemination and value addition of seaweed farming.	△	Port decarbonization is being advanced by each port authority using its own budget. It is considered that the Bangsamoro Government does not yet have sufficient human resources and budget.	△	Japan has an advantage in decarbonization-related technologies; however, for ports, initiatives are also being advanced independently in the Philippines. With regard to technology development and dissemination activities related to seaweed farming, JICA has implemented many similar cooperation projects.	B	Efforts toward decarbonization that address both greenhouse gas emission reductions and proactive absorption and sequestration are expected to have high impact from the Ocean Impact Navigator perspective, and needs for seaweed farming in BARMM are substantial. On the other hand, initiatives to reduce emissions in the maritime transport sector have already commenced in some areas, and the need for ODA support is not particularly high. It should be noted, however, that for future challenges requiring advanced technologies, Japan has a strong comparative advantage in providing support.	B
4	BARMM: Seaweed Farming Promotion Program to Advance Blue Carbon and Strengthen Island Economies	◎ A4	○ B3		◎ D1, D3	◎ E3	◎ F1, F2, F3, F4 Centered on the expansion of seaweed farming, the program will pursue an integrated approach that includes more efficient transport and improved access to financing through blue carbon credits. Accordingly, both direct economic benefits from aquaculture production and blue carbon credits, as well as indirect economic benefits through the development of fish port and port infrastructure, are expected.	S	◎	It is strongly aligned with the Development Cooperation Policy across the areas of infrastructure development for sustainable economic growth, fisheries support to increase value added and strengthen sustainability, environmental conservation, and support for BARMM. It is also highly consistent with the JGA in terms of improving community incomes and strengthening and upgrading the FVC through fish port development and related measures.	◎	In BARMM, needs are particularly high for the dissemination and value addition of seaweed farming and for the development of fish ports and ports degraded by conflict, and requests from the Bangsamoro Government are extremely strong.	△	Bangsamoro Government does not yet have sufficient human resources and budget. At present, inputs by many donors continue; however, challenges are expected to remain in terms of impact and sustainability, including the technical components.Capacity development is required at multiple levels, including government officials, researchers, and extension workers.	○	Japan has a technical and know-how advantage in core areas such as fish ports and ports, cold chain facilities, and research and development and dissemination for seaweed farming. However, rehabilitation works for fish ports and ports are assumed to be undertaken by local construction companies. In addition, it is desirable that initiatives such as Nautical Highway development, ferry route development, and the establishment of a blue carbon credit scheme be implemented as part of assistance to the central government.	A	While there are challenges regarding the Bangsamoro Government's project implementation capacity and sustainability, the program is expected to be high priority in view of the proactive environmental improvement effects and economic benefits of the blue carbon function of seaweed farming, as well as policy validity and coherence for both countries. Nevertheless, it is desirable to implement capacity development initiatives for relevant ministries of the Bangsamoro Government in parallel.	S

Evaluation Index of Ocean Impact Navigator (OIN)

◎ = Each inidicator is the central objective of the project

○ = Items that are not the main objective, but are expected to produce results as a result of activities

△＝Items that can be expected to be effective depending on the plan

Evaluation Index of ODA Feasibility

◎＝High Suitability

○＝Middle Suitability

△＝Low Suitability

Evaluation Index of Overall Evaluation

S = Top Priority

A= High

B = Medium

C= Low

Source: JICA Study Team

Attachment

Attachment 1: References

Attachment 2: Member List of the Survey

Attachment 1: References

(1) Documents and Materials

1000 Ocean Startups、公益財団法人笹川平和財団海洋政策研究所、一般財団法人社会変革推進財団（2025）、オーシャンインパクトナビゲーター「海洋イノベーションエコシステムのための新たなインパクト推定フレームワーク」日本版 v0.9、https://www.spf.org/opri/global-image/units/upfiles/592053-1-20250305110303_b67c7b0d78e68e.pdf
一般社団法人ジャパンブルーエコノミー技術研究組合、ブルーカーボン、https://www.meti.go.jp/shingikai/energy_environment/negative_emission/pdf/004_04_00.pdf
一般社団法人ジャパンブルーエコノミー技術研究組合（2024）、Japan Blue Carbon Credit (J-Blue Credit) Implementation and the Policy Directions
環境省（2021）、里海創生活動における実践事例、https://www.env.go.jp/water/heisa/satoumi/pdf/satoumi_jissen.pdf
環境省（2023）、我が国におけるブルーカーボン事例集、https://www.env.go.jp/earth/ondanka/blue-carbon-jp/pdf/materials/01_jp_1.pdf、https://www.env.go.jp/earth/ondanka/blue-carbon-jp/pdf/materials/02_jp_2.pdf
公益財団法人笹川平和財団、田中元（2023）、ブルーエコノミーの定義と評価手法―オーシャン／マリンエコノミーとの違いに 注目して―、海の論考 OPRI Perspectives 26 号、https://www.spf.org/global-data/opri/perspectives/prsp_026_2023_tanaka.pdf
ジャパンブルーエコノミー技術研究組合（2025）、J ブルークレジット認証申請の手引き -ブルーカーボンを活用した気候変動対策- ver 2.5、https://www.blueeconomy.jp/wp-content/uploads/jbc2025/20250331_J-BlueCredit_Guidline_v.2.5.pdf
水産庁（2022）、水産基本計画
独立行政法人国際協力機構（2018）、ケニア国ブルーエコノミーにかかる情報収集・確認調査、https://openjicareport.jica.go.jp/pdf/12320321.pdf
独立行政法人国際協力機構（2022）、DATA COLLECTION SURVEY ON URBAN INFRASTRUCTURE DEVELOPMENT IN GREATER COTABATO CITY FINAL REPORT MAIN TEXT <VOLUME 1>、https://openjicareport.jica.go.jp/pdf/12369138_01.pdf
独立行政法人国際協力機構（2024）、JICA グローバルアジェンダ No.5 農業・農村開発（持続可能な食料システム）クラスター事業戦略「水産ブルーエコノミー振興」
独立行政法人日本貿易振興機構（2024）、フィリピンにおける脱炭素分野の市場調査、https://www.jetro.go.jp/ext_images/biz/trendreports/2024/11296e2d7130d7b8/report.pdf
内閣府（2023）、海洋基本計画（令和 5 年 4 月 28 日閣議決定）
内閣府（2018）、海洋基本計画（平成 30 年 5 月 15 日閣議決定）
国立大学法人北海道大学、国土交通省、寒地土木研究所、えりも町（2023）、えりも町沿岸の天然コンブ漁場におけるブルーカーボンによる CO_2 吸収量の調査を開始、https://www.hokudai.ac.jp/news/pdf/230425_pr.pdf
APEC Port Services Network（2016）、Implementation Plan for Green Port Award System、https://cn.apecpsn.org/apsn/u/cms/www/202102/05161408xy6f.pdf
ASEAN（2023）、ASEAN Blue Economy Framework、https://asean.org/wp-content/uploads/2023/09/A

SEAN-Blue-Economy-Framework.pdf
Ateno de Manila University（2021）、Szekielda et al、Changes in the Philippine Coastal Environment、https://unfccc.int/sites/default/files/NDC/2022-06/Philippines%20-%20NDC.pdf
Bangko Sentral ng Pilipinas（2020）、BSP Circular 1085 - Sustainable Financial Framework
Bangko Sentral ng Pilipinas（2022）、Circular 1149 - Guidelines on the Integration of Sustainability Principles in Investment Activities of Banks
Bangko Sentral ng Pilipinas（2022）、CL-2022-011 Notice on the Philippine Sustainable Finance Roadmap and Guiding Principles
Bangko Sentral ng Pilipinas（2023）、Circular 1185 - Grant of Additional SBL for Financing Eligible Projects and Zero Percent RRR Against Sustainable Bonds
Bangsamoro Planning and Development Authority（2023）、2nd Bangsamoro Development Plan 2023-2028、https://knowledge.bpda.bangsamoro.gov.ph/development-plans
Bangsamoro Planning and Development Authority（2025）、Formulation of Bangsamoro Blue, Green, and Circular Economy Roadmap 2026-2031
Climate Change Commission（2021）、Republic of the Philippines、Nationally Determined Contribution Communicated to the UNFCCC on 15 April 2021、https://unfccc.int/sites/default/files/NDC/2022-06/Philippines%20-%20NDC.pdf
Congress of the Philippines（1998）、The Philippines Fisheries Code of 1998（Republic Act No. 8550）
Congress of the Philippines（2013）、The Philippines Food Safety Act of 2013（Republic Act No. 10611）
Congress of the Philippines（2015）、An Act to Prevent, Deter and Eliminate Illegal, Unreported, and Unregulated Fishing, Amending Republic Act No. 8550, Otherwise Known as “The Philippine Fisheries Code of 1998,” and for Other Purposes（Republic Act No. 10654）
Department of Agriculture, Bureau of Fisheries and Aquatic Resources、Comprehensive National Fisheries Industry Development Plan（CNFIDP）2021-2025、https://www.bfar.da.gov.ph/wp-content/uploads/2022/10/Comprehensive-National-Fisheries-Industry-Development-Plan-CNFIDP-2021-2025.pdf
Department of Agriculture, Bureau of Fisheries and Aquatic Resources、Comprehensive Post-Harvest, Marketing & Ancillary Industries Plan（CPHMAIP）2018-2022、https://www.bfar.da.gov.ph/wp-content/uploads/2021/04/CPHMAIP20182022.pdf
Department of Agriculture, Bureau of Fisheries and Aquatic Resources、FARMC HANDBOOK
Department of Agriculture, Bureau of Fisheries and Aquatic Resources、National Tuna Management Plan、https://www.bfar.da.gov.ph/wp-content/uploads/2022/07/National-Tuna-Management-Plan-For-Publication.pdf
Department of Agriculture, Bureau of Fisheries and Aquatic Resource、Fisheries Law Enforcement Profile
Department of Agriculture, Bureau of Fisheries and Aquatic Resource（2006）、Comprehensive National Fisheries Industry Development Plan (2006-2025)、https://faolex.fao.org/docs/pdf/phi185010.pdf
Department of Agriculture, Bureau of Fisheries and Aquatic Resource（2012）、Fisheries Administrative Order No.197-1: Series of 2012. Revised rules and regulations governing the lease of public lands for fishpond and mangrove-friendly aquaculture

Department of Agriculture, Bureau of Fisheries and Aquatic Resource（2016）、Fisheries Office Order（FOO）164, series of 2016. Mainstreaming Ecosystem Approaches to Fisheries Management
Department of Agriculture, Bureau of Fisheries and Aquatic Resources（2020）、National Sardines Management Plan、https://www.bfar.da.gov.ph/wp-content/uploads/2022/07/National-Sardines-Management-Plan-with-ISBN.pdf
Department of Agriculture, Bureau of Fisheries and Aquatic Resources（2020）、Blue Swimming Crab Fishery Management Plan、https://www.bfar.da.gov.ph/wp-content/uploads/2022/07/Blue-Swimming-Crabs-National-Management-Plan.pdf
Department of Agriculture, Bureau of Fisheries and Aquatic Resources（2019）、Fisheries Administrative Order No. 263
Department of Agriculture, Bureau of Fisheries and Aquatic Resources（2022）、Philippine Shellfish Industry Roadmap 2021-2025
Department of Agriculture, Bureau of Fisheries and Aquatic Resources（2022）、Philippine Shrimp Industry Roadmap 2021-2040
Department of Agriculture, Bureau of Fisheries and Aquatic Resources（2022）、Philippine Milkfish Industry Roadmap 2021-2040
Department of Agriculture, Bureau of Fisheries and Aquatic Resources（2022）、Philippine Tilapia Industry Roadmap 2022-2025
Department of Agriculture, Bureau of Fisheries and Aquatic Resources（2022）、Philippine Seaweed Industry Roadmap 2022-2026
Department of Agriculture, Bureau of Fisheries and Aquatic Resources（2022）、Philippine IUU Fishing Assessment Report 2021: An Executive Summary、https://www.bfar.da.gov.ph/wp-content/uploads/2022/08/Executive-Summary_IUU-Assessment-2021.pdf
Department of Agriculture, Bureau of Fisheries and Aquatic Resources（2022）、Philippine Seaweed Industry Roadmap 2022-2026
Department of Agriculture, Bureau of Fisheries and Aquatic Resources（2024）、Aquaculture Development and Management Plan 2025-2040
Department of Agriculture, Bureau of Fisheries and Aquatic Resources（2024）、IUU Fishing Assessment Report 2023
Department of Agriculture, Bureau of Fisheries and Aquatic Resources（2024）、Philippine Fisheries Profile 2023
Department of Agriculture, Bureau of Fisheries and Aquatic Resources（2025）、2024 Annual Report
Department of Environment and Natural Resources, Environment Management Bureau, Region 1、Growpure Aquaculture Production and Development Project、https://r1.emb.gov.ph/wp-content/uploads/2022/07/Project-Description_Growpure-Corp.pdf
Department of Environment and Natural Resources、Memorandum Order No.2024-1
Economic Research Institute for ASEAN and East Asia（2023）、Donah Baracol Pinhão、An Overview of the Blue Economy of the Philippines – A Brief Assessment and Recommendations、https://www.eria.org/uploads/Overview-Blue-Economy-the-Philippines.pdf
Department of Transportation (2023)、Transport Modernization Program、https://www.bsp.gov.ph/Pag

es/IRG/irg-files/Full%20PPT/DOTr%20Full%20Agency%20Presentation%20(Davao).pdf
House of Representatives of the Philippines（2023）、An Act Establishing a Framework for Blue Economy, Promoting Stewardship and Sustainable Development of Coastal and Marine Ecosystems and Resources, Reorganizing and Renaming the National Coast Watch System as the National maritime Monitoring Systems, and Providing Funds Therefor、https://legacy.senate.gov.ph/lis/bill_res.aspx?congress=19&q=HBN-9662
House of Representatives of the Philippines（2025）、An Act Establishing a Framework For Blue Economy, Promoting Stewardship and Sustainable Development of Coastal and Marine Ecosystems and Resources, Reorganizing and Renaming the National Coast Watch System as the National Maritime Monitoring System, and Providing Funds Therefore、https://docs.congress.hrep.online/legisdocs/basic_20/HB03819.pdf
House of Representatives of the Philippines（2025）、SBSR Development Act of 2025 House Bill No. 2598、https://docs.congress.hrep.online/legisdocs/basic_20/HB02598.pdf
Maritime Industry Authority（2024）、Maritime Industry Development Plan 2019-2028、https://marina.gov.ph/wp-content/uploads/2024/04/MIDP-2028-as-of-29-April-2024.pdf
National Economic and Development Authority（2023）、Philippine Development Plan (PDP) 2023-2028、https://pdp.depdev.gov.ph/philippine-development-plan-2023-2028/
OCEANA、Establishment of Fisheries Management Areas (FMA) in the Philippines、https://ph.oceana.org/wp-content/uploads/sites/16/oceana_-_fisheries_management_area_briefer.pdf
One Earth Future、Stable Seas、Asia Pacific Pathways to Progress Foundations, Inc.（2020）、BARMM Blue Economy: Proposals for the Bangsamoro Autonomous Region in Muslim Mindanao、
Philippine Fisheries Development Authority（2025）、Philippine Fisheries Development Authority AGENCY BRIEFER
Philippine Port Authority（2015）、Guidelines on the Implementation of PPA Orange Book on Safety, Health, Environmental Management and Handling of Dangerous Goods in Ports、https://ppa.com.ph/sites/default/files/issuances_docs/AO%2007-2015.pdf
Philippine Port Authority（2018）、Port Environmental Policy、https://ppa.com.ph/sites/default/files/issuances_docs/PPA%20AO%20No.%2005-2018%20%20The%20Port%20Environmental%20Policy%20%28PEP%29_0.pdf
Rare（2024）、Schindler Murray, L. et al.、 Landscape Analysis and Opportunity Study on Marine Biodiversity and Blue Carbon Ecosystems in the Philippines、https://rare.org/wp-content/uploads/2024/05/AFD-Rare_Blue-Carbon-Landscape-Analysis-Philippines.pdf
Security and Exchange Commission、Sustainable Finance Market Report

Security and Exchange Commission（2022）、Philippine Sustainable Finance Roadmap
Security and Exchange Commission（2024）、Guidelines on the Philippine Sustainable Finance Taxonomy
Senate Economic Planning Office（2024）、Blue Economy Policy Brief: Harnessing Ocean Wealth for Sustainable Growth、https://legacy.senate.gov.ph/publications/SEPO/SEPO_Policy%20Brief_Blue%20Economy.pdf
Senate of the Philippines（2023）、An Act Establishing a Framework for Blue Economy, Promoting

Stewardship and Sustainable Development of Coastal and Marine Ecosystems and Resources、https://legacy.senate.gov.ph/lis/bill_res.aspx?congress=19&q=SBN-1993

Senate of the Philippines（2023）、An Act Establishing a Framework for Blue Economy, Promoting Stewardship and Sustainable Development of Coastal and Marine Ecosystems and Resources、https://legacy.senate.gov.ph/lis/bill_res.aspx?congress=19&q=SBN-2450

Senate of the Philippines（2025）、An Act Establishing a Framework for Blue Economy, Promoting Stewardship and Sustainable Development of Coastal and Marine Ecosystems and Resources、https://legacy.senate.gov.ph/lis/bill_res.aspx?congress=20&q=SBN-1537

Supreme Court of the Philippines（2016）、Biofuels Act of 2016、https://elibrary.judiciary.gov.ph/thebookshelf/showdocs/2/66308

The Philippine Journal of Fisheries (2020)、Montojo et al.、Estimation of Post-Harvest Losses of Fish Transported Using Ice-chilled Boats from High Sea Pockets 1、https://nfrdi.da.gov.ph/tpjf/vol27/Estimation%20of%20Post-Harvest%20Losses%20of%20Fish%20Transported%20Using%20Ice-chilled%20Carrier%20Boats%20from%20High%20Seas%20Pocket%201.pdf

The Philippine Journal of Fisheries (2021)、Banicod et al.、Assessment of Postharvest Losses Due to Catching Undersized Fishery Commodities and Size-Dependent Pricing in the Philippines、https://www.nfrdi.da.gov.ph/tpjf/etc/Assessment%20of%20Postharvest%20Losses%20Due%20to%20Catching%20Undersized%20Fishery%20Commodities%20and%20Size-Dependent%20Pricing%20in%20the%20Philippines.pdf

The Philippine Journal of Fisheries (2022)、Tadifa et al.、A Study on Postharvest Losses in Fisheries Owing to Changes in Market Supply and Demand in the Philippines、https://www.nfrdi.da.gov.ph/tpjf/etc/A%20Study%20on%20Postharvest%20Losses%20in%20Fisheries%20Owing%20to%20Changes%20in%20Market%20Supply%20and%20Demand%20in%20the%20Philippines.pdf

United Nations Environment Program（2011）、Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication、https://whygreeneconomy.org/information/unep-green-economy-report/

United Nations Environment Program（2012）、Rio +20 Agenda item 10, Outcome of the Conference, The future we want、https://wedocs.unep.org/rest/api/core/bitstreams/bca0293f-d42b-4162-9d92-e1e0acdae813/content

United Nations Environment Program（2012）、Green Economy in a Blue World、https://www.undp.org/sites/g/files/zskgke326/files/publications/Green_Economy_Blue_Full.pdf

United Nations Environment Program（2016）、Blue Economy Concept Paper、https://wedocs.unep.org/rest/api/core/bitstreams/2d5fd23f-fb98-4593-b877-150cbc3f0732/content

World Bank（2017）、The Potential of Blue Economy: Increasing Long-term Benefits of the Sustainable Use of Marine Resources for Small Island Developing States and Coastal Least Developed Countries、https://openknowledge.worldbank.org/server/api/core/bitstreams/cee24b6c-2e2f-5579-b1a4-457011419425/content

World Bank（2024）、Philippines Digital Infrastructure Project (P176317) Appraisal Environmental and Social Review Summary Appraisal Stage、https://documents1.worldbank.org/curated/en/099061224013590613/pdf/P1763171f649e10711973d1e61eb584f62f.pdf

(2) Internet Websites

ウミトロン株式会社、東京都「吸収・除去系カーボンクレジット創出促進事業」に採択、https://pr-ja.umitron.com/post/784842514911887360/tokyobluecarbon
一般社団法人マリンオープンイノベーション機構（MaOI 機構）、研究開発：助成事業、https://maoi-i.jp/research/josei.php#
環境省、里海ネット、https://www.env.go.jp/water/heisa/satoumi/index.html
環境省、計画等の策定状況　横須賀市、https://www.env.go.jp/policy/local_keikaku/sakutei2/14/14201.html
国土交通省港湾局、カーボンニュートラルポート（CNP）の形成、https://www.mlit.go.jp/kowan/kowan_tk4_000054.html
国土交通省海事局、内航カーボンニュートラル推進に向けた検討会、https://www.mlit.go.jp/maritime/maritime_tk7_000036.html
国土交通省（2024）、我が国の沿岸域に生息する海洋植物による二酸化炭素の吸収量（約３５万トン）が国連に報告されました～海藻藻場による二酸化炭素の吸収量の報告は世界初～、https://www.mlit.go.jp/report/press/port06_hh_000290.html
国立研究開発法人宇宙航空研究開発機構（2025）、JAXA 宇宙戦略基金 採用結果、https://fund.jaxa.jp/content/uploads/kekka19.pdf
国立大学法人愛媛大学　南予水産研究センター（2016）、えひめ水産イノベーション・システム、https://ccr.ehime-u.ac.jp/cnf/ecosystem/
国立大学法人鹿児島大学、南九州・南西諸島域イノベーションセンター、ハダムシ感染機構研究会：カンパチのハダムシ感染に関わる分子同定の試み、https://www.krcc.kagoshima-u.ac.jp/archive/hadamushi-club/
国立大学法人高知大学、第 25 回定例記者会見、https://www.kochi-u.ac.jp/outline/kouhou/kisyakaiken/teireikisyakaiken023_20250425115316.html
国立大学法人高知大学、しまんと海藻エコイノベーション拠点、https://www.kochi-u.ac.jp/seawheat/index.html
国立大学法人東京海洋大学　海の研究戦略マネジメント機構、https://mss.kaiyodai.ac.jp/
国立大学法人長崎大学、ながさき BLUE エコノミー、https://blueco.ciugc.nagasaki-u.ac.jp/
新エネルギー・産業技術総合開発機構（2025）、次世代船舶の開発、グリーンイノベーション基金事業、https://green-innovation.nedo.go.jp/project/development-next-generation-vessels/
中部電力ミライズ株式会社（2025）、TOP プレスリリース 中部電力ミライズと中部電力および三井住友海上による「ブルーカーボン」を活用した新たなサービスの開発に向けた合意書の締結について、https://miraiz.chuden.co.jp/info/press/1216102_1938.html
日本財団（2025）、2025 年度「低･脱炭素船舶建造資金」募集要項について、https://www.nippon-foundation.or.jp/who/news/information/2025/20250327-109
みずほファイナンシャルグループ（2023）、本邦初となる「ブルーボンド」起債を追い風に、国産サーモンの陸上養殖で新たな価値創造に挑む、https://www.mizuho-fg.co.jp/sx/project-case/202305-008/index.html
三井住友ファイナンシャルグループ（2024）、インド農村部の家庭に清潔な水道水を～ブルーローンで実現した生活水準の向上と女性支援～、https://www.smfg.co.jp/sustainability/social_value/intervi

ew/0009.html
BusinessMirror、Jovee Marie N. de la Cruz（2025）、House approves Blue Economy bill、https://businessmirror.com.ph/2025/12/17/house-approves-blue-economy-bill/
Common Wealth of Learning、John Lesperance（2016）、The Blue Economy: Origin and Concept、https://www.col.org/news/the-blue-economy-origin-and-concept/
Department of Agriculture Bureau of Fisheries and Aquatic Resources、https://www.bfar.da.gov.ph/
Department of Agriculture Bureau of Fisheries and Aquatic Resources、BFAR Regional Map、https://ncr.bfar.da.gov.ph/bfar-regional-map-10/
Department of Agriculture Bureau of Fisheries and Aquatic Resources、National Seaweeds Technology Development Center、https://www.bfar.da.gov.ph/national-seaweeds-technology-development-center-nstdc/
Department of Agriculture National Fisheries Research and Development Institute、Organizational Structure、https://nfrdi.da.gov.ph/our-organizational-structure/
Date of Trade and Investment – Export Marketing Bureau、Tradeline Portal、https://tradelinephilippines.dti.gov.ph/web/tradeline-portal/trade-statistics
EAFM Learn（2026）、https://eafmlearn.org/
FAO、FishStat、https://www.fao.org/fishery/en/fishstat
Legislative Executive Development Advisory Council、19th Congress (June 2022 – June 2025) LEDAC Common Legislative Agenda (CLA) for the 19th Congress、https://ledac.depdev.gov.ph/resources-2/19th-congress/
OCEANA、Sardine Implementing Regulations, Establish National Rules on Fisheries Management Areas / Protect Sardines、https://ph.oceana.org/our-campaigns/sardines-implementing-regulations/
OCEANA（2025）、A troubling tide: The problem of illegal fisheries and declining catch、https://ph.oceana.org/our-campaigns/sardines-implementing-regulations/
PEMSEA（2022）、Ship Waste Management in Philippine Ports Project Successfully Completed、https://www.pemsea.org/resources/news/ship-waste-management-philippine-ports-project-successfully-completed
Philippine News Agency（2025）、Raymond Carl Dela Cruz、200 social, farm-to-market port projects to boost inclusive growth、https://www.pna.gov.ph/articles/1244475
Philippine Port Authority（2025）、PPA Showcases Commitment to Sustainable, Carbon-neutral Ports Through Green Port Initiatives in the International Community、https://www.ppa.com.ph/node/19852
Philippine Statistics Authority OpenSTAT、https://openstat.psa.gov.ph/
Power Philippines（2025）、DOTr launches PHP 32B plan for Metro Manila electric ferry network、https://powerphilippines.com/dotr-launches-php-32b-plan-for-metro-manila-electric-ferry-network/
Power Philippines（2025）、MARINA, World Bank team up to decarbonize Philippine ferries、https://powerphilippines.com/marina-world-bank-team-up-to-decarbonize-philippine-ferries/
World Bank、Philippine Fisheries and Coastal Resiliency Project、https://projects.worldbank.org/en/projects-operations/project-detail/P174137
World Bank（2022）、A Roadmap for Offshore Wind in the Philippines、https://www.worldbank.org/en/news/infographic/2022/04/25/a-roadmap-for-offshore-wind-in-the-philippines

Attachment 2: Member List of the Survey

	Name	Company	Position
1	ECHIGO Manabu	INTEM Consulting	Team Leader / Fisheries Sector
2	FUJITA Emiko	Oriental Consultants Global	Deputy Team Leader / Finance Sector (1)
3	KOSHIMIZU Masahiko	Oriental Consultants Global	Ocean Transport Sector (1)
4	DOI Masanori	INTEM Consulting	Fisheries Sector (Aquaculture)
5	SHINOHARA Ryo	INTEM Consulting	Fisheries Sector (Value Chain 2)
6	SASAKI Muneyuki	INTEM Consulting	Fisheries Sector (Value Chain 1)
7	Thuta Kyaw Win	Oriental Consultants Global	Ocean Transport Sector (2)
8	OKADA Juri	Oriental Consultants Global	Finance Sector (2)
9	MIYATAKE Kousuke	Oriental Consultants Global	Carbon Credits and Blue Carbon
10	HAYASHI Soichiro	Oriental Consultants Global	Business Development