

ERIA Research Project Report FY2023 No. 17

# **Blue Economy Initiatives in South-East Asia: Challenges and Opportunities**

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## **Blue Economy Initiatives in South-East Asia: Challenges and Opportunities**

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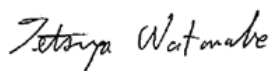
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## Foreword

The Association of Southeast Asian Nations (ASEAN) region's dependence on the ocean and inland water economies is significantly higher than that of most other regions around the world. As evidenced by the findings of this report, these economies contribute a significant 20%–30% share of total gross domestic product for some countries in South-East Asia, both directly and indirectly. Over 90% of global trade passes across the world's oceans and through the Mekong River for some countries in South-East Asia as well. Thus, it is imperative that the development of the Blue Economy be fully supported, especially in finding the most appropriate strategy to achieve the twin goals of economic growth and sustainability.

The Blue Economy offers a promising future as a new engine of growth through (i) job creation in emerging sectors such as aquaculture, renewable energy, and tourism; (ii) promotion of economic diversification, leading to a more resilient economy to withstand future shocks; (iii) strengthened food security, as the ocean and inland water sectors can provide plentiful food throughout the region; and (iv) fostering of innovation and technology in the field, such as marine biotechnology and energy solutions.

This report presents an overview of the current development of the Blue Economy in each ASEAN Member State (AMS). It documents the perspective of each AMS towards the Blue Economy, analyses primary regulations and specific policies related to Blue Economy implementation, reviews major Blue Economy initiatives undertaken, examines risks and challenges towards Blue Economy development, and identifies related cross-border cooperation in each AMS. This report identifies key development processes and suggests potential enablers to inform policymakers in designing the best Blue Economy strategies to promote shared prosperity and sustainability in the South-East Asian region.



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This collaborative effort has brought together the diverse expertise, perspectives, and resources of each ASEAN Member State, resulting in comprehensive and insightful exploration, as well as a nuanced understanding of the challenges and opportunities associated with the Blue Economy in South-East Asia, which is set to be the new engine of growth in the region.

We hope that this integrative report on the Blue Economy will provide insights to policymakers and other stakeholders as they create future development strategies for their respective countries.

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# Table of Contents

	Foreword	iii
	Acknowledgments	iv
	List of Contributors	v
	List of Figures	vii
	List of Tables	viii
	List of Abbreviations	ix
	Executive Summary	xiv
Chapter 1	The Blue Economy in South-East Asia: A New Engine of Growth?	1
Chapter 2	Blue Economy Initiatives in ASEAN Member States	5
Chapter 3	Conclusion: Future Trajectories of the ASEAN Blue Economy	74
	Appendices	76

## List of Figures

Figure 1.1	Levels of Progress of ASEAN Member States in Developing Formal National Blue Economy Strategies and Policies, as of January 2023	4
Figure 2.1	Brunei Darussalam’s Ocean Health Index	6
Figure 2.2	Self-Sufficiency Levels of Brunei Darussalam Fisheries, 2010–2021	8
Figure 2.3	Sectoral Contribution to the Blue Economy in Indonesia, 2015	17
Figure 2.4	Indonesia’s Marine Protected Areas and Key Marine Ecosystems	24
Figure 2.5	Key Sectoral Stakeholders in the Blue Economy in the Lao PDR	28
Figure 2.6	Coastal Zones in Myanmar	39
Figure 2.7	Myanmar’s Total Fisheries Production, 2012–2022	42
Figure 2.8	Sectoral Share of Foreign Direct Investment in Myanmar, September 2020	43
Figure 2.9	Share to Gross Value Added of Ocean-Based Activities by Industrial Origin, 2018–2021	50

## List of Tables

Table 1.1	Examples of ASEAN Progress towards a Blue Economy	3
Table 2.1	Main Blue Economy Regulations and Policies in Cambodia	10
Table 2.2	Cross-Border Cooperation in Cambodia Related to the Blue Economy	16
Table 2.3	Indonesia's Participation in International and Regional Blue Economy Initiatives	18
Table 2.4	National Blue Economy Regulations in Indonesia	20
Table 2.5	Stakeholders and Related Laws for the Inland Blue Economy of Lao PDR	28
Table 2.6	Multilateral Cooperation Related to the Blue Economy of the Lao PDR	33
Table 2.7	Regulations and Institutions for the Blue Economy in Myanmar	40
Table 2.8	Myanmar's Participation in International and Regional Blue Economy Initiatives	45
Table 2.9	Share to Gross Value Added of Ocean-Based Activities by Industrial Origin, 2018–2021	47
Table 2.10	Blue Economy Initiatives and Relevant Government Authorities of Singapore	57
Table 2.11	Trends in the Ocean Economy and Blue Economy in Singapore	58
Table 2.12	Main Stakeholders and Relevant Regulations on Blue Economy in Thailand	62
Table 2.13	Regulations Relating to Integrated Coastal Management Model in Thailand	65



## Lis of Abbreviations

ABEF	ASEAN Blue Economy Framework
AMS	ASEAN Member State
ASEAN	Association of Southeast Asian Nations
BIMSTEC	Bay of Bengal Initiative for Multisectoral Technical and Economic Cooperation
FAO	Food and Agriculture Organization of the United Nations
GDP	gross domestic product
GHG	greenhouse gas
ha	hectare
IMO	International Maritime Organization
IUU	illegal, unreported, and unregulated
km	kilometre
Lao PDR	Lao People’s Democratic Republic
LIPI	Lembaga Ilmu Pengetahuan Indonesia (Indonesian Institute of Sciences)
MPA	Maritime and Port Authority of Singapore
MW	megawatt
NDC	nationally determined contribution
OECD	Organisation for Economic Co-operation and Development
OGSE	oil and gas services and equipment
PAS	Sihanoukville Autonomous Port
PEMSEA	Partnerships in Environmental Management for the Seas of East Asia
RPJMN	<i>Rencana Pembangunan Jangka Menengah Nasional (National Medium-Term Development Plan)</i>
RPJPN	<i>Rencana Pembangunan Jangka Panjang Nasional (National Long-Term Development Plan)</i>
SDG	Sustainable Development Goal
SOLAS	Safety of Life at Sea
UNCLOS	United Nations Convention on the Law of the Sea
UNESCO	United Nations Educational, Scientific and Cultural Organization

# Chapter 1

## The Blue Economy in South-East Asia: A New Engine of Growth?

South-East Asia is home to some of the most dynamic and diverse marine habitats in the world, and they provide essential livelihoods for millions of people. The Blue Economy has become an increasingly popular concept as a strategy for safeguarding these inland water and ocean resources.<sup>1</sup> In 2013, the United Nations Environment Programme highlighted that the Blue Economy has the potential to improve human well-being and social equity while simultaneously reducing environmental risks and ecological scarcities.

If the ocean were treated like a country, it would be the eight largest economy in the world with an estimated gross domestic product (GDP) of \$3 trillion by 2030 or about 5% of global GDP.<sup>2</sup> The Food and Agriculture Organization (FAO) of the United Nations estimated that more than 60 million people work in the fisheries sector globally, of whom more than 83% are from Asia.<sup>3</sup> The oceans are also the most mysterious areas on earth, with less than 20% of their areas explored.<sup>4</sup> Yet although the seas are large; they are finite – a strategy that features balanced economic growth and sustainability is crucial for safeguarding global waters.

The contribution of the ocean economy to Asia-Pacific countries' GDPs varies, from as low as 1% to as high as 30%.<sup>5</sup> The Blue Economy was cited as a significant area for collaboration in the Association of Southeast Asian Nations (ASEAN) region. ASEAN leaders consider the Blue Economy a multifaceted, cross-cutting concept that involves three pillars of the ASEAN Community: the ASEAN Political-Security Community, ASEAN Economic Community (AEC), and ASEAN Socio-Cultural Community. In 2021, the *ASEAN Leaders' Declaration on the Blue Economy* was signed by all ASEAN Member States (AMS), aiming to transform and to diversify AMS economies through the Blue Economy, which is envisioned to become a new engine of growth in the region.

In ensuring that a strategy on the Blue Economy will be well developed, AMS agreed on a definition of the term during the 38<sup>th</sup> ASEAN Summit in 2021 in Brunei Darussalam:

*Blue Economy for ASEAN refers to the sustainable, resilient and inclusive use, governance, management and conservation of oceans, seas as well as marine and coastal resources and ecosystems for economic growth across various sectors such as fishery, aquaculture, maritime transport, renewable energy, tourism, climate*

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<sup>1</sup> K.H. Lee, J. Noh, and J.S. Khim (2020), 'The Blue Economy and the United Nations' Sustainable Development Goals: Challenges and Opportunities', *Environment International*, 137, 105528.

<sup>2</sup> Organisation for Economic Co-operation and Development (OECD) (2016), *The Ocean Economy in 2030*, Paris.

<sup>3</sup> Food and Agriculture Organization of the United Nations (FAO) (2020), *The State of World Fisheries and Aquaculture 2020*, Rome.

<sup>4</sup> United Nations Educational, Scientific and Cultural Organization (UNESCO), *The 7 Principles of Ocean Literacy*, <https://oceanliteracy.unesco.org/principles/>

<sup>5</sup> M. Juneja, et al. (2021), 'Contextualising Blue Economy in Asia-Pacific Region: Exploring Pathways for a Regional Cooperation Framework', *Konrad-Adenauer-Stiftung Policy Briefs*, March, Hong Kong: Konrad-Adenauer-Stiftung.

*change, and research and development while improving human well-being and social equity.*<sup>6</sup>

In September 2023, ASEAN leaders adopted the *ASEAN Blue Economy Framework (ABEF)* as a Priority Economic Deliverable at the 43<sup>rd</sup> ASEAN Summit in Jakarta. The ABEF notes that:

*ASEAN defines the Blue Economy as an integrated, holistic, cross-sectoral, and cross-stakeholder approach that creates value-added and value-chain of resources from oceans, seas, and fresh water in an inclusive and sustainable way, making the Blue Economy the new engine for ASEAN's future economic growth. The ASEAN Blue Economy covers upstream-downstream sectors, serving as an accelerator of the conventional marine sector such as fisheries, aquaculture, fish-only processing, and tourism and a catalyst for emerging sectors such as renewable energy, biotechnology, and marine and freshwater-based research and education as well as other emerging sectors from aquatic resources.*<sup>7</sup>

The ABEF will serve as the main reference document for future Blue Economy activities throughout the region and advance the region's ambitions to accelerate economic growth after the COVID-19-pandemic.<sup>8</sup> Moreover, as the majority of AMS remain in low- and middle-income status, to move forwards, creating a new engine of growth is necessary. The ABEF also aims to promote regional integration and cooperation, uphold the principle of 'leave no one behind', and enhance ASEAN competitiveness. It also reaffirms the 1982 United Nations Convention on the Law of the Sea (UNCLOS)<sup>9</sup> and all existing related ASEAN agreements or commitments. The Blue Economy has the potential to help fulfil the Sustainable Development Goals (SDGs), especially SDG 14 – to conserve and sustainably use the oceans, seas, and marine resources for sustainable development – which is currently the least-funded SDG in the world. The existing gap in conservation funding is huge – around \$7 trillion – as sustainability funding largely focusses on 'green' or land-based conservation.<sup>10</sup>

Oceans are facing significant risks that could affect the global economy and key ecosystem services. For instance, 89% of global fish stocks are either fully exploited, overexploited, or have collapsed. Ocean acidity has increased 30% over the last 50 years, disrupting marine food chains; ocean acidification erodes key minerals used by ocean ecosystems, threatening food supplies to humans in a long-term effect.<sup>11</sup> In addition, about 10 million to 20 million metric tonnes of plastics are entering the oceans each year.

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<sup>6</sup> ASEAN (2021), *ASEAN Leaders' Declaration on the Blue Economy*, Jakarta.

<sup>7</sup> ASEAN (2023), 'ASEAN Blue Economy Framework', statements, 5 September, <https://asean.org/asean-blue-economy-framework/>

<sup>8</sup> ASEAN Indonesia (2023), 'ASEAN Blue Economy Forum Eyes Sustainable Economic Growth', Op-Ed, 26 July 2023, <https://asean2023.id/en/news/asean-blue-economy-forum-eyes-sustainable-economic-growth>

<sup>9</sup> The UNCLOS 1982 is an international agreement that establishes a legal framework for the use and conservation of ocean resources. It continues to serve as the primary international legal framework governing maritime affairs today. See United Nations, Oceans and the Law of the Sea, [https://www.un.org/depts/los/convention\\_agreements/texts/unclos/UNCLOS-TOC.htm](https://www.un.org/depts/los/convention_agreements/texts/unclos/UNCLOS-TOC.htm)

<sup>10</sup> R.D. Tirumala and P. Tiwari (2020), Innovative Financing Mechanism for Blue Economy Projects, *Marine Policy*, 139, 104194

<sup>11</sup> World Bank, Life below Water, <https://datatopics.worldbank.org/sdgtlas/archive/2017/SDG-14-life-below-water.html>

The Blue Economy currently contributes around \$100 billion in fisheries and aquaculture, and another \$27 billion and \$900 billion in offshore oil and gas, respectively, around the world.<sup>12</sup> Yet despite its recognition as a new economic frontier since the Rio+20 United Nations Conference on Sustainable Development in 2012, concrete cooperation and initiatives for the Blue Economy are limited. The concept of the Blue Economy has the capacity to achieve enhanced governance of marine and inland water ecosystems, reduced emissions, equitable improvement in health standards, and help fight climate change.

Moreover, the South-East Asian region has huge marine potential that has not been capitalised. Although traditional Blue Economy sectors – such as fisheries, aquaculture, fish-only processing, and tourism – have shown some development, further innovations are needed to expand and to diversify the Blue Economy in the region. Emerging Blue Economy industries – such as renewable energy, biotechnology, and ocean-based research and education – need adequate financing strategies to ensure their optimisation. Issues, such as intensive farming and aquaculture as well as rapid urbanisation and industrialisation, have damaged marine ecosystems and the economies dependent on them, which have been aggravated by pollution and the clearing of mangroves. These challenges need attention and commitment as well.

Partnerships in Environmental Management for the Seas of East Asia (PEMSEA), an inter-governmental organisation operating in East Asia and a regional partnership programme implemented by the United Nations Development Programme, has documented AMS Blue Economy developments and progress (Table 1.1).

**Table 1.1. Examples of ASEAN Progress towards a Blue Economy**

Existing ASEAN Initiative	Sector
<i>Strategic Plan of Action for ASEAN Cooperation on Fisheries (2016–2020)</i>	Fisheries and aquaculture
ASEAN Trade Facilitation Network	Business and trade
ASEAN Solutions for Investments, Services, and Trade (ASSIST)	Business and trade
Southeast Asia Regional Program on Combating Marine Plastics (SEA-MaP)	Environmental management
<i>ASEAN-SEAFDEC Joint Declaration on Regional Cooperation for Combating IUU Fishing</i>	Fisheries and aquaculture
Enhancing the Competitiveness of ASEAN Fish and Fishery Products	Fisheries and aquaculture
<i>Regional Plan of Action for Managing Fishing Capacity</i>	Fisheries and aquaculture
ASEAN Catch Documentation Scheme for Marine Fisheries	Fisheries and aquaculture
<i>The Sustainable Development Strategy for the Seas of East Asia (SDS-SEA) and other PEMSEA projects</i>	Environmental and natural resources strategy
Various PEMSEA GloFouling (biofouling) partnerships	Biodiversity

<sup>12</sup> P.J. Morgan et al. (eds.) (2022), *Blue Economy and Blue Finance: Toward Sustainable Development and Ocean Governance*, Tokyo: Asian Development Bank (ADB) Institute.

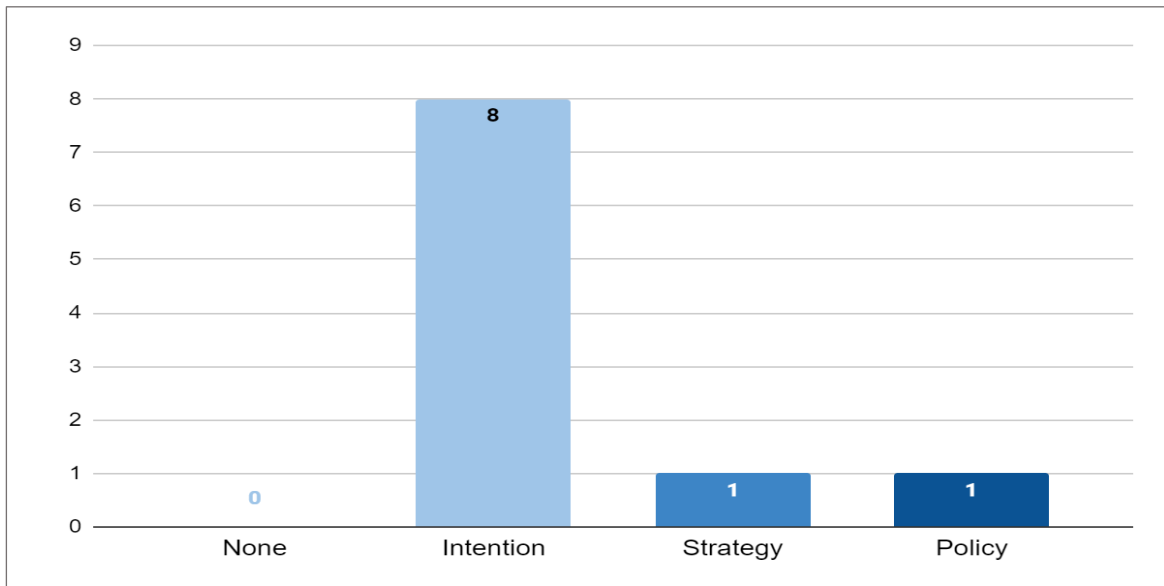
Existing ASEAN Initiative	Sector
<i>Framework for Resilient Development in the Pacific</i> (Pacific Island Forum 2016)	Climate change
IORA Indian Ocean Blue Carbon Hub	Environmental management and climate change
<i>IORA Strategic Framework of Action on Marine Debris in the Indian Ocean</i>	Environmental management and climate change

ASEAN = Association of Southeast Asian Nations; IORA = Indian Ocean Rim Association; IUU = illegal, unreported, and unregulated; PEMSEA = Partnerships in Environmental Management for the Seas of East Asia; SEAFDEC = Southeast Asian Fisheries Development Centre.

Note: This table does not represent all progress in South-East Asia. See Appendix 1 for more details.  
Source: Authors.

Few AMS have compiled Blue Economy strategies nationally; those that have are classified as having ‘intention’ to develop their national Blue Economy (Figure 1.1).

**Figure 1.1. Levels of Progress of ASEAN Member States in Developing Formal National Blue Economy Strategies and Policies, as of January 2023**



none = no record of country commitment to a Blue Economy; intention = published documents reference the country intending to develop its Blue Economy or regional commitments, but no official strategic documents exist; strategy = country published official strategy/planning document outlining plans for Blue Economy development; policy = country published a policy and associated action plan for a Blue Economy strategy.  
Source: Authors.

This report presents an overview of the current development of the ASEAN Blue Economy. It examines the regulatory frameworks, policy implementation, barriers, cross-border cooperation, and possible enablers in each AMS for effective implementation of the Blue Economy throughout ASEAN.

## Chapter 2

# Blue Economy Initiatives in ASEAN Member States

### 1. Brunei Darussalam

#### 1.1. Perspective

In Brunei Darussalam, the Blue Economy aims to be multidimensional, involving several clusters of economic activities. It promotes economic growth, equitable distribution of opportunities and income, as well as environmental preservation. It involves national development agendas such as those for industrial development, food security, climate change, the circular economy, and sustainable development. Sectors involved include fisheries, encompassing both the capture industry and aquaculture; renewable energy; water transport; and tourism. The total contribution of the agriculture, fisheries, and forestry sectors in 2022 was 1.1% of the nominal GDP.<sup>13</sup>

In 2022, Brunei Darussalam's Ocean Health Index<sup>14</sup> score was 59.88, which was below the global average of 69.33 (Figure 2.1). It ranked 199th out of 220 countries and territories. However, Brunei Darussalam performed well in several areas, such as artisanal fishing opportunities, natural products, livelihoods and economies, and coastal protection. The score was pulled down significantly by several other categories, particularly tourism and recreation, food provision, sense of place,<sup>15</sup> and clean waters.

In the *Brunei Darussalam Economic Blueprint*, 'Blue Economy' is mentioned four times, under Aspiration Four: Sustainable Environment.<sup>16</sup> Aspirations are built upon several policy directions, including environmental preservation, promotion of the blue and green economy, research and development, and innovation in clean technology. The Blue Economy remains a rough, hazy idea without a specific framework to guide it within Brunei Darussalam. Its development is still fragmented in several national and ministerial strategies and policies.

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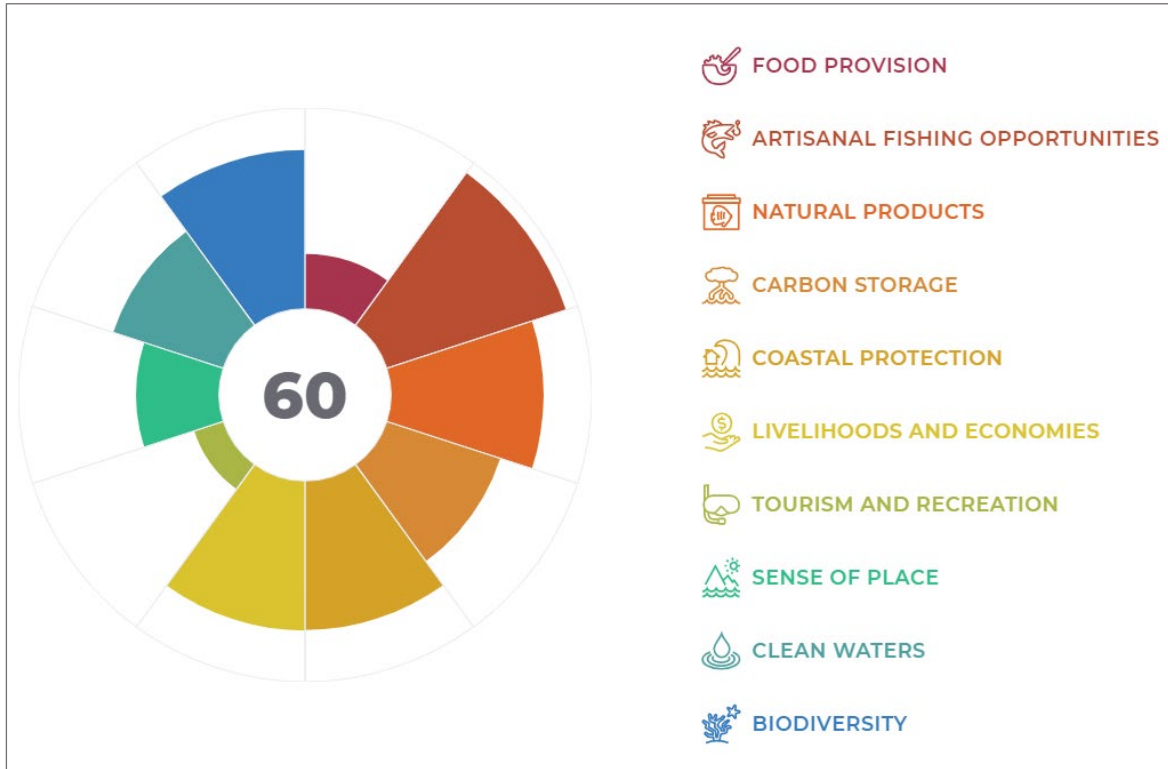
<sup>13</sup> World Bank, Agriculture, Forestry, and Fishing, Value Added (% of GDP) – Brunei Darussalam, <https://data.worldbank.org/indicator/NV.AGR.TOTL.ZS?locations=BN> (accessed 27 February 2023).

<sup>14</sup> The Ocean Health Index is a framework for assessing ocean health based on the sustainable provisioning of benefits and services that people expect from healthy oceans, such as food, cultural and social value, and jobs. See Ocean Health Index, <https://oceanhealthindex.org/>

<sup>15</sup> This is defined as a dynamic process that links the social life and characteristics of a community to a shared geographic area. See K.E. Foote and M. Azaryahu (2009), 'Sense of Place', in R. Kitchin and N. Thrift, *International Encyclopedia of Human Geography*, Amsterdam: Elsevier Science.

<sup>16</sup> Government of Brunei Darussalam, Ministry of Finance and Economy (2020), *Towards a Dynamic and Sustainable Economy: Economic Blueprint for Brunei Darussalam*, Bandar Seri Begawan, <https://www.mofe.gov.bn/Shared%20Documents/OTHERS/banner/Brunei%20Darussalam's%20Economic%20Blueprint.pdf>

**Figure 2.1. Brunei Darussalam’s Ocean Health Index**



Source: Global Ocean Health Index Scores, <https://ohi-science.org/ohi-global/scores.html> (accessed 27 February 2023).

**1.2. Main Blue Economy Regulations and Policies**

The concept of the Blue Economy is new in Brunei Darussalam; it was mentioned for the first time in the *Brunei Darussalam Economic Blueprint* in 2020. The blueprint supports the third goal of *Wawasan Brunei 2035* – a dynamic and sustainable economy. *Wawasan Brunei 2035* is the country’s long-term development plan; it is sufficiently broad-based to accommodate new areas and emerging trends that may surface during the long time period. Recent examples of emerging areas include digitalisation through the *Digital Economy Masterplan 2025*, and climate-change adaptation and mitigation via the introduction of the *Brunei Darussalam National Climate Change Policy*.

The third *Wawasan* goal of a dynamic and sustainable economy is defined by four national outcomes: high and sustainable economic growth, economic diversification, macroeconomic stability, and low unemployment. These outcomes are supported by six aspirations, which are supported by industrial roadmaps, key sectoral master plans, and ministerial strategic plans. Roadmaps realise the development of five priority sectors: energy downstream, food, information and communications technology, tourism, and services, which refer principally to maritime logistics activities. Programmes and projects comprise the country’s *Rancangan Kemajuan Negara (National Development Plan)* as well as capital investments made by the private sector and government-linked companies.

Marine laws and regulations include:

- (i) Fisheries Order (2009), which legislates several fisheries and marine-related activities including the marine culture system, local and foreign fishing vessels, sports fishing, marine reserves and

parks, offshore and inland fisheries, and aquaculture; Territorial Waters of Brunei Act (2002); and Brunei Darussalam Fishery Limits Act (1983);

- (ii) Petroleum Mining Act (2002), Petroleum Pipelines Act (1984), Electricity Act (2011), and Electricity Order (2017); and
- (iii) Maritime and Port Authority of Brunei Darussalam Order (2017) and Merchant Shipping, Civil Liability, and Compensation for Oil Pollution Order (2008).

### 1.3. Specific Blue Economy Policies

Some research and feasibility studies have been completed to investigate new technologies related to the Blue Economy in Brunei Darussalam. For instance, in 2012, the Centre for Strategic and Policy Studies commissioned Powertech Labs in Canada to undertake a feasibility study on alternative energy. The research project tested both offshore and onshore sites and found that there is a degree of feasibility for ocean and wind energy.<sup>17</sup> Since the study was conducted more than 10 years ago, ocean energies are probably much more viable today due to technological advancements over the past decade.

Moreover, climate-change adaptation and mitigation are official national development objectives under the *Brunei Darussalam National Climate Change Policy* in 2020.<sup>18</sup> The government aims to reduce greenhouse gas (GHG) emissions by 50% by 2035 and 20% by 2030 through various measures, including increasing renewable energy and the use of electric vehicles, reducing waste, and implementing a price on carbon emissions. The policy is led by a high-level council co-chaired by the Minister of Development and the Prime Minister's Office.

Food security issues are being re-examined by the government, mostly due to the global COVID-19 pandemic and ensuing supply-side challenges. Hence, in addressing this issue, the government is taking actions on diversifying food sources, improving storage facilities and safety, and increasing self-sufficiency. By putting the Blue Economy in place, there will be an abundance of seafood, which provides an alternative source of protein and nutrients to livestock. Moreover, foods from the ocean can contribute towards more resilience in the food supply chain to meet the rising food demands within the country.

### 1.4. Major Blue Economy Implementation

**Fisheries.** The fisheries sector accounted for 0.5% of the overall economy and 43.5% of the primary sector in 2021. Despite its small size, it is one of the fastest-growing sectors, with a 18.9% annual growth rate.<sup>19</sup> Foreign companies drove most of the production increase, with many having joint venture agreements with government-linked companies. The small-scale capture industry was the biggest contributor to growth, followed by farm prawn aquaculture and frozen processed seafood.

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<sup>17</sup> Centre for Strategic and Policy Studies (2011), *Alternative Energy Sources for Brunei Darussalam (2011)*, Bandar Seri Begawan.

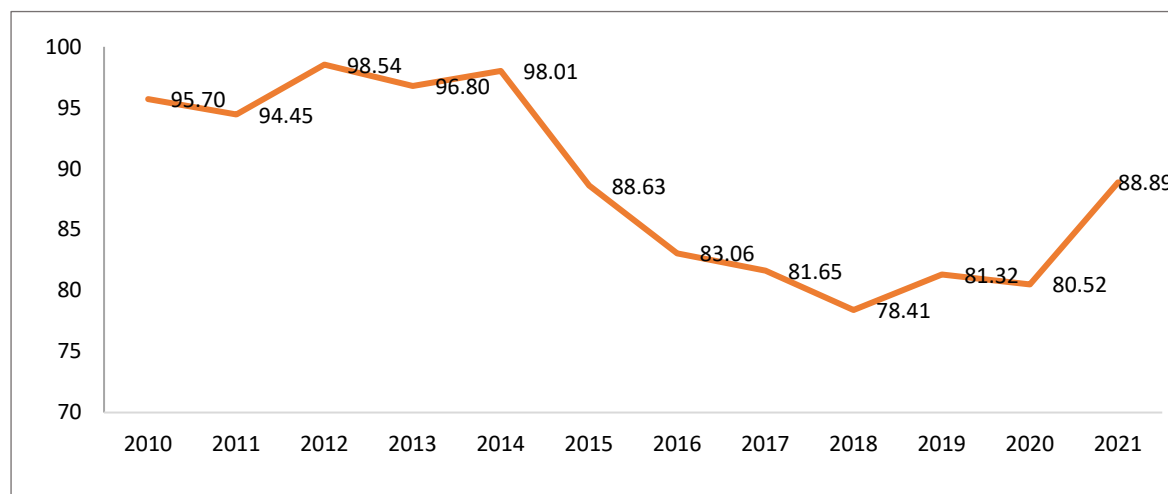
<sup>18</sup> Brunei Darussalam National Council on Climate Change (2020), *Brunei Darussalam National Climate Change Policy*, Bandar Seri Begawan, <http://www.mod.gov.bn/Shared%20Documents/BCCS/Brunei%20National%20Climate%20Change%20Policy.pdf>

<sup>19</sup> Government of Brunei Darussalam, Ministry of Finance and Economy (2021), *Gross Domestic Product: Fourth Quarter and Annual 2021*, Bandar Seri Begawan.



Despite promising achievements in terms of production and exports, there is still improvement needed in terms of self-sufficiency. The levels have been fluctuating from 98.54% in 2012 before falling to 78.41% in 2018 (Figure 2.2). The country’s degree of self-sufficiency has picked up in recent years, climbing to 88.89% in 2021.

**Figure 2.2. Self-Sufficiency Levels of Brunei Darussalam Fisheries, 2010–2021 (%)**



Source: Government of Brunei Darussalam, Department of Fisheries.

**Energy.** Brunei Darussalam primarily extracts crude oil and natural gas from offshore oilfields, exporting them without much value-added transformation. Natural gas is the main source for power generation domestically and is liquefied for export. The Department of Energy oversees the energy sector and aims to increase renewable energy contribution to 30% by 2035,<sup>20</sup> with the government exploring floating solar farms. Relevant legislative documents prioritise health, safety, security, and the environment.

**Maritime transport and logistics.** The water transport services sector contributed 0.9% of total GDP in 2021.<sup>21</sup> Muara Port handles exports of hydrocarbons and manufactured goods, while plans are underway to expand maritime logistics in the country to support food manufacturing and downstream energy. The Maritime and Port Authority of Brunei Darussalam regulates the sector and manages Muara Port through legal frameworks such as the Maritime and Port Authority of Brunei Darussalam Order (2017) and Merchant Shipping, Civil Liability, and Compensation for Oil Pollution Order (2008).

**Tourism.** Brunei Darussalam's small tourism sector is focussed on ecotourism, cultural tourism, and Islamic tourism. The sector contributes 2% of nominal GDP<sup>22</sup> and is a source of foreign exchange earnings and employment. Although the country ranks highly in terms of price competitiveness,

<sup>20</sup> M. Narayan (2021), 'Renewables to Make up 30% of Brunei’s Power Generation by 2035 – Minister', *Reuters*, 25 October, <https://www.reuters.com/world/asia-pacific/renewables-make-up-30-bruneis-power-generation-by-2035-minister-2021-10-25/>

<sup>21</sup> *Ibid.*

<sup>22</sup> Zulkarnain (2018), *Tourism as a Significant Contributor towards Brunei’s Economic Diversification*, Singapore: Lee Kuan Yew School of Public Policy, unpublished.

safety and security, information and communications technology readiness, and health and hygiene, it lags behind in areas such as cultural resources and business travel, prioritisation of travel and tourism, and tourist service infrastructure. The Tourism Development Department regulates and promotes tourism-related businesses.

### **1.5. Barriers**

Challenges and risks that Brunei Darussalam is facing in realising a Blue Economy include:

- (i) vulnerability to global energy prices and downturns, and a need for better fiscal management;
- (ii) government ineffectiveness and poor engagement with stakeholders in policy planning and implementation;
- (iii) ageing infrastructure, such as power plants and water treatment facilities;
- (iv) weak technology transfer and workforce assimilation;
- (v) low or non-existent financing and incentives to encourage private sector participation in large-scale projects; and
- (vi) low technological adoption and innovation.

### **1.6. Cross-Border Cooperation**

Brunei Darussalam has only participated in the *ASEAN Leaders' Declaration the Blue Economy* as part of its international commitment to the Blue Economy.

## **2. Cambodia**

### **2.1. Perspective**

Cambodia shares borders with the Lao People's Democratic Republic (Lao PDR), Thailand, Viet Nam, and the Gulf of Thailand. Four provinces – Kampot, Kep, Koh Kong, and Preah Sihanouk – make up its coast. These are home to more than 1 million people, who mostly depend on marine and coastal resources for their livelihoods. The significant size of Cambodia's marine space and the wealth of its marine and maritime resources highlight the potential of many marine-based sectors that form the Blue Economy. Indeed, Cambodia's Blue Economy contributed \$2.4 billion in gross value added or 16% of the GDP in 2015, employing 3.2 million people.<sup>23</sup>

Cambodia does not have a set definition of the Blue Economy, although the desire for its development was underlined for the first time in the *National Policy on Green Growth, 2013–2030* and *National Strategic Plan for Green Growth, 2013–2030*.<sup>24</sup> As a strategic direction to promote the development of green growth, 'Blue Economy development' aims to be balanced between the environment and society to ensure sustainability. The national strategic plan – which is considered the action plan to implement national policy – discusses four strategies for Blue Economy

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<sup>23</sup> Government of Cambodia, Ministry of Environment (2019), *National State of Oceans and Coasts 2018: Blue Economy Growth Cambodia*, Phnom Penh; and M.C. Ebarvia (2018), 'Blue Economy: Initiatives in the East Asian Seas', paper presented at the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) Asia and the Pacific Regional Expert Workshop on Ocean Accounts, Bangkok, 1–3 August, [https://www.unescap.org/sites/default/files/02\\_04\\_G\\_Blue\\_economy\\_PEMSEA\\_1-3Aug2018.pdf](https://www.unescap.org/sites/default/files/02_04_G_Blue_economy_PEMSEA_1-3Aug2018.pdf)

<sup>24</sup> Government of Cambodia (2013), *National Policy on Green Growth, 2013–2020*, Phnom Penh; and Government of Cambodia (2013), *National Strategic Plan for Green Growth, 2013–2030*, Phnom Penh.

development: a management and development approach, marine pollution monitoring, marine food security, and reducing GHG emissions and adapting to climate change. Nevertheless, it has no concrete activities or measures for the implementation of the Blue Economy.

## 2.2. Main Blue Economy Regulations and Policies

**Table 2.1. Main Blue Economy Regulations and Policies in Cambodia**

Sectors	Related Policies and Regulations
Major national policies and strategies related to the Blue Economy	<ul style="list-style-type: none"> <li>• <i>Rectangular Strategy Phase IV, 2019–2023</i></li> <li>• <i>National Strategic Development Plan, 2019–2023</i></li> <li>• <i>National Policy on Green Growth, 2013–2030</i></li> <li>• <i>National Strategic Plan on Green Growth, 2013–2030</i></li> <li>• <i>National Circular Economy Strategy and Action Plan</i></li> </ul>
Coastal area management	<ul style="list-style-type: none"> <li>• Law on Land Management, Urban Planning, and Construction</li> <li>• Royal Decree on Establishment of National Committee on Management and Development of Cambodian Coastal Areas (NS/RKT/0212/079, 2012)</li> <li>• Sub-Decree on Organization and Functioning of General Secretariat of National Committee on Management and Development of Cambodian Coastal Areas (171 ANK/BK, 2012)</li> <li>• Circular on the Development of Coastal Areas of the Kingdom of Cambodia (2012)</li> </ul>
Fisheries and aquaculture	<ul style="list-style-type: none"> <li>• Law on Fisheries (NS/RKM/0506/011, 2006)</li> <li>• Royal Decree on Establishment of Community Fisheries (NS/RKT/240, 2005)</li> <li>• Sub-Decree on Community Fisheries Management (80 ANK/BK, 2005)</li> <li>• Sub-Decree on Endangered Fisheries Products (123 ANK/BK, 2009)</li> <li>• Decision on the Establishment of the Interministerial Committee to Prevent Anarchy of Fishery Crimes in Cambodia’s Marine Fishing Areas (2000)</li> </ul>
Coastal and marine tourism	<ul style="list-style-type: none"> <li>• Roadmap for Recovery of Cambodia Tourism during and Post-COVID-19 (2021)</li> <li>• Decision No. 99 on the Appointment of the National Committee for Management and Development of Community-Based Tourism and Ecotourism (2021)</li> <li>• <i>National Ecotourism Policy, 2019–2030</i> (2018)</li> <li>• Law on Tourism (2009)</li> <li>• Sub-Decree on the Organisation and Functioning of the Ministry of Tourism (34 ANK/BK, 1997)</li> </ul>
Shipping and ports	<ul style="list-style-type: none"> <li>• <i>National Policy on Port and Port Administration</i> (2013)</li> <li>• Circular No. 070 on Port Planning, Construction, and Operation in the Kingdom of Cambodia (2011)</li> </ul>

Sectors	Related Policies and Regulations
	<ul style="list-style-type: none"> <li>• Sub-Decree No. 40 on Ship and Port Facility Security</li> <li>• Declaration on the Registration of Merchant Vessels</li> <li>• Sub-Decree No. 50 on Establishment of Sihanoukville Autonomous Port (1998)</li> <li>• Circular No 006 on Management of Sea Navigation (1999)</li> <li>• Declaration on Formality and Procedure for Foreign Vessel's Entry Permit</li> <li>• Instruction No. 006 on Maritime Shipping Management</li> <li>• Draft Law on Ports</li> <li>• Draft National Policy on Maritime Transport</li> <li>• Draft Law on Maritime Transport</li> </ul>
Hydrocarbon extraction (oil and gas)	<ul style="list-style-type: none"> <li>• Law on Management of Petroleum and Petroleum Products (2019)</li> <li>• Sub-Decree on Tax Incentives for Oil Operations in Block A (2018)</li> <li>• Law on Mineral Resources Management and Exploitation (NS/RKM/0701/09, 2001)</li> <li>• Sub-Decree on the Management of Mineral Resources Exploration and Exploitation Licenses (72 ANK/BK, 2016)</li> </ul>
Marine conservation and protection	<ul style="list-style-type: none"> <li>• <i>Cambodia Climate Change Strategic Plan, 2014–2023</i></li> <li>• Updated Nationally Determined Contributions, 2020–2030</li> <li>• <i>Long-Term Strategy for Carbon Neutrality by 2050</i></li> <li>• <i>Cambodia National REDD+ Strategy, 2017–2026</i></li> <li>• <i>Action and Investment Plan for the Implementation of the National REDD+ Strategy of Cambodia (2020)</i></li> <li>• <i>Cambodia Climate Change Financing Framework (2015)</i></li> <li>• <i>Cambodia National Adaptation Plan Financing Framework and Implementation Plan (2017)</i></li> <li>• <i>National Climate Change Strategic Plan for Public Health, 2013–2023</i></li> <li>• <i>Disaster Risk Reduction Framework, 2019–2030</i></li> <li>• <i>National Action Plan for Disaster Risk Reduction</i></li> <li>• Law on Disaster Risk Management (NS/RKM/0715/007, 2015)</li> </ul>
Renewable (ocean-based) energy	<ul style="list-style-type: none"> <li>• Law on Mineral Resource Management and Exploitation (NS/RKM/0701/09, 2001)</li> <li>• Sub-Decree on the Management of Mineral Resources Exploration and Exploitation Licenses (72 ANK/BK, 2016)</li> <li>• Interministerial Prakas on Classification of EIA for Projects of All Kinds of Construction Minerals Exploitation or Other Minerals with the Characteristics of Handicraft or Small-Scale Exploitation (2016)</li> <li>• Draft National Energy Efficiency Policy</li> </ul>

Sectors	Related Policies and Regulations
	<ul style="list-style-type: none"> <li>• Sub-Decree on the Promotion of Environmentally Friendly Operation (2018)</li> </ul>
Marine-based manufacturing	<ul style="list-style-type: none"> <li>• <i>Industrial Development Policy, 2015–2025</i></li> <li>• <i>National Policy on Science, Technology and Innovation, 2020–2030</i></li> <li>• <i>Cambodia’s Science, Technology and Innovation Roadmap 2030</i></li> <li>• Draft Small and Medium Enterprise Development Policy, 2021–2026</li> <li>• <i>Cambodia Trade Integration Strategy, 2019–2023</i></li> <li>• Law on Geographical Indications (2014)</li> <li>• Law on the Management of Quality and Safety of Products and Services (2000)</li> <li>• Consumer Protection Law (2019)</li> <li>• Royal Decree on National Council for Science, Technology, and Innovation (2014)</li> </ul>
Education, research, and development	<ul style="list-style-type: none"> <li>• <i>National Policy on Science, Technology and Innovation, 2020–2030</i></li> <li>• <i>Cambodia’s Science, Technology, and Innovation Roadmap 2030</i></li> <li>• Royal Decree on National Council for Science, Technology, and Innovation (2014)</li> </ul>
Marine biotechnology	<ul style="list-style-type: none"> <li>• <i>Industrial Development Policy, 2015–2025</i></li> <li>• Law on Biosafety (NS/RKM/0208/006, 2008)</li> <li>• Law on the Management of Pharmaceuticals (1996)</li> </ul>
Waste management	<ul style="list-style-type: none"> <li>• Law on Water Resources Management of the Kingdom of Cambodia (NS/RKM/0607/016, 2007)</li> <li>• <i>Policy on Urban Solid Waste Management, 2020–2030</i></li> <li>• National Waste Management Strategy and Action Plan (forthcoming)</li> <li>• Sub-Decree No. 36 on Solid Waste Management (1999)</li> <li>• Sub-Decree on Water Pollution Control (1999)</li> <li>• Sub-Decree No. 72 on Environmental Impact Assessment Process (1999)</li> <li>• Sub-Decree No. 113 on Management of Urban Garbage and Solid Waste (2015)</li> <li>• Sub-Decree No. 16 on e-Waste Management (2016)</li> <li>• Sub-Decree No. 168 on Plastic Bag Management (2017)</li> <li>• <i>Environmental Guidelines on Solid Waste Management at Factories, Enterprises, and Companies</i> (2003)</li> <li>• Joint Declaration No. 80 between MOE and MOI on Solid Waste Management in Provinces/Municipalities (2003)</li> <li>• Joint Declaration No. 73 amongst MOE, MEF, and MOI on Environmental Budget (2015)</li> </ul>

Sectors	Related Policies and Regulations
	<ul style="list-style-type: none"> <li>• Prakas No. 446 on the Organisation and Function of the Department of Hazardous Substance Management (2015)</li> <li>• Inter-ministerial Instruction on Municipal Solid Waste Management (2017)</li> </ul>

EIA = environmental impact assessment, MEF = Ministry of Economy and Finance, MOE = Ministry of Environment, MOI = Ministry of Interior, REDD+ = reducing emissions from deforestation and forest degradation in developing countries.

Sources: Authors.

### 2.3. Specific Blue Economy Policies

Due to limited data availability, specific policies on the implementation of the Blue Economy are difficult to identify in Cambodia. As mentioned, the *National Policy on Green Growth, 2013–2030* and *National Strategic Plan for Green Growth 2013–2030* are the foundations for current Blue Economy-related initiatives and policies. In addition, *Rectangular Strategy Phase IV; National Strategic Development Plan, 2019–2023*; and *Circular Economy Strategy and Action Plan, 2021–2035* are major national policies and strategies related to the Blue Economy; these national policies and regulations not only govern economic growth but also prioritise sustainability, which aligns with the overarching objectives of the Blue Economy. Sector-specific regulations and policies have been developed as well, including those related to coastal area management, fisheries and aquaculture, coastal and marine tourism, shipping and ports, hydrocarbon extraction, marine conservation and protection, renewable (ocean-based) energy, marine-based manufacturing, education, research and development, marine biotechnology, and waste management.

### 2.4. Major Blue Economy Implementation

Cambodia has invested significantly to develop its coastal and marine areas to promote sustainable use of resources, economic diversification, and sustainable economic growth.

**Capture fisheries and aquaculture.** This sector is one of the government’s development priorities given its significant contributions to the national economy, job creation and livelihoods, and vulnerability to climate change. With support from development partners, the fisheries sector – including both inland freshwater and marine fisheries – has received significant investments. With total financing of \$93 million, the Sustainable Coastal and Marine Fisheries Project is being implemented to improve marine fisheries and coastal communities’ sustainability and resilience in the four coastal provinces. The project is a response to the drastic decline of the marine fish stock in Cambodia,<sup>25</sup> and is also expected to contribute to the implementation of nationally determined contributions (NDCs) in enhancing climate resilience for capture fisheries and ecological restoration of coastal region. Another key project is the \$124-million Sustainable and Inclusive Growth in the Fisheries Sector project funded by the European Union. The project aims to increase food security,

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<sup>25</sup> ADB (2022), Report and Recommendation of the President to the Board of Directors: Proposed Loans and Grant and Administration of Loan to the Kingdom of Cambodia for the Sustainable Coastal and Marine Fisheries Project, Manila.

improve nutrition, and foster further economic development in marine (wild) and freshwater capture fisheries and aquaculture.

**Shipping and ports.** The development and expansion of the Sihanoukville Autonomous Port (PAS) are major priorities of the government, which aims to make Cambodia's single deep seaport a major hub of shipping connectivity and logistics and thus play a key role in fostering the country's international trade and economic development. Given the strong commitment from the government and development partners, investments in PAS expansion include a concessional loan of \$300 million from Japan in 2022 to build new container terminals and related infrastructure. The investment is in line with the country's steady economic growth and export and import activity that require higher PAS handling capacity. Cambodia has no sustainable or green port development policy, but the PAS has implemented the Port Safety, Health and Environmental Management System since 2011.<sup>26</sup>

**Coastal and marine tourism.** Developing coastal tourism sites is another government priority. Upgrading coastal tourism infrastructure, such as road connectivity, airports, and sanitation systems, is key. With co-financing of \$10 million from the government and the Asian Development Bank, an international tourism port in Kampot Province is being constructed that covers an area of 4.25 hectares (ha). As Cambodia hopes to attract 1 million international tourists by sea per year, this port is expected to contribute significantly to achieve this goal because it can connect to seaports in Thailand and Viet Nam or receive cruises from other countries.

**Renewable energy.** Cambodia is committed to sustainable energy use and development by increasing the share of renewable energy in its energy mix. In the last several years, the investment in and production of solar energy have rapidly expanded. However, ocean-based energy production – such as wind and wave power, and current and tidal energy – has yet to be harnessed due to the high cost of investments and limited access to technologies.<sup>27</sup> Biogas is the main renewable energy option that is being used by some coastal communities that have more than two cattle per household. Biogas digesters use the cattle waste, wastewater, and sludge to generate energy for household lighting and cooking. These digesters also help reduce the collection of firewood from the mangrove forests.

**Marine conservation and protection.** Cambodia has made significant strides in promoting marine conservation and protection. It designated its first Marine Protected Area (MPA), the Koh Rong Marine National Park, covering an area of 52,498 ha in Preah Sihanouk and Koh Kong provinces in 2018. In 2016, it had designated a Marine Fisheries Management Area, covering 405 square km around the Koh Rong Sanloem Archipelago, based on a multipurpose-use approach to foster biodiversity conservation, sustainable fishing, and tourism.<sup>28</sup> It also designated more multiple-use

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<sup>26</sup> The purpose of the system is to help improve port operations with respect to safety, health, and environmental protection. See PEMSEA (2012), Port Safety, Health and Environmental Management System (PSHEMS) Development and Implementation Guideline, <http://pemsea.org/publications/manuals-guides-and-webinars/port-safety-health-and-environmental-management-system-pshems> and Government of Cambodia, Ministry of Environment (MEF) (2019), National State of Oceans and Coasts 2018: Blue Economy Growth Cambodia, Phnom Penh.

<sup>27</sup> Government of Cambodia, MEF (2019), National State of Oceans and Coasts 2018: Blue Economy Growth Cambodia, Phnom Penh.

<sup>28</sup> Fauna and Flora, Protecting Cambodia's Coastal and Marine Environments, Our Projects, <https://www.fauna-flora.org/projects/protecting-cambodias-coastal-marine-environments/>

management areas, including Dong Peng (27,700 ha) and Prek Teuk Sap Kbal Chhay (5,520 ha) in Koh Kong and Preah Sihanouk provinces, respectively. Koh Kapi and associated islands in Koh Kong Province, covering 12,000 ha, have also been designated as a Ramsar wetlands site.

**Waste management.** The government, through the National Committee for Coastal Management and Development, constructed three wastewater treatment facilities in Sihanoukville. The first two plants (totalling \$143 million), with a capacity to treat 12,400 cubic metres of wastewater per day, are already in operation, while the third, with a capacity to treat 20,000 cubic metres of wastewater per day, is likely to be completed in April 2023. A wastewater treatment plant and associated sanitation infrastructure were also installed in Kep around its popular crab market to treat wastewater before it is released into the sea, improving sanitation conditions at this tourism site and protecting the coastal environment.

## 2.5. Barriers

**Overfishing and illegal fishing.** The extensive use of illegal fishing equipment has destroyed fish stocks, coral reefs, and seagrass in Cambodia's waters, which are major fish habitats.<sup>29</sup> Illegal, unreported, and unregulated (IUU) fishing has also damaged Cambodia's reputation, as the European Union effectively banned the exports of fisheries products from Cambodia in 2013.<sup>30</sup>

**Urbanisation and industrialisation.** These have threatened the sustainability of the environment due to air and water pollution that they create. Air pollution is primarily attributed to industrial emissions and vehicle exhaust, while water pollution often consists of untreated industrial wastewater discharged into rivers and seas. Moreover, the institutional framework that regulates such issues remains limited.

**Decreasing mangrove forests.** Although playing a crucial role in protecting coastal areas, providing ecosystem services, and offering habitats for marine fisheries, more mangrove forests in Cambodia are lost every year.<sup>31</sup> Mangrove forest destruction is caused mainly by commercialisation of agriculture, such as salt farming, charcoal production, and shrimp farming. Without re-forestation of the mangroves, coastal areas are under the pressure of environmental degradation, affecting the health of the marine biodiversity, ecosystems, as well as coastal communities.

**Lack of institutional frameworks and arrangements on the ocean economy.** Policies and regulations have been developed for various sectors of the Blue Economy separately. For instance, marine or coastal tourism is treated as part of overall national tourism development, but it is not considered part of sustainable ocean development.

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<sup>29</sup> ADB (2022), Report and Recommendation of the President to the Board of Directors: Proposed Loans and Grant and Administration of Loan to the Kingdom of Cambodia for the Sustainable Coastal and Marine Fisheries Project, Manila.

<sup>30</sup> In 2012, Cambodia received a 'yellow card' (i.e. warning) from the European Union; by 2013, the country received a 'red card' along with seven other countries – Belize, Fiji, Guinea, Panama, Sri Lanka, Togo, and Vanuatu. See IUU Watch (2015), EU Regulation to Combat Illegal Fishing: Third Country Carding Process, [https://www.iuuwatch.eu/wp-content/uploads/2015/06/Case-Study1.2pp.FIN\\_1.pdf](https://www.iuuwatch.eu/wp-content/uploads/2015/06/Case-Study1.2pp.FIN_1.pdf)

<sup>31</sup> B.K. Veettil and N.X. Quang (2019), *Mangrove Forests of Cambodia: Recent Changes and Future Threats*, <https://mangroves.elaw.org/content/mangrove-forests-cambodia-recent-changes-and-future-threats>



**Lack of human resources.** Public institutions lack the capacity to carry out policies, strategies, and regulations related to ocean-based economic sectors. Moreover, the skilled workforce<sup>32</sup> for the Blue Economy remains limited.

**Lack of investments.** In capturing economic benefits from marine sectors and protecting marine resources, investment is essential. Both the national budget and private investment in Cambodia are limited.

**Limitation of data.** There is a lack of recording and reporting on various marine and coastal resources and activities (e.g. living aquatic resource stocks and exploitation, marine fisheries processing activities, marine forest and biodiversity resources, and marine debris). Further, although there are some records (e.g. for fish landings), they are not systematically and accurately reported. Regularly updated and accurate data are crucial for informing policy and regulatory frameworks, planning, and monitoring and evaluation of policy and strategy implementation.

## 2.6. Cross-Border Cooperation

Several international conventions and agreements related to coastal and marine issues involving Cambodia are listed in Table 2.2.

**Table 2.2. Cross-Border Cooperation in Cambodia Related to the Blue Economy**

Theme	International Conventions and Agreements
Sustainable development	<i>Transforming Our World: The 2030 Agenda for Sustainable Development</i>
Climate change	Paris Agreement
	United Nations Framework Convention on Climate Change
Biodiversity protection	Ramsar Convention on Wetlands
Waste management	Basel Convention
Marine and maritime activities	United Nations Convention on the Law of the Sea

Source: Authors.

## 3. Indonesia

### 3.1. Perspective

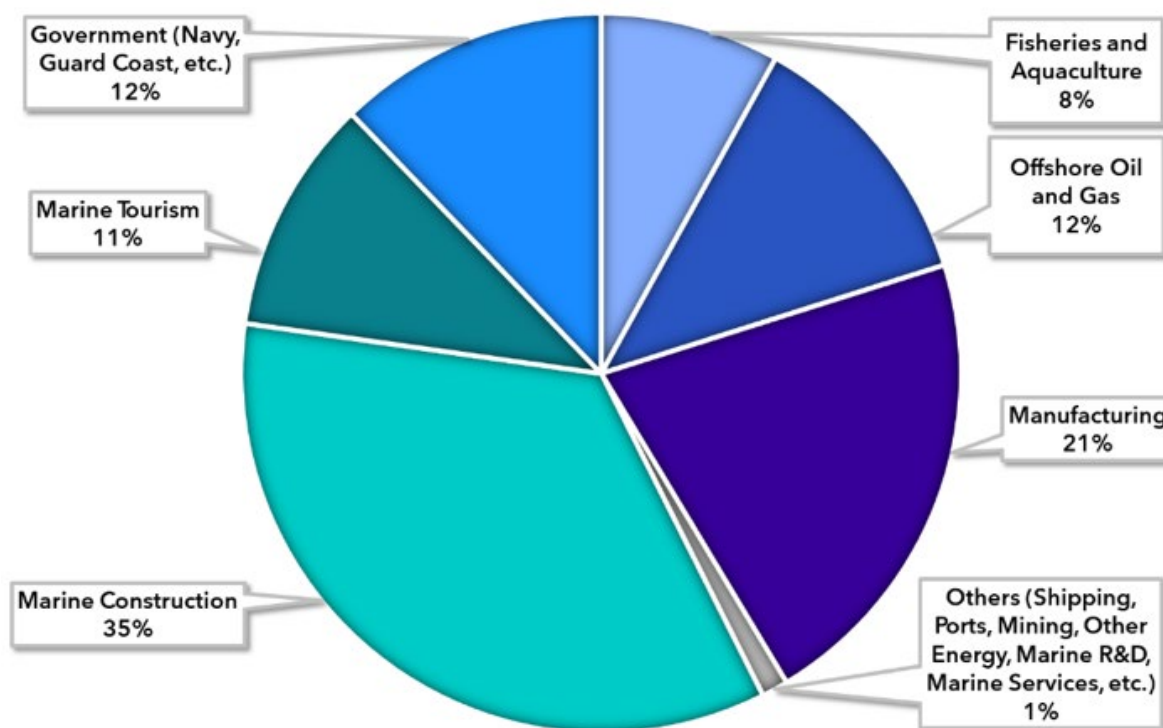
Indonesia's economy relies on natural resources, including ocean-based sectors such as fisheries, agriculture, forestry, and mining, which accounted for 20% of GDP and 50% of exports in 2017 (Figure 2.3). The Ministry of Maritime Affairs and Fisheries estimated that the potential value of Indonesia's Blue Economy is \$1,334 billion. The country's vast coastal and territorial sea area – including 17,508 islands, 290,000 square kilometres (km) of territorial sea, 65% of its total area covered by the sea, a 3 million-square-km exclusive economic zone, 80,791 km of coastlines, and 5.23 million fishers and fish farmers – demonstrate the massive potential of its Blue Economy. Within its exclusive economic zone, Indonesia has the right to manage and to utilise all of its ocean

<sup>32</sup> For example, oceanographers, naval architects, marine engineers, aquaculturists, marine economists, and marine business experts.

resources for exploration, exploitation, conservation, and development under the Djuanda Declaration of 1957.<sup>33</sup>

Indonesia's Blue Economy development is based on the *Blue Economy Development Framework*, which defines the Blue Economy as a new engine for inclusive economic growth aligned with the *Rencana Pembangunan Jangka Panjang Nasional (National Long-Term Development Plan, RPJPN)* and *Rencana Pembangunan Jangka Menengah Nasional (National Medium-Term Development Plan, RPJMN)* for sustainable development and good ocean management.<sup>34</sup> Good ocean management emphasises the sustainable use and conservation of natural resources in oceans and coastal areas for development in line with the SDGs. It integrates sustainable economic activities, such as in fisheries and tourism, and includes actions to reduce marine pollution, conserve ecosystems, and increase resilience and climate action.

**Figure 2.3. Sectoral Contribution to the Blue Economy in Indonesia, 2015**



Source: PEMSEA (2021), *Regional State of Ocean and Coasts 2021: The East Asian Seas Region, Volume 1*, Quezon City, <https://www.pemsea.org/publications/books/regional-state-ocean-and-coasts-2021-east-asian-seas-region-volume-1>

<sup>33</sup> PEMSEA (2021), *Regional State of Ocean and Coasts 2021: The East Asian Seas Region, Volume 1*, Quezon City, <https://www.pemsea.org/publications/books/regional-state-ocean-and-coasts-2021-east-asian-seas-region-volume-1>.

<sup>34</sup> Government of Indonesia, Bappenas (2022), *Blue Economy Development Framework for Indonesia's Economic Transformation*, Jakarta, [https://perpustakaan.bappenas.go.id/e-library/file\\_upload/koleksi/dokumenbappenas/file/Blue%20Economy%20Development%20Framework%20for%20Indonesias%20Economic%20Transformation.pdf](https://perpustakaan.bappenas.go.id/e-library/file_upload/koleksi/dokumenbappenas/file/Blue%20Economy%20Development%20Framework%20for%20Indonesias%20Economic%20Transformation.pdf).

### 3.2. Main Blue Economy Regulations and Policies

Indonesia's commitment to the Blue Economy is divided into two categories: international and regional (Table 2.3) and national (Table 2.4).

**Table 2.3. Indonesia's Participation in International and Regional Blue Economy Initiatives**

Context	Purpose
High-Level Policy Dialogue on Food Security and Blue Economy Plan of Action (APEC)	<ul style="list-style-type: none"> <li>• Acknowledges that the challenges to meet the food demand of the world's rising populations require sustainable food supply chains anchored on resilient resources and coastal communities, sustainable food production, developed markets, and open and fair trade.</li> <li>• Acknowledges the importance of conservation, protection, and sustainable management of habitats, biodiversity, oceans, and fisheries through the Blue Economy and other means for food security.</li> <li>• Acknowledges that aquaculture is one of the fastest growing food-producing sectors and is projected to increase to 62% of total fisheries production by 2030, while catches from wild capture fisheries will level off and demand from an emerging global middle class will substantially increase.</li> <li>• Encourages APEC economies to implement the following plan of action within their economies, building upon previous APEC commitments: advance sustainable management and conservation of oceans and coastal resources and sustainable aquaculture to ensure a resilient food supply, including conserving, protecting, and sustainably managing resources and their ecosystems and reducing their vulnerability to climate change and disasters; reduce loss of fish and fish products in terms of quality and quantity to improve food safety, add product value, and ensure food security; and increase food security and inclusive growth by promoting agribusiness, market development, and open and fair trade to enable the integration of small-scale fishers and fish farmers into global food chains.</li> </ul>
Jakarta Declaration on Blue Economy (IORA)	<ul style="list-style-type: none"> <li>• Optimises the use of existing financial instruments in the IORA region to enhance Blue Economy development in IORA member countries.</li> <li>• Seeks new and innovative financing mechanisms and to strengthen collaboration amongst public, private, and dialogue partners.</li> <li>• Guided by agreed principles when developing and implementing a Blue Economy approach to sustainable development and enhancing socio-economic benefits, particularly of coastal communities in the Indian Ocean Region.</li> </ul>
Changwon Declaration (PEMSEA)	<ul style="list-style-type: none"> <li>• Reflected on the progress made 2009–2012 towards the implementation of the SDS-SEA, and ensures continued progress towards a sustainable future, including the development of an ocean-based Blue Economy.</li> <li>• Created the 5-year <i>SDS-SEA Implementation Plan, 2012–2016</i>.</li> </ul>

Context	Purpose
	<ul style="list-style-type: none"> <li>• Mainstreams SDS-SEA objectives, targets, and actions into national and sub-national development and investment plans.</li> <li>• Shifts coastal and ocean governance from government-centred to a more inclusive approach, involving both government and non-government stakeholder partners, through institutional mechanisms at the regional, LME, sub-regional sea area, national, and local levels.</li> <li>• Aligns strategic action programmes and other endeavours for achieving target-focussed action plans in LMEs/sub-regional sea areas into a common platform for improving coastal and ocean governance and for mobilising the human and financial resources of stakeholder partners.</li> <li>• Converges sectoral initiatives and programmes in priority coastal, marine, and watershed areas within the framework of national integrated coastal management programmes.</li> <li>• Builds up technical and management capacity to achieve expected economic benefits from oceans.</li> <li>• Targets research on the valuation of ecosystem services and losses to society and economy because of degradation and destruction.</li> <li>• Sets up a comprehensive knowledge management platform and adopts and implements an organisational control reporting system to provide baseline information and that needed for monitoring progress necessary for achieving the different global and regional targets.</li> <li>• Undertakes joint and collaborative planning with concerned government agencies, levels of government, organisations, sectors, and the public, as appropriate, to continually update <i>the SDS-SEA Regional Implementation Plan</i>.</li> </ul>
High-Level Panel for Sustainable Ocean Economy	<ul style="list-style-type: none"> <li>• Builds momentum towards a sustainable ocean economy in which adequate protection, sustainable production, and equitable prosperity go together.</li> <li>• Aims to produce 6 times more food globally, generate 40 times more renewable energy than current levels, contribute 21% of necessary greenhouse gas emissions reductions needed by 2050, help lift millions of people out of poverty, and increase economic and environmental resilience.</li> </ul>
Xiamen Declaration (APEC)	<ul style="list-style-type: none"> <li>• Calls for the establishment of more integrated, sustainable, inclusive, and mutually beneficial partnerships through ocean cooperation amongst APEC members that implement previous commitments and focus efforts on collaborated and concerted actions in four priority areas: coastal and marine ecosystem conservation and disaster resilience; role of the ocean on food security and food-related trade; marine science, technology, and innovation; and the Blue Economy.</li> </ul>

Context	Purpose
<p><i>ASEAN Leaders' Declaration on the Blue Economy</i></p>	<ul style="list-style-type: none"> <li>• Defines the ASEAN Blue Economy as the sustainable, resilient, and inclusive use, governance, management, and conservation of oceans, seas, as well as marine and coastal resources and ecosystems for economic growth across various sectors such as fisheries, aquaculture, maritime transport, renewable energy, tourism, climate change, and research and development while improving human well-being and social equity.</li> <li>• Agrees to explore cooperation on the Blue Economy in areas such as marine environmental protection; IUU fishing; marine and coastal ecosystems protection; sustainable aquaculture and fishing practices; sustainable production and consumption; biotechnology; marine industrial development; marine pollution; marine litter and plastic pollution; food security; trade; coastal tourism and heritage conservation; maritime transport; security and safety of navigation; marine science; ocean energy; sea and ocean governance and management; data, statistics, and data analytics; as well as capacity building, digitisation, and innovation.</li> <li>• Strengthens cooperation to pursue a greater understanding of the Blue Economy, including through workshops and seminars, research and education, capacity building and training, and sharing of information and best practices, as well as other appropriate measures that are in line with obligations under international law, national laws, and regulations.</li> </ul>

AMS = ASEAN Member State; APEC = Asia Pacific Economic Cooperation; ASEAN = Association of Southeast Asian Nations; IORA = Indian Ocean Rim Association; IUU = illegal, unreported, and unregulated; LME = large marine ecosystem; SDS-SEA = Sustainable Development Strategy for the Seas of East Asia.

Source: Authors.

**Table 2.4. National Blue Economy Regulations in Indonesia**

Sectors	Regulations
<p>Regulations to support the ocean economy concept</p>	<ul style="list-style-type: none"> <li>• Law No. 32/2014 on the sea</li> <li>• Law No. 11/2020 on job creation (10 amendments to Law No. 32/2014)</li> <li>• Presidential Regulation No. 16/2017 on the <i>Indonesian Ocean Policy</i>, comprising the Indonesian Ocean Policy national and 4-year action plan documents</li> <li>• Presidential Regulation No. 18/2020 on the <i>National Medium-Term Development Plan, 2020–2024</i></li> </ul>

Sectors	Regulations
Regulations to support implementation of business process in the maritime and fisheries sector	<ul style="list-style-type: none"> <li>• Law No. 45/2009 on fisheries (amending Law No. 31/2004 and Law No. 11/2020)</li> <li>• Law No. 5/1983 on the Indonesia Exclusive Economic Zone (does not address management rules for fishing activities that cause potential economic loss)</li> <li>• Government Regulation No. 60/2007 on the conservation of fish resources stocks (Ref: Law No. 31/2004)</li> <li>• Government Regulation No. 27/2021 on maritime and fisheries sector business processes</li> </ul>
Regulations for ocean spatial planning (ocean protection and waste management)	<ul style="list-style-type: none"> <li>• Law No. 26/2007 on spatial planning (amending Law No. 24/1992, but does not full regulate spatial marine zoning for conservation)</li> <li>• Act No. 6/1996 on Indonesian waters</li> <li>• Law No. 23/2014, Article 14 on local government</li> <li>• Law No. 32/2009 on environmental protection and management</li> <li>• Law No. 18/2008 on waste management</li> <li>• Law No. 1/2014 on management of coastal areas and isles (amending Law No. 27/2007)</li> </ul>
Regulations to support implementation of sea transport	<ul style="list-style-type: none"> <li>• Law No. 17/2008 on shipping</li> <li>• Government Regulation No. 37/2002 on rights and responsibilities of foreign ships and aircraft on exercising archipelagic sea lane passage rights through and over designated archipelagic sea lanes</li> <li>• Government Regulation No. 31/2021 on the implementation of the shipping sector</li> <li>• Law No. 17/1985 on the ratification of UNCLOS 1982</li> <li>• Presidential Decree No. 65/1980 on the ratification of SOLAS 1974</li> </ul>
Regulations to protect energy and mineral resources and non-conventional natural resources based on the blue economy	<ul style="list-style-type: none"> <li>• Law No. 1/2014 on management of coastal areas and isles (amending Law No. 27/2007)</li> <li>• Law No. 30/2007 on energy</li> <li>• Law No. 32/2014 on the sea</li> <li>• Government Regulation No. 25/2021 on implementing energy resources and mineral resources</li> </ul>

Sectors	Regulations
Regulation to manage sea construction, sea industrial, and biotechnology	<ul style="list-style-type: none"> <li>• Law No. 26/2007 on spatial planning (amending Law No. 24/1992)</li> <li>• Law No. 7/2004 on water resources</li> <li>• Law No. 32/2014 on the sea</li> <li>• Government Regulation No. 27/2021 on maritime and fisheries sector business processes</li> </ul>
Regulations to support sea usage for marine tourism and business activities in coastal areas and isles	<ul style="list-style-type: none"> <li>• Law No. 32/2014 on the sea</li> <li>• Act No. 6/1996 on Indonesian waters</li> <li>• Law No. 10/2009 on tourism</li> <li>• Law No. 1/2014 on the management of coastal areas and isles (amending Law No. 27/2007)</li> </ul>

SOLAS = safety of life at sea, UNCLOS = United Nations Convention on the Law of the Sea.

Sources: Authors.

Indonesia's legal framework provides a solid foundation for regulating the Blue Economy. The Constitution recognises Indonesia as an archipelagic state, and the boundaries and rights of its territory are established by law. Indonesia has also ratified the UNCLOS and implemented Safety of Life at Sea (SOLAS) 1974, which provide rules and regulations for the governance and sovereignty of its territorial seas. These established regulations can help guide policies for the Blue Economy by providing a framework for classifying sub-sectors, clarifying cross-sectoral developments, and reducing information and financial frictions.

### 3.3. Specific Blue Economy Policies

Several specific policies support Blue Economy initiatives in Indonesia:

- (i) the *Indonesian Ocean Policy* (Presidential Decree No. 16/2017), which recognises the Blue Economy as one of six basic principles;
- (ii) *Blue Economy Development Framework*, which mainstreams Indonesia's development and economic transformation policy and cites SDG 14 as a main target to achieve; and
- (iii) cooperation with the United Nations Environment Programme to support the ongoing development of a Blue Economy roadmap, including launching fisheries management areas; addressing foreign IUU fishing; creating a national action plan on marine debris, taxes, and a single-use plastic ban; expanding MPAs; developing marine spatial plans for local areas; and launching the Indonesia Tourism Development Project, a programme that incorporates planning functions, business support, community empowerment, environmental and cultural assets management, and investment in tourism-relevant basic infrastructure and skills.<sup>35</sup> Four of six current project locations chosen by Indonesia involve marine-based tourism or are located in the coastal areas (i.e. Lake Toba, Lombok, Labuan Bajo, and Wakatobi).

<sup>35</sup> World Bank (2021), *Oceans for Prosperity: Reforms for a Blue Economy in Indonesia*, Washington, DC.

### 3.4. Major Blue Economy Implementation

As the world's largest archipelago – whose area includes some of the world's richest regions of ocean resources and marine biodiversity – Indonesia has already implemented several Blue Economy initiatives in different sectors. This potential was highlighted in the RPJMN, in which various marine-related sectors are identified as critical to support the achievement of the national development agenda. Indonesia's initiatives in sectors of the Blue Economy are as follows.

**Fisheries and aquaculture.** The fisheries sector is vital to Indonesia's economy, with its contribution to GDP growing on average from 2015 to 2020. The COVID-19 pandemic caused its growth to stagnate, but it still contributes around 2.5%–2.8% to GDP.<sup>36</sup> Indonesia's fish production is 7.7 million tonnes, and aquaculture accounts for 42% of total fisheries products.<sup>37</sup> Indonesia's commitment to improved fisheries management is reflected in initiatives such as addressing IUU fishing and a 'sink the vessels' policy, which targets illegal ships that are causing over \$20 billion in losses annually for the country.<sup>38</sup>

**Marine biodiversity and ecosystem conservation.** Indonesia's marine and coastal ecosystems, including coral reefs and mangroves, are rich in biodiversity and provide ecological and economic benefits. However, pollution and overexploitation threaten them. Indonesia has taken action to address marine debris and has expanded its MPAs to comprise over 23 million ha, with a goal of reaching 30 million ha by 2030 (Figure 2.4). The Ministry of Maritime Affairs and Fisheries has also implemented a scorecard system (i.e. *Evaluasi Efektivitas Pengelolaan Kawasan Konservasi Perairan, Pesisir, dan Pulau-Pulau Kecil*) to improve the management of these areas by providing a rigorous and consistent means of tracking management effectiveness. A recently upgraded version of this monitoring system has also been developed, with an increased focus on socio-economic and environmental outcomes, showing progress on expanding MPAs.

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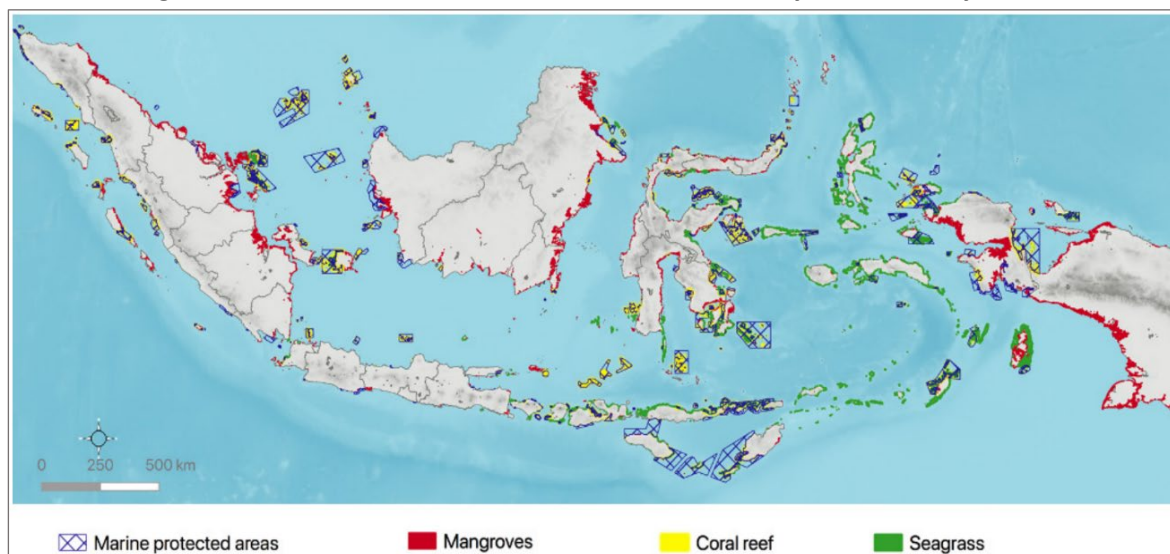
<sup>36</sup> Government of Indonesia, Bappenas (2021), *Blue Economy Development Framework for Indonesia's Economic Transformation*, Jakarta.

<sup>37</sup> OECD (2021), 'Sustainable Ocean Economy Country Diagnostics of Indonesia', *Development Co-operation Directorates*, No. 5, Paris, [https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DCD\(2021\)5&docLanguage=En](https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DCD(2021)5&docLanguage=En)

<sup>38</sup> P. Parameswaran (2015), 'Explaining Indonesia's "Sink the Vessels" Policy under Jokowi', *The Diplomat*, 13 January, <https://thediplomat.com/2015/01/explaining-indonesias-sink-the-vessels-policy-under-jokowi/>



**Figure 2.4. Indonesia's Marine Protected Areas and Key Marine Ecosystems**



Source: World Bank (2021), *Oceans for Prosperity: Reforms for a Blue Economy in Indonesia*, Washington, DC.

**Tourism.** Indonesia's coastal and marine areas are popular tourist destinations and a significant source of revenue. Indonesia promotes sustainable tourism practices, such as ecotourism and community-based tourism, to support the conservation and sustainable use of marine resources while providing economic opportunities for local communities. The Sustainable Tourism Development in Indonesia programme, launched in 2018, aims to bring a more holistic and inclusive approach to tourism development and includes marine-based tourism projects in four locations.<sup>39</sup>

**Marine manufacturing, construction, oil, and gas.** Marine manufacturing and construction are shifting to a standardised, consolidated, and integrated process. Indonesia needs to consider alternative energy sources, as its oil and natural gas production continues to fall. The country is struggling to develop renewable energy, and only a small percentage of its potential is currently harnessed.<sup>40</sup> There is untapped potential for renewable marine energy, including tidal energy. Indonesia is taking steps towards streamlining regulations and increasing multilateral cooperation to support the development of renewable ocean technologies. The decommissioning of oil and gas platforms will be a challenge due to high costs and technical requirements.

**Intersectoral partnerships.** In developing new initiatives for monitoring the Blue Economy, Bappenas is developing the Indonesian Blue Economy Index based on a dashboard of various macroeconomic indicators. Working with government intervention and technological development, the index will help improve coordination between government agencies and stakeholders engaged in the sector and can be used to set specific targets for each pillar of the Blue Economy. These pillars include emerging sectors (e.g. marine renewable energy), traditional sectors (e.g. fisheries, aquaculture, marine-based manufacturing, and tourism), and social aspects (e.g. labour and welfare,

<sup>39</sup> World Bank (2021), *Oceans for Prosperity: Reforms for a Blue Economy in Indonesia*, Washington, DC.

<sup>40</sup> McKinsey (2020), *Ten Ways to Boost Indonesia's Energy Sector in a Post-Pandemic World*, 16 December, <https://www.mckinsey.com/industries/oil-and-gas/our-insights/ten-ways-to-boost-indonesias-energy-sector-in-a-postpandemic-world#/>

health, and marine research and development and education), which are aligned with the SDGs to ensure inclusivity and sustainability.<sup>41</sup>

**Financing.** Indonesia has begun to develop instruments to support the development of the Blue Economy. There are at least 12 instruments that are being developed: debt-based finance, other bonds, *Sharia* financing, trust funds, capital markets, impact investment, philanthropy, development partners, blended finance, debt-for-nature swaps, insurance, and ecological fiscal transfers. Some of these instruments have been arranged through public–private partnerships.<sup>42</sup>

### 3.5. Barriers

Challenges and risks exist in Indonesia’s plan for a Blue Economy:

**Destruction of critical coastal habitats.** Indonesia has the largest area of mangroves in the world, but they are under threat from coastal development. The country is experiencing one of the highest rates of mangrove loss globally, with aquaculture and oil palm plantations being the primary causes. More than half of Indonesia's mangroves are in a degraded condition.<sup>43</sup> Effective measures are urgently needed to protect these critical coastal habitats and to prevent further loss.

**Inefficient fisheries management.** With 38% of marine capture fisheries estimated to be overfished and 44% fully fished in 2017, export earnings, government revenues, and the welfare of coastal communities have been greatly affected.<sup>44</sup> Overfishing also leads to the depletion of fish stocks, making fishing unsustainable. To mitigate this risk, more effective monitoring, control, and surveillance mechanisms are needed. While Indonesia has been able to control foreign incursions into its waters, the monitoring system for the domestic fleet remains weak. With over 600,000 vessels,<sup>45</sup> fisheries management areas are critical for governing Indonesia's fisheries. However, the system remains incomplete, and better coordination is needed across government levels to clarify responsibilities.

**Marine plastic debris.** Marine plastic debris has adverse effects on ecosystem costs, human health, and coastal economic activities. In 2021, the World Bank estimated that Indonesia contributes between 0.20 and 0.55 million tonne of plastics annually to the oceans.<sup>46</sup> The impacts of marine plastic debris on fisheries, coastal tourism, and commercial shipping have received international attention, with economic damage of over \$450 million per year in Indonesia and more than \$10.8

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<sup>41</sup> Government of Indonesia, Bappenas (2022), *Blue Economy Development Framework for Indonesia’s Economic Transformation*, Jakarta, [https://perpustakaan.bappenas.go.id/e-library/file\\_upload/koleksi/dokumenbappenas/file/Blue%20Economy%20Development%20Framework%20for%20Indonesias%20Economic%20Transformation.pdf](https://perpustakaan.bappenas.go.id/e-library/file_upload/koleksi/dokumenbappenas/file/Blue%20Economy%20Development%20Framework%20for%20Indonesias%20Economic%20Transformation.pdf); and P.J. Morgan et al. (eds.) (2022), *Blue Economy and Blue Finance: Toward Sustainable Development and Ocean Governance*, Tokyo: ADB Institute.

<sup>42</sup> Indonesia Climate Change Trust Fund and Government of Indonesia, Bappenas (2022), *Indonesia Blue Finance Policy Note*, Jakarta, [https://www.icctf.or.id/wp-content/uploads/2022/12/Blue-Finance-Policy-Note\\_Publish.pdf](https://www.icctf.or.id/wp-content/uploads/2022/12/Blue-Finance-Policy-Note_Publish.pdf)

<sup>43</sup> S. Putra (2019), ‘Resource Management of Mangrove and Seagrass Ecosystem’, presentation for the Government of Indonesia, Ministry of Marine Affairs and Fisheries (MMAF) Workshop on Enhancing Resilience of Coastal and Marine Resources.

<sup>44</sup> MMAF Decree No. 50/2017.

<sup>45</sup> California Environmental Associates (2018), *Trends in Marine Resources and Fisheries Management in Indonesia: A 2018 Review*, San Francisco, <https://www.packard.org/wp-content/uploads/2018/08/Indonesia-Marine-Full-Report-08.07.2018.pdf>

<sup>46</sup> World Bank (2021), *Oceans for Prosperity: Reforms for a Blue Economy in Indonesia*, Washington, DC.

billion annually in Asia-Pacific alone.<sup>47</sup> These calculations do not include the costs of remediation and indirect damage to ecosystems, which significantly increase the economic burden.

**Increasing damage to coral reefs.** Human impacts damage coral reefs, exacerbated by climate change.<sup>48</sup> According to recent surveys by Lembaga Ilmu Pengetahuan Indonesia, (Indonesian Institute of Sciences, LIPI), around one-third of Indonesia's coral reefs are in poor condition.<sup>49</sup> Another study shows that over 80% of Indonesia's reefs are expected to experience coral bleaching in 5 out of 10 years in the 2030s.<sup>50</sup> Contributing factors include destructive fishing and pollution, including agricultural and urban runoff and plastic waste.

**Marine and coastal tourism issues.** Increased visitor numbers and inadequate infrastructure threaten marine and coastal areas. Lack of basic services and infrastructure deficiencies also impact residents in these areas. Lombok, for instance, had low household access to piped water supply, sanitation, and solid waste collection services before its prioritisation for tourism development in 2015. Environmental pressure has increased with growing visitors and business needs. Komodo National Park has also seen early signs of environmental degradation, with the proportion of tourists encountering marine plastic debris increasing from 10% in 2009 to over 50% in 2017.<sup>51</sup>

### 3.6. Cross-Border Cooperation

Indonesia has actively participated in high-level panels for the sustainable ocean economy and Blue Economy, including the High-Level Policy Dialogue on Food Security and Blue Economy Plan of Action, Jakarta Declaration on Blue Economy, Changwon Declaration, High-Level Panel for Sustainable Ocean Economy, Xiamen Declaration, and *ASEAN Leaders' Declaration on the Blue Economy*.

## 4. Lao People's Democratic Republic

### 4.1. Perspective

The Lao PDR is the only landlocked country in South-East Asia. However, it still has a significant stake in the Blue Economy due to its abundant inland water resources. Lao PDR's Blue Economy mainly depends on the Mekong River, which is a crucial source of livelihoods, food, and transport for millions of people. The river also has significant hydropower potential, which can provide renewable energy to the country and boost economic growth. However, it is essential to balance the economic benefits of hydropower with the need to maintain the ecological integrity of the river and well-being of local communities. Lao PDR's freshwater resources are also vital for agriculture, aquaculture, and

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<sup>47</sup> Asia-Pacific Economic Cooperation (APEC) (2020), Update of 2009 APEC Report on Economic Costs of Marine Debris to APEC Economies, Singapore.

<sup>48</sup> World Bank (2021), *Oceans for Prosperity: Reforms for a Blue Economy in Indonesia*, Washington, DC.

<sup>49</sup> T.A. Hadi et al. (2020), *The Status of Indonesian Coral Reefs 2019*, Jakarta: Research Centre for Oceanography.

<sup>50</sup> L. Burke, K. Reytar, and M. Spalding (2012), *Reefs at Risk Revisited in the Coral Triangle*, Washington, DC: World Resources Institute, <https://www.wri.org/publication/reefs-risk-revisited-coral-triangle>

<sup>51</sup> A. Harvey et al. (2018), 'Assessing the Reliability and Utility of Citizen Science Data for Monitoring and Managing Marine Wildlife and Ecosystems', paper presented at the Fifth International Marine Conservation Congress, Kuching, Malaysia, 24–29 June.

biodiversity conservation. The country can develop sustainable fisheries and aquaculture practices to support its growing population's food needs and to generate income for local communities.

Based on the concepts of value creation, inclusiveness, and sustainability, three key sectors for developing the Blue Economy in the Lao PDR emerge: energy (hydropower), management of natural resources and the environment, and agriculture (including fisheries). The intersection of these spheres creates emerging sectors that can mutually benefit and link to the ASEAN-wide Blue Economy, including the hydropower carbon offset market; sustainable ecotourism; pro-poor agriculture, including reservoir fisheries and irrigation for agriculture smallholders; carbon trading in agroforestry; smallholder agroforestry; agro ecotourism; and clean hydrogen as renewable energy and ammonia products.

The government has not explicitly defined the Blue Economy in any official policy or strategy. However, the country's approach to water resources management aligns with the principles of the Blue Economy – focussing on sustainability, economic growth, and social equity.

#### **4.2. Main Blue Economy Regulations and Policies**

The *9th National Socio-Economic Development Plan* aims to promote sustainable economic growth in the Lao PDR while addressing social and environmental issues.<sup>52</sup> The plan recognises the importance of sustainable management of natural resources, including water, in achieving its objectives. It includes measures to improve water resources management, such as promoting the use of clean energy and reducing water pollution.

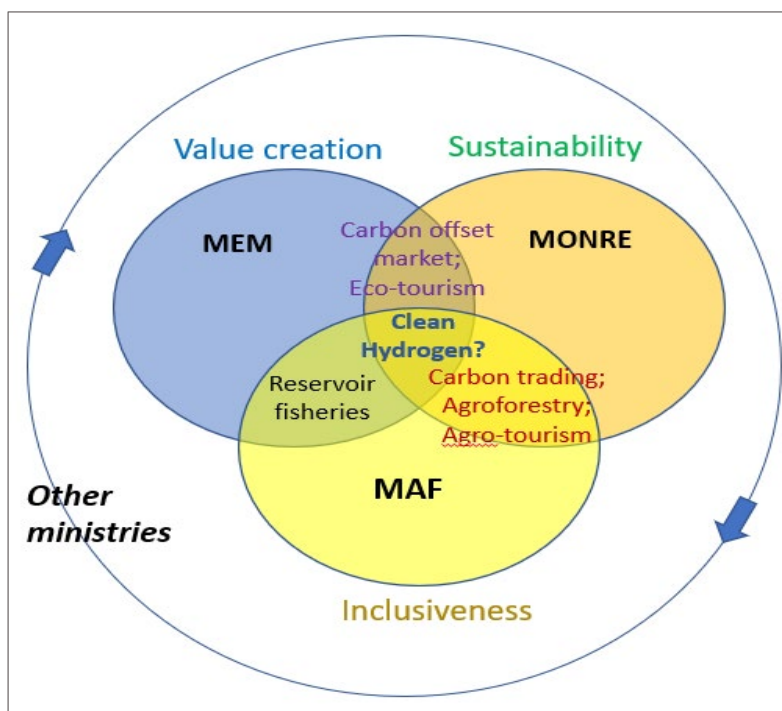
The *National Green Growth Strategy of the Lao PDR till 2030* is another framework that guides the country's development towards a more sustainable future.<sup>53</sup> The strategy aims to promote economic growth while addressing environmental and social challenges. It recognises the importance of sustainable management of natural resources, including water, and promotes the development of renewable energy sources, such as hydropower and solar energy, to reduce the country's reliance on fossil fuels. The strategy also emphasises the importance of reducing pollution and GHG emissions to mitigate the impacts of climate change.

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<sup>52</sup> Government of Lao PDR (2021), 9th National Socio-Economic Development Plan, 2021–2025, Vientiane.

<sup>53</sup> Government of Lao PDR (2021), Lao PDR 2nd Voluntary National Review Main Message, Vientiane, [https://sustainabledevelopment.un.org/content/documents/277122021\\_Main\\_Message\\_Lao\\_PDR.pdf](https://sustainabledevelopment.un.org/content/documents/277122021_Main_Message_Lao_PDR.pdf)

**Figure 2.5. Key Sectoral Stakeholders in the Blue Economy in the Lao PDR**



MAF = Ministry of Agriculture and Forestry, MEM = Ministry of Energy and Mines, MONRE = Ministry of Natural Resources and Environment.  
Source: Authors.

Table 2.5 presents five key sectors in the Blue Economy in the Lao PDR as well as associated stakeholders and legislation.

**Table 2.5. Stakeholders and Related Laws for the Inland Blue Economy of Lao PDR**

Sector	Stakeholders	Related Laws
Fisheries and aquaculture	<p>Government agencies:</p> <ul style="list-style-type: none"> <li>Ministry of Agriculture and Forestry (Department of Livestock and Fisheries)</li> <li>Ministry of Natural Resources and Environment (Department of Water and Water Resources)</li> <li>Ministry of Industry and Commerce (Department of Domestic Trade)</li> </ul> <p>Others:</p> <ul style="list-style-type: none"> <li>Fishery communities</li> <li>Cage culture enterprises</li> </ul>	<ul style="list-style-type: none"> <li>Wildlife and Aquatic Law (2007)</li> <li>Fisheries Law (2009)</li> <li>Law on Water and Water Resources (ed. 2017)</li> </ul>
Irrigation	<p>Government agencies:</p> <ul style="list-style-type: none"> <li>Ministry of Agriculture and Forestry (Department of Livestock and Fisheries)</li> </ul>	<ul style="list-style-type: none"> <li>Law on Agriculture (2013)</li> <li>Law on Irrigation (2013)</li> </ul>

Sector	Stakeholders	Related Laws
	<ul style="list-style-type: none"> <li>• Ministry of Natural Resources and Environment (Department of Water and Water Resources)</li> </ul> <p>Others:</p> <ul style="list-style-type: none"> <li>• Irrigation users</li> </ul>	
Energy	<p>Government agencies:</p> <ul style="list-style-type: none"> <li>• Ministry of Energy and Mines (Department of Energy Policies and Planning, Department of Energy Business)</li> <li>• Ministry of Planning and Investment (Department of Investment Promotion)</li> <li>• Ministry of Natural Resources and Environment (Department of Environment, Department of Water and Water Resources, Department of Natural Resources and Environment Inspection, Environmental Protection Fund)</li> <li>• Ministry of Agriculture and Forestry (Department of Forestry)</li> <li>• National Assembly (Provincial Assemblies)</li> </ul> <p>Others:</p> <ul style="list-style-type: none"> <li>• Électricité du Laos (EDL) (EDL-Generation Public Company; EDL Transmission Company Limited)</li> <li>• Hydropower development companies</li> <li>• Affected local communities</li> </ul>	<ul style="list-style-type: none"> <li>• Law on Electricity (ed. 2017)</li> <li>• Law on Dam Safety (2022)</li> <li>• Law on Investment Promotion (ed. 2016)</li> <li>• Law on Environment Protection (2012)</li> <li>• Law on Water and Water Resources (ed. 2017)</li> <li>• Land Law (ed. 2019)</li> <li>• Law on Forestry (ed. 2019)</li> </ul>
Mines	<p>Government agencies:</p> <ul style="list-style-type: none"> <li>• Ministry of Energy and Mines (Department of Mine Management)</li> <li>• Ministry of Planning and Investment (Department of Investment Promotion)</li> <li>• Ministry of Natural Resources and Environment (Department of Environment, Department of Water and Water Resources, Department of Natural Resources, Environment Inspection, Environmental Protection Fund)</li> <li>• Ministry of Agriculture and Forestry (Department of Forestry)</li> </ul>	<ul style="list-style-type: none"> <li>• Law on Minerals (ed. 2018)</li> <li>• Law on Investment Promotion (ed. 2016)</li> <li>• Law on Environment Protection (2012)</li> <li>• Law on Water and Water Resources (ed. 2017)</li> <li>• Land Law (ed. 2019)</li> <li>• Law on Forestry (ed. 2019)</li> </ul>

Sector	Stakeholders	Related Laws
	<ul style="list-style-type: none"> <li>• National Assembly (Provincial Assemblies)</li> </ul> <p>Others:</p> <ul style="list-style-type: none"> <li>• Mineral development projects</li> <li>• Affected local communities</li> </ul>	
Transport, connectivity, and logistics	<p>Government agencies:</p> <ul style="list-style-type: none"> <li>• Ministry of Public Works and Transport (Department of Transport, Department of Railway)</li> <li>• Ministry of Planning and Investment</li> </ul> <p>Others:</p> <ul style="list-style-type: none"> <li>• Laos-China Railway Company Limited</li> <li>• Vientiane Logistics Park (Thanaleng Dry Port)</li> </ul>	<ul style="list-style-type: none"> <li>• Law on Multiple Transport (2013)</li> <li>• Law on Land Transport (2013)</li> <li>• Law on Rail (2018)</li> <li>• Decree on Dry Ports (2021)</li> </ul>
Tourism and recreation	<p>Government agencies:</p> <ul style="list-style-type: none"> <li>• Ministry of Information, Culture and Tourism</li> <li>• Ministry of Natural Resources and Environment</li> <li>• Ministry of Planning and Investment</li> <li>• Ministry of Public Works and Transport</li> </ul> <p>Others:</p> <ul style="list-style-type: none"> <li>• Lao Association of Travel Agents</li> <li>• Lao Hotel and Restaurant Association</li> </ul>	<ul style="list-style-type: none"> <li>• Law on Tourism (2014)</li> <li>• Law on Water and Water Resources (ed. 2017)</li> <li>• Land Law (ed. 2019)</li> <li>• Law on Forestry (ed. 2019)</li> <li>• Law on Environment Protection (2012)</li> <li>• Law on Investment Promotion (ed. 2016)</li> </ul>
Watershed and forest management conservation	<p>Government agencies:</p> <ul style="list-style-type: none"> <li>• Ministry of Natural Resources and Environment (Department of Environment, Department of Water and Water Resources)</li> <li>• Ministry of Agriculture and Forestry (Department of Forestry)</li> </ul>	<ul style="list-style-type: none"> <li>• Law on Forestry (ed. 2019)</li> <li>• Wildlife and Aquatic Law (2007)</li> <li>• Law on Environment Protection (2012)</li> <li>• Law on Water and Water Resources (ed. 2017)</li> <li>• Decree on Climate Change (2019)</li> </ul>

Source: Authors.

#### 4.3. Specific Blue Economy Policies

Currently, the Lao PDR lacks a specific policy for the implementation of the Blue Economy, despite 80% of the country's area being situated within the Mekong River Basin. It has policies related to fisheries and aquaculture, irrigation, energy, mines, transport, connectivity and logistics, tourism

and recreation, and watershed and forest management conservation. Despite this situation, the Lao PDR can leverage existing policies to support sustainable development in sectors related to the Blue Economy, while considering the unique challenges associated with being the only landlocked country in South-East Asia.

#### 4.4. Major Blue Economy Implementation

Several established water-related sector policies include some Blue Economy initiatives.

**Inland fisheries and aquaculture.** Fisheries are important in the lives of rural people in the Lao PDR, providing animal protein and secondary income. Wild capture fisheries are the primary source of production, but aquaculture and stocking are becoming more important. Effective fisheries management is important for maintaining fisheries, while the development of water resources for other industries can impact fisheries. The estimated annual yield of capture fisheries is almost \$150 million per year. In FY2020, almost 67% of agricultural households relied on fisheries and aquatic animal raising for income and food, an increase of 27% since FY2011. About 92% of households that raise aquatic animals prefer the use of fishponds. Those that catch fish do so largely in rivers, ponds, or swamps.<sup>54</sup>

**Irrigation.** Over the past 20 years, irrigated areas have tripled from 0.15 million ha in 1991 to 0.46 million ha in 2014.<sup>55</sup> Further expansion and intensification of irrigation are possible in most provinces. As of 2014, the country has 18,067 irrigation schemes, with the majority being small-scale pump and reservoir schemes in the floodplains of the Mekong River and its tributaries. The total irrigated area for both rainy and dry seasons is estimated to be about 444,000 ha, with dry season irrigated areas accounting for 164,100 ha.<sup>56</sup>

**Renewable energy.** The Lao PDR has abundant renewable energy resources, particularly hydropower and biomass. Hydropower has been the focus of development since 1990, providing power to the country and neighbouring countries. The country has a potential hydropower capacity of 26,000 megawatts (MW), with 3,737 MW installed by 2015. It is expected that 15,000 MW to 20,000 MW of hydropower capacity will be installed by 2030 and 2040, respectively. By 2015, hydropower accounted for 85.1% of total electricity generation, with coal-fired thermal power plants accounting for 14.9% and negligible renewable energy. The government earns revenue from taxes, royalties, and dividends from power producers and benefits from foreign private investment. The Lao PDR aims to manufacture at least 51,134 million kilowatt-hours of electricity in 2023 and to increase this to 5,559 MW of electricity by 2030, with the majority generated from hydropower projects.<sup>57</sup>

**Water transport.** The Mekong River is an essential mode of transport, being the longest inland navigable waterway, spanning 1,865 km. It has historically served as a vital conduit for people and goods between towns along its banks and continues to be a hub for traditional forms of trade in

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<sup>54</sup> Government of Lao PDR, Ministry of Agriculture and Forestry (MAF) (2019), *Agriculture Statistics Yearbook 2019*, Vientiane; Government of Lao PDR, MAF (2022), *Agriculture Statistics Yearbook 2022*, Vientiane.

<sup>55</sup> Government of Lao PDR, MAF (2019), *Agriculture Statistics Yearbook 2019*, Vientiane.

<sup>56</sup> *Ibid.*

<sup>57</sup> Government of Lao PDR, Department of Energy Policy and Planning (2019), 'Lao PDR Energy Outlook 2020', *Economic Research Institute for ASEAN and East Asia (ERIA) Research Project Reports 2018*, No. 19, Jakarta: ERIA.



small boats linking communities. Today, the river has also emerged as a critical link in international trade routes, connecting the Lao PDR to the rest of the world and the other Mekong countries. The Lao PDR currently has 21 river port facilities managed by the Department of Waterways under the Ministry of Public Works and Transport. While these ports are typically used for domestic trade, recent years have seen an increase in cross-border trade with China, Myanmar, and Thailand. However, rapids, waterfalls, and low water levels during the dry season reduce the navigable length of the river to less than 1,000 km. Vessels with capacities of 50 to 100 deadweight tonnage are typically used for regional trade, carrying cargo such as timber, agricultural products, and construction materials.

**Ecotourism.** Before 2020, tourism was the second largest source of foreign exchange earnings in the Lao PDR after mining and electricity. In 2019, international arrivals peaked at 4.79 million visitors who spent \$934 million, contributing 9.1% to the country's economy and providing employment to 300,000 people. However, the COVID-19 pandemic caused a 74% decline in international arrivals and a 70%–80% drop in revenue for tourism-related businesses.<sup>58</sup> This has had a significant impact on workers in the tourism sector, leading to unpaid salaries, loss of incomes, increased outstanding debts, reduced disposable income, and a decline in domestic demand.

**Biodiversity conservation and water resources management.** The forests of the Lao PDR have great economic value, with the forest industry contributing 4.5% to export earnings in 2008 and employing 22,000 people. Non-timber forest products are important for rural households, with local use worth \$159.87 million per year.<sup>59</sup> There are also protected areas covering 18% of the total area of the country. Moreover, the Lao PDR is facing increasing pressure on water resources – especially during the long dry season – which is now affected by climate change. Therefore, it is imperative that the government address this issue through water reforms and a national water resources strategy and action plan.

#### 4.5. Barriers

As the core concept of the Blue Economy focusses on the sustainable use of ocean resources, the Lao PDR may benefit less from the ASEAN Blue Economy than AMS with coastlines. Moreover, although existing Blue Economy sectors of the Lao PDR – such as hydropower development – contribute significantly to its economy, they are expanding relatively unchecked. This growth has not been particularly inclusive and has come with substantial environmental costs.<sup>60</sup> The contribution to employment has remained modest, with only around 10,000 workers directly employed in jobs related to hydropower, such as electricity, gas, steam, and air-conditioning supply, accounting for less than 1% of total jobs generated in 2017 and with a heavy bias towards men. In addition, hydropower projects have altered river flows, significantly impacting fisheries, biodiversity, and downstream agriculture. These have resulted in the loss of forest resources, which could have been used to produce a wide range of forest products and ecosystem services, including those

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<sup>58</sup> Government of Lao PDR, Ministry of Information, Culture and Tourism (2021), *Lao PDR's Tourism COVID-19 Recovery Roadmap, 2021–2025*, Vientiane.

<sup>59</sup> Government of the Lao PDR, Ministry of Natural Resources and Environment (2017), *National Pollution Control Strategy to 2025 with Vision to 2030*, Vientiane.

<sup>60</sup> World Bank (2022), *Lao PDR Economic Monitor: Tackling Macroeconomic Vulnerabilities*, October, Washington, DC; and World Bank (2022), *Linking Laos, Unlocking Policies: Lao PDR Country Economic Memorandum*, Washington, DC.

related to watershed management, climate-change mitigation, disaster risk reduction, and biodiversity conservation.

Another challenge is institutional fragmentation, with a lack of agreement regarding specific Blue Economy tasks mandated to various ministries and departments – with an inadequate exchange of technical, economic, financial, and contractual information between sector stakeholders. Given the weak institutional capacity in the Lao PDR, significant monitoring and compliance capacity challenges are evident. The government typically lacks the necessary technical, financial, and human resources capacity to put in place a reliable and credible monitoring strategy to assess the extent of compliance with a Blue Economy.

#### 4.6. Cross-Border Cooperation

In addition to the *ASEAN Leaders’ Declaration on the Blue Economy*, the Lao PDR has participated in several related cooperation arrangements, especially those concerning the Mekong River (Table 2.6).

**Table 2.6. Multilateral Cooperation Related to the Blue Economy of the Lao PDR**

<b>Organisation</b>	<b>Involved Countries</b>	<b>Cooperation</b>
Mekong River Commission (MRC)	Cambodia, Lao PDR, Thailand, Viet Nam	An intergovernmental organisation for regional dialogue and cooperation in the Lower Mekong River Basin, MRC was established in 1995 based on the Mekong Agreement. It serves as a regional platform for water diplomacy and a knowledge hub of water resources management for the sustainable development of the region.
Greater Mekong Subregion (GMS)	Cambodia, China (specifically Yunnan Province and Guangxi Zhuang Autonomous Region), Lao PDR, Myanmar, Thailand, Viet Nam	With support from the Asian Development Bank and other donors, the GMS Economic Cooperation Program supports the implementation of high-priority sub-regional projects in agriculture, energy, environment, health and human resources development, information and communications technology, tourism, transport and trade facilitation, and urban development.
CLV	Cambodia, Lao PDR, and Viet Nam	The Cambodia–Lao PDR–Viet Nam Development Triangle Area focusses on deepening comprehensive cooperation and building integrated, sustainable and prosperous CLV economies. It calls for rules-based transboundary water resource management.
United Nations	Food and Agriculture Organization (FAO); International Fund for Agriculture Development (IFAD); UN Women; United Nations Conference on Trade and Development (UNCTAD); United Nations Development Programme (UNDP);	

Organisation	Involved Countries	Cooperation
		United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP); United Nations Educational, Scientific and Cultural Organization (UNESCO); United Nations Environment Programme (UNEP); United Nations Human Settlements Programme (UN-Habitat); United Nations Industrial Organization (UNIDO); World Food Programme (WFP), World Health Organization (WHO); World Bank

Source: Authors.

## 5. Malaysia

### 5.1. Perspective

In Malaysia, the Blue Economy is defined as economic activities in and around oceans and coastal areas. In the *Twelfth Malaysia Plan, 2021–2025*, under Priority Area B and Strategy B1, the Blue Economy is defined as ‘better management of marine resources for sustainable development that improves human well-being and social equity while significantly reducing environmental risk and ecological degradation’.<sup>61</sup> The Malaysian Investment Development Authority cited the World Bank’s definition of the Blue Economy, ‘the sustainable use of ocean resources for economic growth, improved livelihoods, and jobs while conserving the health of the ocean ecosystem’.<sup>62</sup> According to Akademi Sains Malaysia, eight sectors have been categorised as Blue Economy sectors in Malaysia, which are divided into traditional and emerging sectors.<sup>63</sup>

### 5.2. Main Blue Economy Regulations and Policies

In Malaysia, relevant regulations and policies are divided into several categories, with various stakeholders involved in the management of water-related sectors. For instance, fisheries and aquaculture are regulated by at least three different government authorities – Ministry of Agriculture and Food Security, Department of Fisheries, and Fisheries Development Authority. Related regulations consist of the Fisheries Act 1985, Waters Act 1920, State Fisheries Ordinance 2003, and Environmental Quality Act 2003. For coastal and marine tourism, four different institutions oversee it – the Ministry of Tourism, Arts and Culture; National Museum; state governments; and Malaysian National Security Council. Relevant regulations include the Environmental Quality Act 1974, Coastal and Marine Development Act 1992, and Tourism Tax Act 2017. In addition, extractive industries; shipping, ports, and related activities; renewable ocean energy, marine biotechnology and bioprospecting; desalination for freshwater generation; and waste disposal management are regulated with multiple public stakeholders involved.

<sup>61</sup> Government of Malaysia (2021), *Twelfth Malaysia Plan, 2021–2025: A Prosperous, Inclusive, Sustainable Malaysia*, Putrajaya.

<sup>62</sup> Malaysian Investment Development Authority, *Revitalising the Maritime Industry through Blue Economy*, <https://www.mida.gov.my/revitalising-the-maritime-industry-through-blue-economy/>

<sup>63</sup> Akademi Sains Malaysia (2023), *Position Paper on Blue Economy: Unlocking the Value of the Oceans*, Kuala Lumpur, <https://www.akademisains.gov.my/asm-publication/position-paper-on-blue-economy-unlocking-the-value-of-the-oceans/>

### 5.3. Specific Blue Economy Policies

Besides the *Twelfth Malaysia Plan 2021–2025*, the *National Agrofood Policy 2021–2030* outlines strategies related to fisheries and aquaculture sectors, including ensuring adequate, affordable, and safe fisheries yields; improving the sustainability of fisheries resources; making it a sub-sector in the national economy; and prioritising good governance across the sub-sector.<sup>64</sup>

Similarly, the *National Tourism Policy, 2020–2030* highlights both island and coastal tourism.<sup>65</sup> It aims to reinforce the sustainable development of tourism islands by preventing over tourism, embracing sustainability certifications, and strengthening governance capacity. Meanwhile, coastal tourism should address revitalising the coastal belt along the east coast as a top tourism destination that offers unique experiences. The *National Ecotourism Plan, 2016–2025* repositions MPAs as tourism destinations that champion the conservation and management of marine and terrestrial resources for the enjoyment of tourists in a responsible manner while enhancing the well-being of the local community.<sup>66</sup>

The *New Industrial Master Plan 2030* and *National Mineral Industry Transformation Plan, 2020–2030* were created to promote sustainable management of the mineral industry, encouraging more capital and skills-intensive activities and to support local entrepreneurship. In line with the aforementioned plans, the *National OGSE Industry Blueprint 2021–2030* seeks to create a robust, resilient, and globally competitive Malaysian oil and gas services and equipment (OGSE) sector that can contribute to state development.

The *National Transport Policy (2019–2030)* aims to develop a sustainable transport sector that accelerates economic growth and well-being. In addition, the *Malaysia Shipping Master Plan, 2017–2022* was initiated to revitalise its shipping industry, and the National Shipping and Port Council was set up to address both public and private sectors' issues within the sector.

Malaysia has created several specific policies for renewable ocean energy policies, including the *National Renewable Energy Policy*, feed-in tariff system, research and development support, and international cooperation.

### 5.4. Major Blue Economy Implementation

The major sectors where Blue Economy initiatives have been implemented are listed below.

**Fisheries and aquaculture.** Fisheries and aquaculture play a critical role in Malaysia's economy and food security by providing employment opportunities, contributing to rural development, and supplying animal protein. Several policies support this sector, including the *National Agrofood Policy, 2021–2030*, which aims to improve food security. It builds on the success of the earlier national agrofood policy, which increased agrofood's contribution to the GDP by 6.8% annually. The new

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<sup>64</sup> Government of Malaysia, Ministry of Agriculture and Food Industries (2021), *National Agrofood Policy, 2021–2030* (NAP 2.0), Putrajaya.

<sup>65</sup> Government of Malaysia, Ministry of Tourism, Arts and Culture (2020), *National Tourism Policy, 2020–2030*, Putrajaya.

<sup>66</sup> Government of Malaysia, Ministry of Tourism, Arts and Culture (2017), *National Eco Tourism Plan, 2016–2025*, Putrajaya.

policy includes 4 strategies and 16 action plans, involving short-, medium-, and long-term targets to drive the development of the fisheries and aquaculture sector.<sup>67</sup>

**Island and coastal tourism.** Policymakers have implemented various intervention policies to ensure the sustainability of Malaysia's tourism industry, such as the *National Tourism Policy 2020–2030*, which focusses on island and coastal tourism. It aims to promote sustainable development, prevent over tourism, embrace sustainability certifications, and strengthen governance capacity. The *National Eco Tourism Plan, 2016–2025* repositions MPAs as ecotourism destinations and champions the conservation and management of marine and terrestrial resources. Additionally, Malaysia has established fisheries sanctuaries and the Turtle Conservation and Information Centre to minimise negative externalities from ocean tourism, promote conservation, and enhance the well-being of local communities.

**Extractive industries.**<sup>68</sup> The extractive industries sector, including mining and quarrying, has implemented various strategies and actions to enhance competitiveness and sustainability. The *National Mineral Policy 2* and *National Mineral Industry Transformation Plan* aim to increase and to diversify the mining industry using contemporary technology and research and development while promoting sustainable management of the mineral industry.<sup>69</sup> The government is promoting sustainable mining practices, developing the skills and capacities of the local workforce, and seeking international cooperation in the sector. A ban on sea sand export is aimed at curbing illegal sand mining and protecting the shoreline and continental shelf, which helps address the issue of coastal erosion exacerbated by sea-level rise. The government also seeks to create a robust, resilient, and globally competitive OGSE sector that can contribute to GDP growth and employment.

**Shipping, ports, and related activities.** Malaysia has implemented several policies to develop its shipping industry and to position itself as a key player in the regional and global maritime industry, including the *Malaysian Shipbuilding/Ship Repair Industry Strategic Plan 2020*, *National Transport Policy (2019–2030)*, Malaysian Integrated Technical Cooperation Programme,<sup>70</sup> and *Malaysia Shipping Master Plan, 2017–2022*. The country has also invested in improving port infrastructure and facilities, which has helped reduce turnaround time and increase efficiency, contributing to economic growth and development.

**Marine biotechnology and bioprospecting.** Malaysia is exploring the potential of marine biotechnology to support its economic growth. The government has various established policies and initiatives, such as the *National Biotechnology Policy 2.0* and the Malaysian Marine Biotechnology Initiative, to support the development and commercialisation of biotechnology products and services derived from marine resources. The initiatives include the Institute of Marine Biotechnology, Marine Research Foundation, *National Blue Ocean Strategy*, Malaysia–Japan

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<sup>67</sup> Government of Malaysia, Department of Fisheries, <https://www.dof.gov.my/>

<sup>68</sup> Various activities and policy implementation in this sector are related to the Blue Economy, including mineral mining and deep seabed mining. As with land-based mining, mineral extractions do present environmental risks unless a sustainable mining practice is being promoted through good governance and good regulations.

<sup>69</sup> Government of Malaysia, Ministry of Natural Resources, Environment and Climate Change, <https://www.nrecc.gov.my/en-my/Pages/default.aspx>

<sup>70</sup> The programme encompasses Malaysia's efforts and commitment towards human capital development in the maritime field in collaboration with the International Maritime Organization (IMO). Under the programme, participants attend selected seminars, training, or workshops involving developing countries and islands.

International Institute of Technology, and Bioeconomy Corporation, which aim to facilitate collaboration and partnerships amongst researchers, industry, and government and to increase Malaysia's competitiveness in the global market for marine biotechnology products and services.

**Renewable ocean energy.** Malaysia is actively promoting the development of renewable ocean energy to meet the world's growing energy needs in a sustainable way. The government has implemented strategies to explore the potential of wave energy, tidal energy, ocean thermal energy conversion, and marine current energy conversion to generate electricity and has identified potential sites for the development of these projects. In addition, the government has established policies to support the deployment of renewable ocean energy.

**Desalination.** Freshwater is becoming a valuable resource, and seawater desalination is an ideal option for ensuring a sustainable clean water supply. However, Malaysia currently lacks specific policies that focus on seawater desalination due to the high energy-intensive process and associated costs. Malaysia has one full-scale seawater desalination plant in Pantai Senok, and MPDT Capital Behad is developing a desalination plant in Penang that is expected to generate 250 million litres of clean water daily.

**Waste disposal management.** Waste management is a priority for Malaysia, as its population growth and rapid economic development have led to more waste generation. The government has introduced policies and initiatives to address this, including the *National Marine Litter Policy and Action Plan, 2021–2030*. The Solid Waste and Public Cleansing Management Act 2007 has been adopted in seven states, and waste management facilities have also been developed there. Initiatives to reduce waste and plastic pollution include the National Recycling Programme, Waste Separation at Source Programme, and *Road Map towards Zero Single-Use Plastics 2018–2030*.<sup>71</sup> Beach clean-up efforts are also regularly organised to protect the marine environment and ecosystem.

## 5.5. Barriers

Malaysia's economy has undergone significant shifts in industrial phases, with the industrial sector's contribution to GDP increasing from 13.4% in 1970 to 20.5% in 1980, while the agricultural sector's contribution decreased from 30.8% to 22.2% over the same period. The services sector has become the backbone of the economy, contributing over 50% of GDP since 2008.<sup>72</sup> The Blue Economy has contributed up to 23% of GDP<sup>73</sup> – amongst the highest amongst AMS – but the country has yet to launch a national ocean policy. The Organisation for Economic Co-operation and Development predicted that the growth of ocean-based industries may soon outperform the global growth of the economy in terms of value added and employment.<sup>74</sup>

Malaysia faces several challenges that could impede the advancement of a sustainable Blue Economy, including the absence of a national ocean policy and marine spatial plan, as well as a shortage of resources and manpower to enforce regulations. There are also issues with jurisdictional

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<sup>71</sup> Maritime Institute of Malaysia, <https://www.mima.gov.my/vision-mission>

<sup>72</sup> J. Felipe (2018), 'Asia's Industrial Transformation: The Role of Manufacturing and Global Value Chains', *ADB Economics Working Paper Series*, No. 549, Manila: ADB.

<sup>73</sup> PEMSEA (2021), *Regional State of Ocean and Coasts 2021: The East Asian Seas Region (Volume 1)*, Quezon City, <https://www.pemsea.org/publications/books/regional-state-ocean-and-coasts-2021-east-asian-seas-region-volume-1>

<sup>74</sup> OECD (2016), *The Ocean Economy in 2030*, Paris.

overlap between different agencies, a lack of data and technical expertise, and inadequate logistical support and technology. Pollution from land-based sources is a significant problem. Finally, the division of power between federal and state governments has resulted in ineffective legislation and enforcement of environmental laws and policies.

## **5.6. Cross-Border Cooperation**

Apart from the *ASEAN Leaders' Declaration on the Blue Economy*, Malaysia has participated in the Joint Ministerial Statement–Regional Ministerial Meeting on Promoting Responsible Fishing Practices Including Combating IUU Fishing in the Region; cooperated with the International Maritime Organization (IMO) on human capital development; and undertaken various international partnerships with universities, government bodies, and research institutions, including the Malaysia–Japan International Institute of Technology.

## **6. Myanmar**

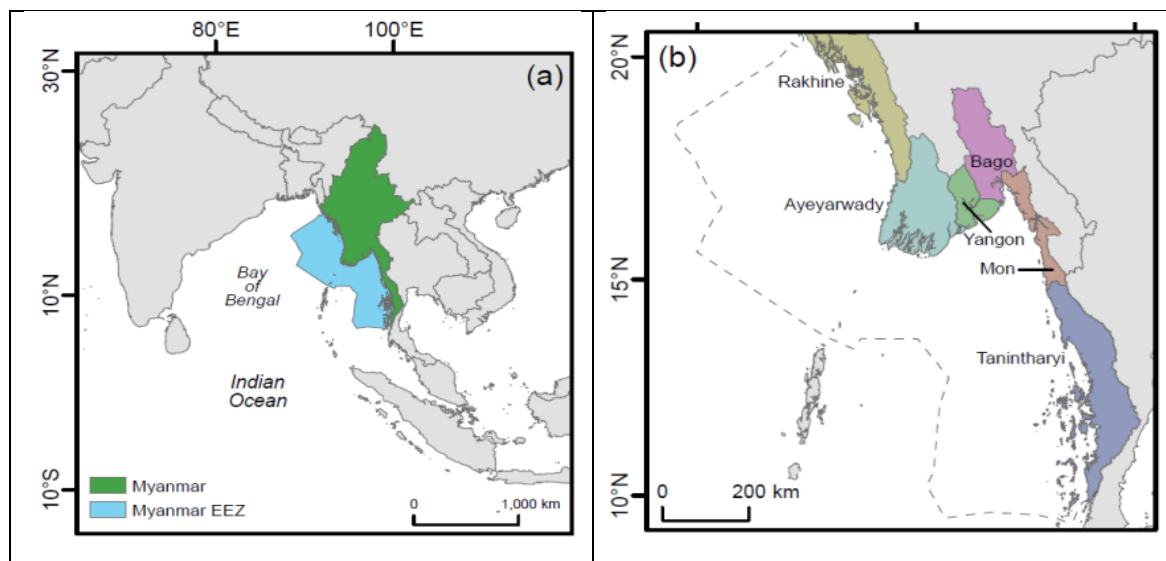
### **6.1. Perspective**

Myanmar has one of the longest coastal lines – of 3,000 km – in mainland South-East Asia. It has roughly three regions – the Rakhine State coastal area, which borders the Bay of Bengal; Tanintharyi Region coastal area that borders the Andaman Sea; and Ayeyarwady Delta that lies between the two (Figure 2.6). The coast is home to 23 million people, approximately 50% of total population of the country.<sup>75</sup> It plays an important role in Myanmar's economic development, providing rich natural resources, including from fisheries, agriculture, and oil and gas fields – and has abundant untapped ecological resources. The country's commercial capital, Yangon, has an international seaport on the coast of the Ayeyarwady Delta, while two deep seaports – Kyaukphyu in Rakhine State and Dawei in Tanintharyi Region – have been developed as part of international investment projects involving China and Thailand.

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<sup>75</sup> The total population of Myanmar is 51.4 million, comprising the enumerated population as well as the estimated population that was not counted during the 2014 census. Myanmar has a low population growth rate of 0.89%, and the population was estimated to grow to 54.0 million by 2022. See Government of Myanmar and United Nations Population Fund (2016), *The 2014 Myanmar Population and Housing Census - Thematic Report on Population Dynamics*, Nay Pyi Taw.

Figure 2.6. Coastal Zones in Myanmar



Source: F.C.H. Birch et al. (2016), *Myanmar Marine Biodiversity Atlas*, Exeter: University of Exeter.

Natural gas exports have provided 25% of total merchandise exports from Myanmar, while 90% of hydrocarbon production is from natural gas.<sup>76</sup> Whereas oil is produced onshore mostly in the central dry zones or inner plains, all of the natural gas production is offshore.

Fisheries exports comprise one-third of total agriculture exports.<sup>77</sup> Although the government has made efforts to promote aquaculture production over the last decade, its growth pattern has reached a plateau. The combination of natural gas and fisheries exports account for one-third of national income,<sup>78</sup> underlining the importance of ocean resources for the country.

Although Myanmar does not have a national definition of the Blue Economy, it signed the 2021 *ASEAN Leaders' Declaration on the Blue Economy*. Therefore, the country has committed to enacting efficient, sustainable, and resilient socio-economic development; food security, livelihood opportunities, equity, and inclusiveness; protection and restoration of coastal and marine ecosystem services for climate and disaster resilience; mainstreaming multiple objectives in national and regional development policies and investment plans; and regional cooperation on maritime security (including IUU fishing), transboundary ocean resources management, research and innovation, socio-cultural and knowledge exchange, and monitoring and reporting across governments and stakeholders.

Myanmar's conceptualisation of the Blue Economy came from its earlier commitment to managing coastal and marine resources sustainably by achieving the SDGs by 2030. In its national development plan, the country aims to achieve sustainable use of 'natural resources and the

<sup>76</sup> BMI Research (2018), *Myanmar Oil and Gas Report, Quarter 2*, London.

<sup>77</sup> A. Thomas-Smyth et al. (2021), *The Status and Potential of Myanmar's Marine Fisheries: A Fishery Status Evaluation and Roadmap for Reform in the Face of Climate Change*, New York: Environmental Defense Fund, [https://www.edf.org/sites/default/files/documents/Myanmar%20Road%20Map%2C%20EDF%2C%20Jan.2020\\_1.pdf](https://www.edf.org/sites/default/files/documents/Myanmar%20Road%20Map%2C%20EDF%2C%20Jan.2020_1.pdf)

<sup>78</sup> G. Hosch, B. Belton, and G. Johnstone (2021), 'Catch and Effort Trends in Myanmar's Offshore Fleets Operating out of Myeik: 2009–2018,' *Marine Policy*, 123.



environment for the prosperity of the nation'.<sup>79</sup> Myanmar's conceptualisation may include traditionally exploited marine resources – living resources (i.e. capture fisheries) and non-living resources (i.e. oil, gas, and marine manufacturing and construction) – and the use of oceans for tourism, education, ports, and shipping.

## 6.2. Main Blue Economy Regulations and Policies

Myanmar has not developed a comprehensive legal framework regarding the ocean environment, except that Schedule One of Article 96 refers the matter of 'petroleum, natural gas, marine fisheries, major ports, lighthouses, shipbuilding, and carriage by sea' to the jurisdiction of the central government, suggesting that sub-national governments have no jurisdiction over the use of marine and offshore resources.<sup>80</sup> Lacking organic laws to guide the Blue Economy, the mandate to govern and to utilise marine, coastal, and offshore resources is derived from various legislative laws, regulations, and guidelines (Table 2.7).

**Table 2.7. Regulations and Institutions for the Blue Economy in Myanmar**

Sectors	Regulations
Ocean economy	<ul style="list-style-type: none"> <li>• Law No. 10/2015, Myanmar Coastal and Inland Water Transport Service License</li> <li>• Law No. 14/2017, Myanmar Territorial Sea and Maritime Zones</li> <li>• Law No. 31/2013, Telecommunication</li> <li>• Law No. 14/2017, Myanmar Territory Sea Water and Exclusive Economic Zone</li> </ul>
Implementation of business processes in the maritime and fisheries sector	<ul style="list-style-type: none"> <li>• Law No. 1/1989, Fishing Rights of Foreign Vessels as Amended in 1993</li> <li>• Law No. 24/1989, Aquaculture</li> <li>• Law No. 1/1991, Freshwater Fisheries</li> <li>• Law No. 9/1990, Marine Fisheries as Amended in 1993</li> <li>• Directive No. 9/1998, Department of Fisheries System of Inspection</li> <li>• Law No. 1/2014, Myanmar Special Economic Zones</li> <li>• Law No. 34/2014, Amending the Pearl Industry Law</li> <li>• Law No. 44/2014, Electricity</li> <li>• Law No. 13/2015, Amending Sea Transport Tax</li> <li>• Law No. 21/2015, Myanmar Coastal Authority</li> </ul>
Ocean spatial planning (ocean protection and waste management)	<ul style="list-style-type: none"> <li>• Law No. 11/2019, Boundaries</li> </ul>
Sea transport	<ul style="list-style-type: none"> <li>• Law No. 18/2012, Revoking Myanmar Five Stars Shipping Corporation Law of 1964</li> </ul>

<sup>79</sup> Government of Myanmar (2018), *Myanmar Sustainable Development Plan (MSDP), 2018–2030*, Nay Pyi Taw.

<sup>80</sup> Government of Myanmar (2008), 'Schedule One: Union Legislative List', *The Constitution of the Republic of the Union of Myanmar*, Nay Pyi Taw.

Sectors	Regulations
	<ul style="list-style-type: none"> <li>• Law No. 26/2013, Amending Water Blockade Act</li> <li>• Law No. 27/2013, Amending the Defile Traffic Act</li> <li>• Law No. 3/2014, Multi-Modal Transport</li> <li>• Law No. 51/2014, Inland Water Transport Organisation</li> <li>• Law No. 10/2015, Coastal and Maritime Transport</li> <li>• Law No. 29/2015, Inland Water Transport</li> </ul>
Energy and mineral resources and non-conventional natural resources based on the Blue Economy	<ul style="list-style-type: none"> <li>• Law No. 8/2015, Protecting Ethnic Rights</li> </ul>
Sea construction, sea industry, and biotechnology	<ul style="list-style-type: none"> <li>• Law No. 8/2006, Conservation of Water Resources and Rivers</li> <li>• Law No. 9/2012, Environmental Conservation</li> <li>• Law No. 34/2013, Amending the Myanmar Maritime University Law</li> <li>• Notification No. 50/2014, Environment Conservation Rules</li> <li>• Law No. 12/2018, Conservation of Biodiversity and Protected Areas</li> </ul>
Marine tourism and business activities in coastal areas and isles	<ul style="list-style-type: none"> <li>• Law No. 28/2014, Standardisation</li> </ul>

Source: Authors.

### 6.3. Specific Blue Economy Policies

Only in recent years has the government recognised the potential for economic growth through the sustainable development of ocean resources. It established the Coastal Resources Management Central Committee in 2016, chaired by a vice-president, on the dire state of coastal, marine, and mangrove resources in the country. Since 2016, the committee has hosted national-level policy coordination meetings to address the challenges and risks.<sup>81</sup> The State Administration Council also established its own national committee and working committee in 2021 to draw up a national strategy and action plan on the Blue Economy.<sup>82</sup>

Policy continuity between two political regimes in Myanmar in the last decade confirmed the commitment to developing national capacity and strengthening public institutions to achieve a sustainable ocean economy. Currently, the government is undertaking a long-term plan, the *Myanmar Sustainable Development Plan (MSDP), 2018–2030*, to achieve the SDGs by 2030. The plan was launched in August 2018, aiming to make Myanmar a peaceful, prosperous, and democratic country through three pillars and five goals, including the sustainable use of ‘natural resources and the environment for the prosperity of the nation’.<sup>83</sup>

<sup>81</sup> Government of Myanmar, Cabinet of the Union Government (2021), ‘Notification No. 306/2021’, *National Gazette*, 30 September.

<sup>82</sup> Government of Myanmar, Coastal Resources Management Central Committee (2021), ‘Notification No. 132/2021’, *National Gazette*, 5 November.

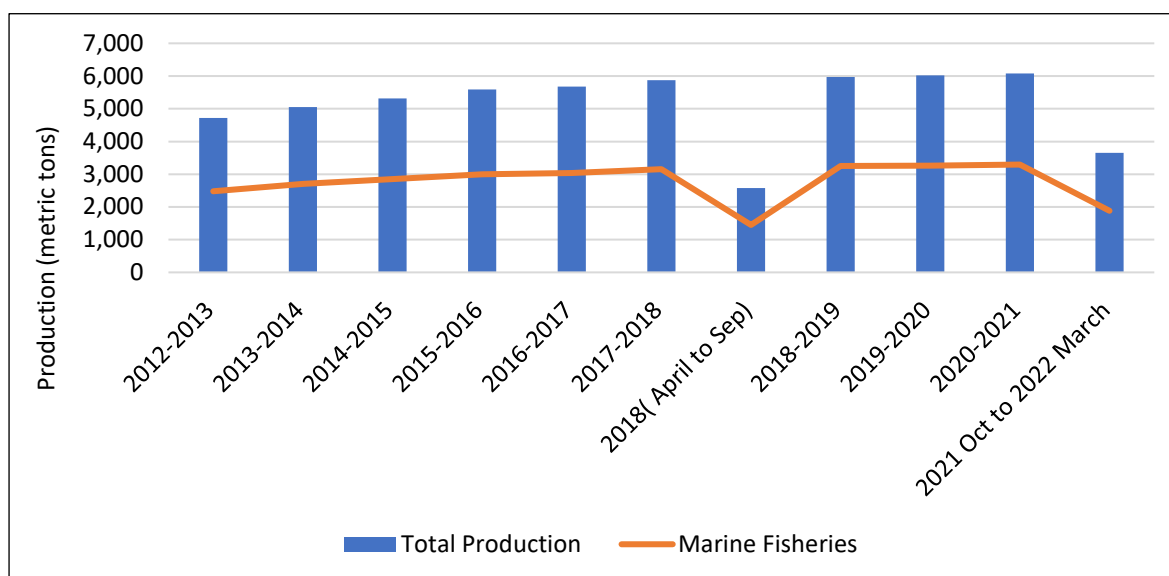
<sup>83</sup> Government of Myanmar (2018), *Myanmar Sustainable Development Plan (MSDP), 2018–2030*, Nay Pyi Taw.

#### 6.4. Major Blue Economy Implementation

When Myanmar began to liberalise its economy in 2011, a policy framework for the economic transition emphasised the protection, restoration, and enhancement of forests and land and marine resources.<sup>84</sup> The lessons learned from Cyclone Nargis in 2008 – the country’s deadliest disaster – and the success of the reform strategy built upon sustainable concepts have led to more comprehensive formulation of sound natural resources management as outlined in the *Myanmar Sustainable Development Plan (MSDP), 2018–2030*. The following describes the strategic framework and sectoral activities concerning with Blue Economy in Myanmar.

**Fisheries and aquaculture.** These play a central role in the economy, with the nominal GDP increasing on average from 2015 to 2020 due to the steady increase of production in aquaculture, leasable and open fisheries, and seafood cultivation. Although the government wished to increase aquaculture production to replace marine fisheries in the last 10 years, the ratio of aquaculture production to marine capture fisheries has remained unchanged (Figure 2.7).

**Figure 2.7. Myanmar’s Total Fisheries Production, 2012–2022**



Source: Government of Myanmar, Department of Fisheries (2023), *Fisheries Statistics*, Nay Pyi Taw.

**Marine biodiversity and ecosystem conservation.** At the heart of a sustainable ocean economy and its social and economic benefits, Myanmar’s rich biodiversity includes coral reefs, mangroves, and seagrass beds that are also critical for the replenishment of fisheries resources. As part of its commitment as a signatory to the Convention on Biological Diversity, Myanmar adopted the *National Biodiversity Strategy and Action Plan* in 2011 and revised it in 2015 towards biodiversity conservation, management, and utilisation of natural resources in a sustainable manner.<sup>85</sup>

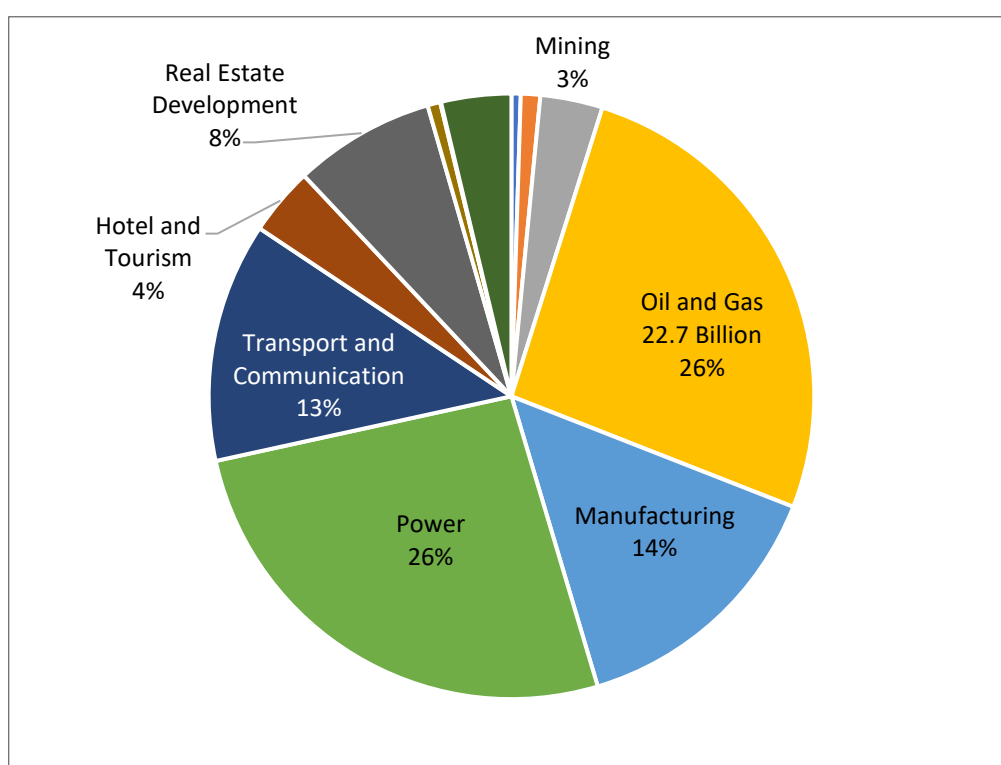
<sup>84</sup> Government of Myanmar, Ministry of National Planning and Economic Development (2013), *Framework for Economic and Social Reforms, 2012–2015*, Nay Pyi Taw.

<sup>85</sup> Government of Myanmar, Forest Department (2015), *National Biodiversity Strategy and Action Plan (NBSAP), 2015–2020*, Nay Pyi Taw.

**Tourism.** Myanmar has a rich natural and cultural heritage, and many of its coastal and marine areas have tourism potential. Since the country’s political and economic liberalisation in 2011, the tourism sector has been one of the fastest growing industries. To strengthen tourism-related social and environmental safeguards, the government adopted the *Myanmar Tourism Master Plan 2013–2020*, which emphasised zoning practices and control in tourism destinations, climate-change adaptation, and green technologies. The government also drew up the *Ecotourism Policy and Management Strategy* to support zoning systems that restrict visitor use of core areas to conserve key species and habitats.

**Oil and gas.** In Myanmar, 60%–70% of natural gas production was exported to Thailand and China in 2022, and gas accounted for about 20% of Myanmar’s overall exports.<sup>86</sup> The remaining was used for domestic power generation. Natural gas – almost all produced in offshore fields in the Gulf of Martaban and off of the Rakhine State coast – has become another important source of foreign income as well as domestic power generation since 2011. Myanmar’s offshore and deep-water areas are mostly underexplored; however, the ongoing political crisis and Western economic sanctions particularly targeted against the oil and gas sector have discouraged many investors towards the Myanmar market. Still, Myanmar needs to focus on developing an optimal energy mix that does not permit the depletion of offshore natural gas resources. At the same time, it must consider alternative fuel sources for power generation, as its abundant hydropower resources are also facing impacts from climate change.

**Figure 2.8. Sectoral Share of Foreign Direct Investment in Myanmar, September 2020**



Source: Central Statistical Organization of Myanmar.

<sup>86</sup> *Nikkei Asia* (2023), ‘Myanmar’s Natural Gas Income in Jeopardy as Foreign Firms Exit’, 23 February, <https://asia.nikkei.com/Spotlight/Myanmar-Crisis/Myanmar-s-natural-gas-income-in-jeopardy-as-foreign-firms-exit>

## 6.5. Barriers

The country's Ocean Health Index remains poor at 65, compared to global average of 69. Although the score has slightly improved over recent years, Myanmar still faces many challenges to coastal and ocean-dependent livelihoods that include job quantity and quality, biodiversity damage, and habitat destruction.<sup>87</sup> In addition, the difficulty in transitioning towards a Blue Economy has been further exacerbated by the COVID-19 pandemic, which has disrupted supply chains thus delaying recovery of local industries.

Myanmar also faces acute constraints in engaging and partnering with relevant international stakeholders, such as the private sector and various financial institutions. International oil and gas corporations, like TotalEnergies and Chevron Corporation, have exited the country, citing worsening human rights conditions. Moreover, the strategic rivalry between Myanmar's two giant neighbours, China and India, is becoming intense and intractable in many ways – the competition for infrastructure projects, marine resources, shipping lanes, maritime trade, as well as the increasing militarisation are worrying.

Overfishing and IUU fishing remain issues. Furthermore, governance capacity remains limited, and the existing scientific and management structures for fisheries are nascent at best. Pollution, such as plastics and marine debris, oil spills, and sewage discharge, have worsened the marine ecosystem, and watershed degradation and mangrove deforestation also pose major threats to ocean habitats.

## 6.6. Cross-Border Cooperation

Myanmar has made firm commitments to the principles and purposes of regional association as enshrined in the 1997 Bangkok Declaration. It also hosted the Third Bay of Bengal Initiative for Multisectoral Technical and Economic Cooperation (BIMSTEC) Summit of Leaders in Nay Pyi Taw in 2014 and helped formulate a policy pronouncement relevant to the Blue Economy in the Summit Declaration to 'resolve to continue cooperation in the area of fisheries, including inland fisheries, and conservation and management and sustainable use of marine resources in the Bay of Bengal region'.<sup>88</sup> It participated in three mechanisms: the Jakarta Declaration on Blue Economy, Fourth BIMSTEC Summit of Leaders, and *ASEAN Leaders' Declaration on the Blue Economy*, amongst others (Table 2.8).

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<sup>87</sup> Ocean Health Index, Myanmar, Global Scores, <https://oceanhealthindex.org/regions/myanmar/> (accessed 20 March 2023).

<sup>88</sup> BIMSTEC (2014), *Third BIMSTEC Summit Declaration*, Nay Pyi Taw, 4 March, <https://bimstec.org/summitdeclaration/>

**Table 2.8. Myanmar's Participation in International and Regional Blue Economy Initiatives**

<b>Agreements/Treaties/Protocols</b>	<b>Date of Signature/ Ratification/ Accession</b>
<b>Regional</b>	
Plant Protection Agreement for Asia and Pacific Region	4 November 1959
ASEAN Agreement on the Conservation of Nature and Natural Resources	16 October 1997
ASEAN Agreement on Transboundary Haze Pollution	13 March 2003
<b>International</b>	
United Nations Framework Convention on Climate Change (UNFCCC)	25 November 1994
Convention on Biological Diversity (CBD)	25 November 1994
International Tropical Timber Agreement	31 January 1996
Vienna Convention for the Protection of the Ozone Layer	24 November 1993
Montreal Protocol on Substances That Deplete the Ozone Layer	24 November 1993
London Amendment to the Montreal Protocol on Substances That Deplete the Ozone Layer	24 November 1993
Convention Concerning the Protection of the World Culture and Natural Heritage	29 April 1994
United Nations Convention to Combat Desertification	2 January 1997
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)	13 June 1997
Cartagena Protocol on Biosafety	11 May 2001
Kyoto Protocol to the Convention on Climate Change	13 August 2003
Stockholm Convention on Persistent Organic Pollutants	18 April 2004
Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity	9 January 2014

ASEAN = Association of Southeast Asian Nations.

Source: Authors.

## **7. Philippines**

### **7.1. Perspective**

At least 2 million people in the Philippines are directly dependent on coastal resources for their livelihoods.<sup>89</sup> Estimates have shown that the Blue Economy contributed around \$11.9 billion in gross value added to the country by 2015.<sup>90</sup> Thus, the importance of the Blue Economy in the Philippines cannot be overstated. The term 'Blue Economy' first appeared in a national planning document during the Duterte Administration, and it was referenced twice in the *Philippine Development Plan, 2017–2022*, including in some specific actions. The documents, however, did not define the term.

<sup>89</sup> PEMSEA (2019), National State of Oceans and Coasts 2018: Blue Economy Growth of Philippines, Quezon City.

<sup>90</sup> M.A.G. Zafra (2021), 'Developing the Philippine Blue Economy: Opportunities and Challenges in the Ocean Sector', ADB Institute Working Paper Series, No. 1291, Tokyo: ADB Institute.

As far back as 2016, there have been calls for an integrated and comprehensive plan for the Blue Economy as well as the creation of a government entity responsible for its management. Various proposals, from academia to policymakers, have been put forwards covering marine regulation and enforcement, marine development and conservation, and jurisdiction, but these have not progressed.<sup>91</sup>

The new national planning framework, the *Philippine Development Plan, 2023–2028*, mentions the Blue Economy more extensively and attempts to lay out objectives and actions that support its development. It adopts a definition from the Changwon Declaration:

*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.*<sup>92</sup>

## **7.2. Main Blue Economy Regulations and Policies**

Chapter 20 of the *Philippine Development Plan, 2023–2028* mentions the Blue Economy under the overall strategy of ‘expanding the development of sustainable resource-based industries’. The specific strategy is to promote sustainable fish- and marine-based industries that contribute to the development of the Blue Economy through eco-friendly technologies and practices. Categories and sectors are mentioned under different chapters, including agriculture and agribusiness (Chapter 5); services (Chapter 7); science, technology, and innovation (Chapter 8); and climate action and disaster resilience (Chapter 15).

The Philippines has no overall legal framework that governs the Blue Economy. However, there are ongoing legislative proposals for the development of a Blue Economy national framework, including in the Philippines Innovation Act (Republic Act No. 11293) and Philippines Green Jobs Act of 2016 (Republic Act No. 10771).

Sector-specific Blue Economy frameworks have been in place for decades. For instance, for fisheries and aquaculture, the Philippine Fisheries Code of 1998 and Agriculture and Fisheries Modernization Act of 1998 are still the main regulations. An administrative order established Fisheries Management Areas in 2019. Regarding the coastal and marine ecosystem and biodiversity conservation, the country employs the Wildlife Resources Conservation and Protection Act 2001 (Republic Act No. 9147). Several other sectors also have regulations, such as for pollution reduction and waste management (i.e. Philippine Clean Water Act of 2004, Ecological Solid Waste Management of 2000, Marine Pollution Act of 1974, and Sanitation Code of the Philippines of 1994), maritime transport and shipping (i.e. IMO conventions), maritime security (i.e. National Coast Watch System), tourism (i.e. Tourism Act of 2009), offshore oil and gas (i.e. Oil Exploration and Development Act of 1972), and renewable energy (i.e. Republic Act No. 9513).

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<sup>91</sup> R.U. Mendoza and S. Valenzuela (2017), ‘Growing the Philippine Blue Economy: Policy Challenges and Opportunities’, Ateneo School of Government (ASOG) Working Papers, No. 17-008, <https://ssrn.com/abstract=3040436>

<sup>92</sup> Government of the Philippines (2023), *Philippine Development Plan, 2023–2028*, Manila, <https://pdp.neda.gov.ph/philippine-development-plan-2023-2028/>

Besides these regulations, the Philippines has ongoing legislative proposals related to the Blue Economy. A proposal in the Senate (18th Congress, P.S. Res. No. 10) filed in 2019 directs the appropriate Senate Committees to conduct an inventory and inquiry on the government’s policies and projects on fisheries and marine resources conservation; maritime transport, shipbuilding, and repair; seafarers’ rights and welfare; marine tourism; and other matters relating to the country’s maritime and ocean affairs, with the goal of formulating a comprehensive national policy on the strategic and sustainable development of the country’s Blue Economy. In 2022, another bill (HB 00069) was filed that called for establishing ‘a framework for [the] Blue Economy, promoting stewardship and sustainable development of coastal and marine ecosystems and resources’.<sup>93</sup> Table 2.9 outlines more regulations relevant to the Blue Economy and the responsible stakeholders.

**Table 2.9. Regulatory Frameworks and Relevant Stakeholders Related to the Blue Economy in the Philippines**

Sector	Regulatory Framework	Responsible Stakeholders
Fisheries and aquaculture	<ul style="list-style-type: none"> <li>• Philippine Fisheries Code of 1998</li> <li>• Agriculture and Fisheries Modernization Act of 1998</li> <li>• Act to Prevent, Deter, and Eliminate Illegal, Unreported, and Unregulated Fishing (Republic Act No. 10654)</li> <li>• Traceability System for Fish and Fish Products 2014</li> <li>• Voluntary Guidelines on the Establishment of a Municipal Catch Documentation and Traceability System for LGUs 2019</li> <li>• Administrative Order Establishing Fisheries Management Areas for the Conservation and Management of Fisheries in Philippine Waters 2019</li> <li>• Local Government Code: Enforcement of Fishery Laws in Municipal Waters Including Conservation of Mangroves (Republic Act No. 7160)</li> </ul>	<ul style="list-style-type: none"> <li>• Bureau of Fisheries and Aquatic Resources, Department of Agriculture</li> <li>• Philippine Fisheries Development Authority</li> </ul>
Coastal and marine ecosystem and biodiversity conservation	<ul style="list-style-type: none"> <li>• Wildlife Resources Conservation and Protection Act (Republic Act No. 9147/2001)</li> <li>• Revised Forestry Code (Republic Act No. 7161/1991)</li> <li>• National Integrated Protected Areas System Act (Republic Act No. 7586/1992)</li> <li>• Adopting Integrated Coastal Management as a National Strategy to Ensure the Sustainable Development of Country’s Coastal and Marine Environment and Resources (Executive Order No. 533/2006)</li> </ul>	<ul style="list-style-type: none"> <li>• Department of Environment and Natural Resources</li> </ul>

<sup>93</sup> The bill has been pending with the House Committee on Economic Affairs since 26 July 2022.



Sector	Regulatory Framework	Responsible Stakeholders
	<ul style="list-style-type: none"> <li>• National Policy on Biological Diversity, Prescribing Its Implementation throughout the Country, particularly in the Sulu Sulawesi Marine Ecosystem and the Verde Island Passage Marine Corridor (Executive Order No. 578/2006)</li> </ul>	
Pollution reduction and waste management	<ul style="list-style-type: none"> <li>• Philippine Clean Water Act (Republic Act No. 9275/2004)</li> <li>• Ecological Solid Waste Management Act (Republic Act No. 9003/2000)</li> <li>• Toxic Substances and Hazardous and Nuclear Wastes Control Act (Republic Act No. 6969/1990)</li> <li>• Pollution Control Law (Presidential Decree No. 984/1976)</li> <li>• Marine Pollution (Presidential Decree No. 600/1974)</li> <li>• Environmental Impact Statement System (Presidential Decree No. 1586)</li> <li>• Clean Air Act (Republic Act No. 8749/1999)</li> <li>• National Marine Policy (Presidential Decree 979/1994)</li> <li>• Sanitation Code (Presidential Decree No. 856/1975)</li> <li>• Full Devolution of Certain Functions of the Executive Branch to Local Governments (Executive Order No. 138/2021)</li> </ul>	<ul style="list-style-type: none"> <li>• Environment Management Bureau, Department of Environment and Natural Resources</li> <li>• Department of Interior and Local Government</li> <li>• LGUs</li> </ul>
Maritime transport and shipping	<p>Accession to these International Maritime Organization conventions:</p> <ul style="list-style-type: none"> <li>• Protocol of 1997 to Amend the International Convention for the Prevention of Pollution from Ships, 1973</li> <li>• Protocol of 1988 Relating to the International Convention on Load Lines, 1966</li> <li>• Protocol of 1978 Relating to the International Convention for the Safety of Life at Sea, 1974</li> <li>• Protocol of 1988 Relating to the International Convention for the Safety of Life at Sea, 1974</li> <li>• International Convention on the Control of Harmful Anti-Fouling Systems on Ships (2001)</li> <li>• International Convention for the Control and Management of Ships' Ballast Water and Sediments (2004)</li> </ul>	<ul style="list-style-type: none"> <li>• Marine Industry Authority</li> </ul>

Sector	Regulatory Framework	Responsible Stakeholders
	<ul style="list-style-type: none"> <li>Act Promoting the Development of Philippine Domestic Shipping, Shipbuilding, Ship Repair, and Ship Breaking (Republic Act No. 9295/2004)</li> <li>Act Regulating the Practice of the Merchant Marine Profession in the Philippines 1998 (Republic Act No. 8544)</li> </ul>	
Marine security	<ul style="list-style-type: none"> <li>Establishment of a National Coast Watch (Executive Order No. 57)</li> </ul>	<ul style="list-style-type: none"> <li>Department of National Defence</li> <li>Department of Foreign Affairs</li> </ul>
Tourism	<ul style="list-style-type: none"> <li>Tourism Act (Republic Act No. 9593/2009)</li> </ul>	<ul style="list-style-type: none"> <li>Department of Tourism</li> </ul>
Offshore oil and gas	<ul style="list-style-type: none"> <li>Oil Exploration and Development Act of 1972</li> <li>Presidential Decree No. 1857, which improves fiscal and contractual terms to service contractors with special reference to deep-water oil exploration</li> <li>Philippine Environmental Policy Act (Presidential Decree No. 1151/1977)</li> </ul>	<ul style="list-style-type: none"> <li>Department of Energy</li> </ul>
Renewable energy	<ul style="list-style-type: none"> <li>Act Promoting the Development, Utilization and Commercialization of Renewable Energy Resources and for Other Purposes (Republic Act No. 9513/2008)</li> <li>Department Circular No. 2022-11-0034 (Department of Energy) Amending the Renewable Energy Act of 2008*</li> </ul>	<ul style="list-style-type: none"> <li>Department of Energy</li> </ul>
Disaster reduction and management	<ul style="list-style-type: none"> <li>Philippine Disaster Reduction and Management Act (Republic Act No. 10121)</li> </ul>	<ul style="list-style-type: none"> <li>National Disaster Risk Reduction and Management Council</li> </ul>

LGU = local government unit.

\*The amendments have removed Filipino ownership requirements previously imposed on the exploration, development, and utilisation of solar, wind, hydro, and ocean or tidal energy resources, now allowing full foreign ownership. Prior to this, the exploration, development, and utilisation of such sources of renewable energy could only be undertaken by Filipino citizens or juridical entities that were at least 60% Filipino-owned. Source: Authors.

### 7.3. Specific Blue Economy Policies

Sustainable fisheries management practices, coastal zone management, preservation of marine biodiversity, and promotion of ecotourism are a few examples of Blue Economy-related projects and actions in the Philippines. Despite not necessarily being created with the Blue Economy in mind, these efforts still adhere to its tenets and further its objectives.

The Philippines has the capacity to lead sustainable Blue Economy growth despite the lack of a defined Blue Economy policy. The country is proud of its extensive coastlines, rich marine life, and expanding tourism sector. It can develop new economic prospects while protecting its natural

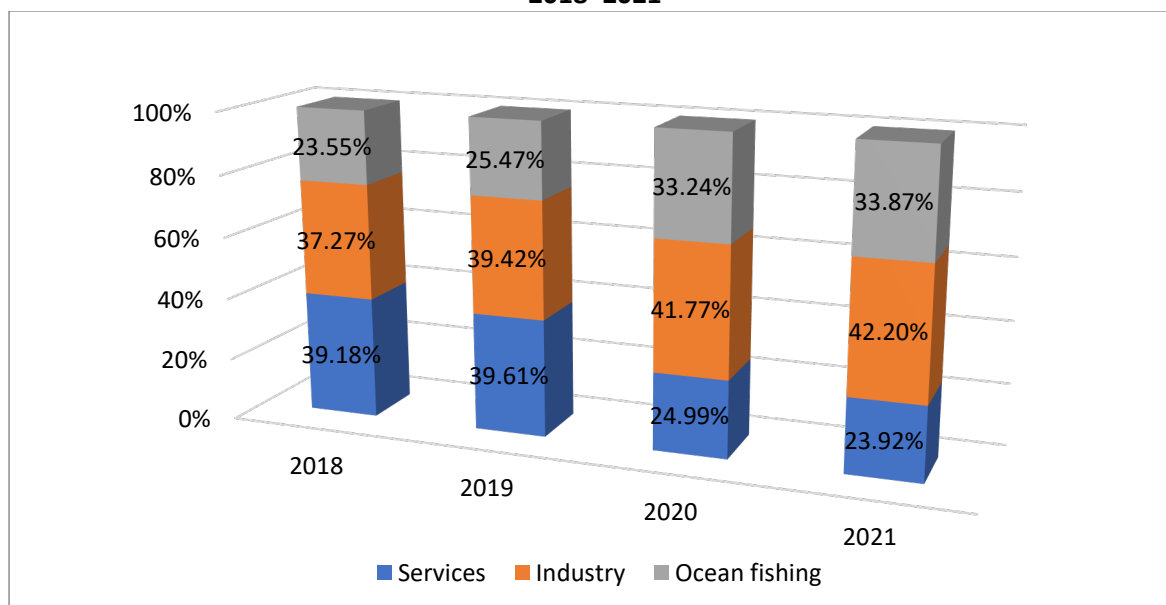
heritage by utilising these resources and putting into place rules that encourage the sustainable use of ocean resources. Thus, even while the lack of a clear Blue Economy strategy may be perceived as a barrier, the Philippines is already building a solid foundation for Blue Economy initiatives.

#### 7.4. Major Blue Economy Implementation

With a length of 37,008 km, the Philippine coastline is the fifth longest in the world, covering a sea area of 679,800 square km and an exclusive economic zone of 1,581 square km. More than 8% of territorial waters are categorised as an MPA. The value of coastal and marine ecosystems is estimated at \$966.6 billion.<sup>94</sup>

The country’s coast houses 62% of the total population of more than 114 million as of 2022. In 2021, ocean-based industries grew by 6.7%, with a gross value added of more than \$13 billion and accounting for 3.6% of GDP.<sup>95</sup> In that same year, 1.99 million people were employed in these industries, about 4.5% of total employment.<sup>96</sup> In terms of share to total gross value added, ocean fishing grew the most, by more than 10 percentage points from 2018 to 2021, with services falling by more than 15 percentage points in the same period (Figure 2.9).

**Figure 2.9. Share to Gross Value Added of Ocean-Based Activities by Industrial Origin, 2018–2021**



Note: Economic activities and industries that comprise the ocean economy include fishing, mining and quarrying (i.e. offshore oil and gas), manufacturing, electricity, construction, trade, transport and storage (i.e. shipping and ports), financial intermediation (i.e. maritime insurance), business activities, public administration (i.e. defence activities), education, and recreational services (i.e. tourism).

Source: Philippine Statistics Authority, Philippine Ocean Economy Satellite Accounts, <https://psa.gov.ph/statistics/ocean-economy>

<sup>94</sup> B.R. Samaniego (2019), ‘The Perceived Benefits of Marine Protected Areas by Fishers in Batangas, Philippines’, *Journal of Environment Science and Management*, 22(1).

<sup>95</sup> Philippine Statistics Authority, Philippine Ocean Economy Satellite Accounts, <https://psa.gov.ph/statistics/ocean-economy>

<sup>96</sup> *Ibid.*

An overview of the scope of Blue Economy actions that have been implemented is below.

**Natural resources.** The Philippines has implemented several initiatives to measure the contribution of ocean-based industries to the economy and to integrate the value of ecosystem services into national economic accounting and reporting systems. These initiatives include Philippine Ocean Economy Satellite Accounts; *Roadmap to Institutionalize Natural Capital Accounting in the Philippines*; and projects such as the Environmental and Natural Resources Project, Philippine Economic Environmental and Natural Resources Accounting, and Philippines Wealth Accounting and Valuation of Ecosystem Accounts.<sup>97</sup>

**Coastal and marine resources management.** The Philippines has established over 1,600 MPAs for biodiversity conservation, fisheries sustainability, and tourism and recreation. The National Greening Program has restored almost 80,000 ha of mangrove areas and planted almost 200 million seedlings. The National Integrated Coastal Management Program has promoted a ‘ridge-to-reef’ approach to managing coastal resources, which involves 150 municipalities and cities in the development and implementation of individual integrated coastal management plans.<sup>98</sup>

**Fisheries and aquaculture.** To address depleted fisheries resources and habitat degradation, the government adopted ecosystem-based fisheries management and enforced closed fishing seasons. The FishR system and 700-DALOY reporting system help protect marine resources, while the Philippine National Aquasilviculture Programme focusses on mangrove rehabilitation and livelihoods provision. The Philippines is also party to the FAO Agreement on Port State Measures to prevent IUU fishing.

**Pollution and plastic litter.** The government is addressing plastic waste through initiatives such as banning single-use plastics and promoting reusable and biodegradable materials. Around 500 local government units have implemented such measures. Civic movements and non-governmental organisation-supported projects for the clean-up of marine plastic debris are also being carried out with international funding or local business support, such as the Communities Organized for Resource Allocation initiative.

**Renewable tidal and ocean energy.** The Philippines aims to increase the share of renewables in the energy mix to 35% by 2030 and 50% by 2040, with a focus on exploring tidal and ocean energy.<sup>99</sup> The lifting of foreign ownership restrictions has opened investment opportunities, and 40 offshore

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<sup>97</sup> Government of the Philippines, National Economic and Development Authority (NEDA) (2023), *The Philippine Development Plan 2023–2028*, Manila, <https://pdp.neda.gov.ph/wp-content/uploads/2023/01/PDP-2023-2028.pdf>; and Government of the Philippines, NEDA (2022), *Roadmap to Institutionalize Natural Capital Accounting in the Philippines*, Manila, <https://neda.gov.ph/wp-content/uploads/2022/06/May-2022-Natural-Capital-Accounting-Roadmap-Abridged.pdf>

<sup>98</sup> Government of the Philippines, Department of Natural Resources (2013), *Sustaining Our Coasts: The Ridge-to-Reef Approach*, Manila.

<sup>99</sup> A.C. Koty (2023), ‘Philippines Opens Renewable Energy to Full Foreign Ownership’, *ASEAN Briefing*, 11 January, <https://www.aseanbriefing.com/news/philippines-opens-renewable-energy-to-full-foreign-ownership/#:~:text=According%20to%20the%20Philippines'%20National,more%20accessible%20to%20the%20public>

wind contracts have already been awarded. There are also recent developments in the tidal energy sector with the entry of Minesto AB, a Swedish marine energy company.<sup>100</sup>

**Maritime industry and shipbuilding.** The Philippines heavily relies on its maritime industry. Under the Build Build Build programme (2017–2022), more than 600 ports were upgraded and modernised. Several initiatives support the development of the Blue Economy, such as the Global Maritime Energy Efficiency Partnership project; Port Safety, Health, and Environmental Management Code and System; and Green Port Award System.<sup>101</sup> Plans to modernise the shipping industry include loans and financing packages for private sector projects. The Philippines is the fourth largest ship producer globally, serving the demand for smaller vessels in the domestic market and exporting large commercial ships. More than one-quarter of the estimated 1.5 million seafarers worldwide are Filipinos,<sup>102</sup> contributing \$6.7 billion to the Philippine economy in 2022.<sup>103</sup>

**Marine and oceanographic research.** Marine biotechnology is an emerging field that explores diverse and underexplored marine environments for sustainable sources of biomolecules and biomass. The main applications are in pharmaceuticals, energy, food and feed, agronomy, bioremediation, cosmetics, bio-inspired materials, health care, and well-being. The Philippines has a marine drug discovery and resources programme as well to extract bioactive compounds from marine organisms for high-value pharmaceutical products. In 2018, the Verde Island Passage Centre was established to research different marine ecosystems.

**Coastal and marine tourism.** The Department of Tourism identified national parks and heritage sites in coastal and marine areas for sustainable tourism. The Zero Carbon Resort for Sustainable Tourism Program provided capacity-building training to over 500 tourism establishments resulting in significant impacts, such as annual savings of over \$8 million and energy savings of 38 MW-hours. The Green Fins initiative promotes environmentally friendly guidelines for sustainable diving and snorkelling. Ecotourism success stories in the Philippines, like swimming with whale sharks, are transforming attitudes towards marine conservation as well.<sup>104</sup>

**Offshore oil and gas.** The Malampaya Deep Water Gas-to-Power project is a collaboration between the government and private sector that started in 2001. It produces natural gas, which is used to power five power plants in Luzon, reducing the country's dependence on imported oil and providing a stable supply of cleaner energy from a local source. The project meets up to 20% of the country's energy needs and can displace around 1.35 million kilograms of carbon dioxide per hour when operating at full capacity.<sup>105</sup>

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<sup>100</sup> A. Garanovic (2023), 'Minesto Finds Local Partner to Deliver Tidal Power Plants in Philippine', Offshore Energy, 1 February, <https://www.offshore-energy.biz/minesto-finds-local-partner-to-deliver-tidal-power-plants-in-philippines/>

<sup>101</sup> PEMSEA (2018), *National State of Oceans and Coasts 2018: Blue Economy Growth, Philippines*, <http://pemsea.org/sites/default/files/NSOC%20Philippines%202019%2001082021.pdf>

<sup>102</sup> N. Turgo (2021), 'A Taste of the Sea: Artisanal Fishing Communities in the Philippines', in V. O. Gekara and H. Sampson (eds.), *The World of the Seafarer: Qualitative Accounts of Working in the Global Shipping Industry*, *WMU Studies in Maritime Affairs*, Vol. 9, Berlin: Springer.

<sup>103</sup> S. Angara (2023), 'Recognizing the Plight and Contributions of Seafarers', *Manila Bulletin*, 10 June, <https://mb.com.ph/2023/6/10/recognizing-the-plight-and-contributions-of-seafarers>

<sup>104</sup> A. Rotter et al. (2021), 'The Essentials of Marine Biotechnology', *Frontiers in Marine Science*, 8(8), <https://doi.org/10.3389/fmars.2021.629629>

<sup>105</sup> GeoRiskPH, <https://www.georisk.gov.ph/>

**Disaster risk reduction.** The Philippines is considered the fourth most disaster-prone country in the world, with 274 disasters affecting an estimated 130 million people from 1995 to 2015. The National Disaster Risk Reduction and Management Council was established in 2010 to ensure the protection and welfare of people during disasters or emergencies. The People's Survival Fund is an annual budgetary allocation to implement climate-change adaptation projects aligned with the *National Climate Change Action Plan*. The GeoRisk Philippines Initiative, led by the Philippine Institute of Volcanology and Seismology, is a multi-agency initiative providing accurate and efficient hazards and risk assessment for disaster preparedness around the country.

**Maritime security.** The National Coast Watch System, an interagency mechanism created for a coordinated and coherent approach to maritime and security issues, includes the Philippine Navy, Philippine Coast Guard, Philippine National Police Maritime Group, Department of Justice, and Bureau of Fisheries and Aquatic Resources.<sup>106</sup>

**Financing.** In May 2022, access to financing for blue projects was enabled with the International Finance Corporation's subscription of \$100 million to blue bonds, the first issued in the Philippines. For Banco de Oro, the issuing bank, the commitment allows support for initiatives in areas such as water conservation, wastewater treatment, plastics recycling, sustainable tourism, fisheries, and sustainable seafood processing.<sup>107</sup>

## 7.5. Barriers

The challenges and risks that the Philippines faces towards the Blue Economy are divided into different categories:

**Limited policy framework and capacity of institutions.** There is a lack of a clear definition and strategy for the Blue Economy in the Philippines, leading to fragmented governance and inadequate institutional frameworks. Moreover, current agencies may be overloaded with responsibilities, and the creation of a new overall governing body may be necessary. While devolving powers to local government units can be empowering, their capacity to effectively carry out functions such as solid waste management is limited by financial and technical constraints.

**Management of common resource use.** Challenges arise in governing and managing common ocean resources due to conflicting interests and uneven distribution of benefits. In addition, implementing MPAs faces difficulties due to inconsistent laws and policies, weak community engagement, and poor enforcement. Limited resources and weak local capacity exacerbate the problem. The creation of 'no-take zones'<sup>108</sup> may result in loss of income for small-scale fishers unless alternative livelihood options are provided. For a sustainable Blue Economy, it is essential to have strong, supportive local coastal communities.

**Jurisdiction issues.** Overlapping maritime claims by various countries – such as in the West Philippine Sea/South China Sea – can lead to uncertainty over jurisdiction and complicated marine resources management. Uncoordinated policies in such situations can damage the management of shared resources and lead to destructive competition. Therefore, resolving jurisdictional issues is

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<sup>106</sup> National Coast Watch System, <https://ncws.gov.ph/mission-and-vission/>

<sup>107</sup> B.O. de Vera (2022), 'BDO to Issue PH's First "Blue" Bonds', *Philippine Daily Inquirer*, 29 April, <https://business.inquirer.net/346691/bdo-to-issue-phs-first-blue-bonds>

<sup>108</sup> A 'no-take zone' is an area set aside by a government authority where no extractive activity is allowed. This can include activities related to fishing, mining, and drilling.

critical for the sustainable management, expansion, and growth of the Blue Economy related to non-living resources extraction and generation.

**Climate change and disasters.** The Philippines faces a variety of challenges from climate change and disasters, such as rising sea levels and more intense typhoons. Additionally, underutilisation of disaster risk reduction and management funds is a challenge, and poor integration of land- and sea-use planning, infrastructure development, and ecosystem conservation have yet to enhance resiliency.

**Waste management and pollution.** Solid waste and marine litter in the Philippines are impacting Blue Economy implementation. Municipal solid waste management plans are not being implemented effectively, resulting in marine litter problems. The country needs a national strategy to combat marine plastic pollution, including proper waste treatment, organisation of the informal sector, and a framework for addressing the issue. Mismanaged waste affects marine tourism and harms fisheries and aquaculture, impacting marine biodiversity and local ecosystems.

**Overfishing and IUU.** Challenges include delays in implementing the Fisheries Code, overfishing due to commercial fishers in municipal waters, and IUU fishing. Indeed, the country loses about \$1 billion annually due to IUU fishing.<sup>109</sup> Subsidies for commercial fishing may exacerbate the overfishing problem unless it adheres to the recently adopted World Trade Organization Agreement on Fisheries Subsidies that prohibits subsidies to fishing on the unregulated high seas and fishing on overfished stocks.

**Poor port infrastructure and ancillary facilities.** Port infrastructure is inadequate and inefficient due to limited resources and lack of equipment. Domestic shipbuilding facilities do not meet international standards, and there is a shortage of skilled workers. The plan for cruise tourism carries risks and environmental impacts, including the need for dredging for new port facilities.

**Lack of a renewable energy framework.** Renewable marine energy in the Philippines lacks a policy framework for offshore wind development and enabling infrastructure, making transmission capacity and port upgrades a challenge. Furthermore, policy is also underdeveloped for marine spatial planning and environmental assessments.

**Missing data and statistics.** This cuts across all sectors and levels of governance. Examples include data needed for better fisheries management as well as those on marine debris, conservation of marine resources, and marine tourism.

## 7.6. Cross-Border Cooperation

The Philippines is an active participant in various fora, including those with dedicated mandates and programmes on ocean, marine, and coastal resources, and synergies with pre-existing regional commitments and/or programmes. Within ASEAN, these include *ASEAN-SEAFDEC Declaration on Regional Cooperation for Combating IUU Fishing*; *Roadmap towards Integrated and Competitive Maritime Transport in ASEAN*; ASEAN Regional Forum Workplace for Maritime Security, implementation of 12 regional policy areas in fisheries as agreed by the ASEAN

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<sup>109</sup> R. Bello (2021), 'In Numbers: Illegal, Unreported, and Unregulated Fishing in the Philippines', *Rappler*, 8 December, <https://www.rappler.com/environment/numbers-illegal-unreported-unregulated-fishing-philippines/>

Sectoral Working Group on Fisheries in 2020, with the additional inclusion of marine debris; and *Strategic Plan of Action on ASEAN Cooperation on Fisheries, 2021–2025*.

Internationally, these include PEMSEA SDS-SEA; *PEMSEA Roadmap to 2030*, which focusses on the Blue Economy; Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security *Regional Plan of Action 2.0 2021–2030*; and *ASEAN–Southeast Asian Fisheries Development Centre (SEAFDEC) Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region towards 2030*.

## 8. Singapore

### 8.1. Perspective

Singapore has used its strategic location to become a global maritime hub, and the Blue Economy represents a significant opportunity that the city-state can leverage to develop new industries and technologies that can help support sustainable growth. Singapore is enclosed between two of the largest marine ecoregions of the world – the Western Indo-Pacific and Central Indo-Pacific regions<sup>110</sup> – and sits near the Coral Triangle. Singapore can be divided into three major areas – the central hilly area; western undulating area; and eastern coastal area, consisting of alluvium and sediment.<sup>111</sup>

For Singapore, the share of the ocean economy to GDP is about 7% and employs over 170,000 people.<sup>112</sup> These numbers are growing, as policymakers are paying more attention to the maritime-based economy. Singapore leads the green bond market in South-East Asia, with 53% of the \$9.3 billion issued in green bonds from the country.<sup>113</sup>

In 2017, Andrew Tan, former chief executive, Maritime and Port Authority of Singapore (MPA), called for an integrated approach bringing together science, research, technology, and different disciplines to understand the various ecosystems within the oceans and to uncover more of the nexus between land and sea. He also underlined four principles to ensure an enduring Blue Economy that fulfils the twin goals of growth and sustainability (i.e. good governance, long-term vision, good execution, and strong partnerships).<sup>114</sup>

Based on the existing literature and formal government documents, Singapore has not adopted an official definition of the Blue Economy. However, it has been promoting and developing its maritime sector actively. MPA, as the lead agency in overseeing the development of marine-related regulations and policies, has implemented several initiatives that align with the principle of the Blue Economy (i.e., promoting economic growth and sustainable use of marine resources).

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<sup>110</sup> M.D. Spalding et al. (2007), 'Marine Ecoregions of the World: A Bioregionalization of Coastal and Shelf Areas', *BioScience*, 57(7), pp.573–83, <https://doi.org/10.1641/B570707>

<sup>111</sup> Department of Statistics Singapore, Environment, <https://www.singstat.gov.sg/publications/reference/ebook/society/environment>

<sup>112</sup> M.C. Ebarvia (2018), 'Blue Economy: Initiatives in the East Asian Seas', paper presented at the UNESCAP Asia and the Pacific Regional Expert Workshop on Ocean Accounts, Bangkok, 1–3 August, [https://www.unescap.org/sites/default/files/02\\_04\\_G\\_Blue\\_economy\\_PEMSEA\\_1-3Aug2018.pdf](https://www.unescap.org/sites/default/files/02_04_G_Blue_economy_PEMSEA_1-3Aug2018.pdf)

<sup>113</sup> Climate Bonds Initiative (2019), *ASEAN Green Financial Instruments Guide*, [https://www.climatebonds.net/files/reports/asean\\_green\\_fin\\_istruments\\_cbi\\_012019\\_0.pdf](https://www.climatebonds.net/files/reports/asean_green_fin_istruments_cbi_012019_0.pdf)

<sup>114</sup> M. Sagar (2017), 'An Integrated Approach to a "Blue Economy"', OpenGov, 27 October, <https://opengovasia.com/an-integrated-approach-to-a-blue-economy/>



## 8.2. Main Blue Economy Regulations and Policies

Addressing maritime issues cannot be done unilaterally, and the government believes that involving all key stakeholders – government, civil society, and business – is crucial to achieving a sustainable ocean economy. Singapore has thus called for an integrated approach to good ocean governance.<sup>115</sup> It launched the *Singapore Green Plan 2030*, a whole-of-nation movement to drive the city-state's national agenda on sustainable development. This plan, however, emphasises only the green aspects of land-based solutions to climate change.<sup>116</sup>

Singapore has developed major policies and regulations regarding the use of maritime resources. MPA is the regulatory body for all matters related to maritime and port operations (e.g. shipping, maritime safety, and environmental sustainability such as pollution control), and the MPA Act regulates the role and function of the institution. In addition, Singapore has MPAs governed by the National Parks Board that aim to protect marine ecosystems and biodiversity. Meanwhile, fishing regulations fall under the jurisdiction of the Agri-Food and Veterinary Authority of Singapore. The Environmental Protection and Management Act is the regulatory framework for environmental pollution in which marine pollution is a key focus. In terms of security, the Maritime Security and Safety Regulations help prevent threats attributed to the maritime area. The Fisheries Act regulates fishing activities in Singapore's waters.

Within the Blue Economy context, Singapore's regulations and policies are, in general, aimed at promoting safe and efficient use of marine resources, safeguarding the environment, and ensuring the sustainability of the marine environment.

## 8.3. Specific Blue Economy Policies

Singapore has created several initiatives and enacted some policies related to the Blue Economy, including the *Sea Transport Industry Transformation Map 2025*, launched in 2022; *Singapore Blue Plan 2018*, jointly developed by the Ministry of National Development and National Parks Board; and Maritime Singapore Green Initiative, created by MPA to reduce the environmental impact of shipping and related activities.<sup>117</sup> Additionally, the *Maritime Singapore Decarbonisation Blueprint* was created by MPA to chart ambitious and concrete long-term strategies to build a sustainable maritime Singapore. The blueprint outlines seven focus areas to support decarbonisation of the maritime industry:<sup>118</sup>

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<sup>115</sup> *Ibid.*

<sup>116</sup> M.A. Quirapas-Franco, M. Low, and A. Ng (2021), 'The Role of the Blue Economy in Singapore's Sustainable Energy Transition', *Energy Studies Institute Policy Briefs*, No. 43, Singapore.

<sup>117</sup> The Maritime Executive (2022), 'Sea Transport Industry Transformation Map 2025', 4 April, <https://www.maritime-executive.com/corporate/sea-transport-industry-transformation-map-2025>; L. Lai (2018), 'New Blue Plan to Preserve More of Singapore's Marine Landscape', *The Straits Times*, 13 October, <https://www.straitstimes.com/singapore/new-blue-plan-to-preserve-more-of-singapores-marine-landscape>; and MPA, Maritime Singapore Green Initiative, <https://www.mpa.gov.sg/maritime-singapore/sustainability#:~:text=The%20Maritime%20Singapore%20Green%20Initiative%20seeks%20to%20reduce,5%20years%20in%20the%20Maritime%20Singapore%20Green%20Initiative>

<sup>118</sup> MPA, Maritime Singapore Decarbonisation Blueprint: Working towards 2050, <https://www.mpa.gov.sg/maritime-singapore/sustainability/maritime-singapore-decarbonisation-blueprint>

- (i) **Port terminals.** In support of Singapore’s national emissions target, MPA seeks to reduce emissions from port terminals and to transit to a low-carbon future while keeping the port competitive.
- (ii) **Domestic harbour craft.** As part of the efforts to mitigate national emissions, MPA is committed to reducing emissions from domestic marine transport through a progressive and phased approach.
- (iii) **Future marine fuels, bunkering standards, and infrastructure.** Singapore remains committed to provide low- and zero-carbon fuel solutions to meet the future energy needs of the global shipping industry.
- (iv) **Singapore Registry of Ships.** The registry represents a commitment to tackling GHG emissions arising from international voyages made by Singapore-registered ships.
- (v) **Efforts with IMO and other international platforms.** The country pledges to reduce carbon dioxide emissions per transport work and to reduce GHG emissions by at least 50% by 2050 compared to 2008.
- (vi) **Research and development and talent.** Singapore aims to be a global hub for maritime decarbonisation research and development solutions, enabled by a vibrant ecosystem, with the talent and expertise to develop, trial, deploy, and commercialise innovations.
- (vii) **Carbon awareness, carbon accounting, and green financing.** Singapore aims to create a green maritime finance hub by promoting the green financing landscape and strengthening carbon accounting and reporting.

#### 8.4. Major Blue Economy Implementation

Singapore has been proactively promoting the Blue Economy. Initiatives include the sustainable use and management of ocean resources for economic growth and jobs creation while aiming to preserve the ocean ecosystem and sustainability (Table 2.10).

**Table 2.10. Blue Economy Initiatives and Relevant Government Authorities of Singapore**

Major Implementation/Initiative	Relevant Government Authority	Details
Developing a maritime autonomous surface ship	MPA	Strengthening navigational safety and efficiency in busy waters
Sustainable aquaculture	Agri-Food and Veterinary Authority of Singapore	Using advanced technologies (e.g. closed containment systems, recirculating aquaculture systems, and integrated multi-trophic)
Smart port	MPA	Digitalisation, data-driven port operation, and automation

Major Implementation/Initiative	Relevant Government Authority	Details
Maritime GreenFund	MPA	Sustainable shipping practices, funding for the development of ocean-based green technologies
Sustainable seafood consumption, eco-friendly diving	Singapore Tourism Board	Fostering sustainable tourism practices
Sustainable Aquaculture Innovation Centre and Ocean Renewable Energy Action Plan	National Research Foundation Singapore	Priority topics of national research agenda
Water technology and research	Public Utilities Board	Treating water from resource to viewing it as an economic asset.

MPA = Maritime and Port Authority of Singapore.

Sources: M.C. Ebarvia (2018), 'Blue Economy: Initiatives in the East Asian Seas', paper presented at the UNESCAP Asia and the Pacific Regional Expert Workshop on Ocean Accounts, Bangkok, 1–3 August, [https://www.unescap.org/sites/default/files/02\\_04\\_G\\_Blue\\_economy\\_PEMSEA\\_1-3Aug2018.pdf](https://www.unescap.org/sites/default/files/02_04_G_Blue_economy_PEMSEA_1-3Aug2018.pdf); and M.A. Quirapas-Franco, M. Low, and A. Ng (2021), 'The Role of the Blue Economy in Singapore's Sustainable Energy Transition', *Energy Studies Institute Policy Briefs*, No. 43, Singapore.

In adopting Blue Economy principles, the government has developed a wide range of initiatives (Table 2.11).

**Table 2.11. Trends in the Ocean Economy and Blue Economy in Singapore**

Ocean Economy	Blue Economy Initiatives
<p><b>Maritime industry.</b> Shipping, port, offshore and marine engineering (i.e. manufacture and repair of ships, boats, marine engines, oil rigs, and oil field and gas field machinery and equipment), and maritime services sectors; contributes 7% to the GDP and employs over 170,000 people.</p>	<p><b>Sustainable ports</b></p> <p><b>Maritime Singapore Green Initiative.</b> Consists of 5 programmes: green ships, green ports, green technology, green awareness, and green energy.</p> <p><b>LNG bunker-ready port.</b> Committed to providing a broad range of fuel solutions, including LNG, to meet the future energy needs of the global shipping industry; embarked on a 3-year LNG bunkering pilot programme from 1 January 2017 in preparation for the wider adoption of LNG as a marine fuel; working with 11 other ports to establish a global network of LNG bunker-ready ports.</p> <p><b>Ballast water management.</b> Provides ballast water sediment reception facilities in ports and terminals where the cleaning and repair of ballast tanks occur.</p>
<p><b>Ports and shipping.</b> The Port of Singapore is the world's top transshipment hub and the second busiest container port.</p>	

Ocean Economy	Blue Economy Initiatives
<b>Coastal and marine tourism.</b> The outlook for the cruise industry reached \$239.1 million in 2022; market volume is expected to grow to \$401.80 million by 2026.	<b>Sustainable tourism</b> <b>Ecotourism, nature reserves, and marine parks.</b> <b>Dive trails.</b> Sisters’ Islands Marine Park has responsible diving protocols. <b>Guided bird-watching tours and workshops.</b> Organised at the Sungei Buloh Wetland Reserve during the migratory season September–March.
<b>Fisheries and aquaculture.</b> Total fisheries production in Singapore was at 5,550 metric tonnes in 2021; Aquaculture was at 5,244 metric tonnes in 2021.	<b>Biotechnology and aquaculture.</b> Recirculation aquaculture system technology, with culture protocols; development of closed containment systems for coastal fish farms; and selective breeding technology for development of faster-growing fish
<b>Energy</b>	<b>Marine renewable energy technology.</b> Target of reducing greenhouse gas emissions by 36% compared to 2005 levels by 2030; green renewable energy standard and green energy certification of renewable energy. <b>Ocean renewable energy.</b> Research, development of test bedding sites for tidal power.
<b>Water</b>	Desalination, wastewater treatment and water reclamation, solid waste management measures, habitat restoration and management

GDP = gross domestic product, LNG = liquified natural gas.

Sources: M.C. Ebarvia (2018), ‘Blue Economy: Initiatives in the East Asian Seas’, paper presented at the UNESCAP Asia and the Pacific Regional Expert Workshop on Ocean Accounts, Bangkok, 1–3 August, [https://www.unescap.org/sites/default/files/02\\_04\\_G\\_Blue\\_economy\\_PEMSEA\\_1-3Aug2018.pdf](https://www.unescap.org/sites/default/files/02_04_G_Blue_economy_PEMSEA_1-3Aug2018.pdf);

Government of the United States, International Trade Administration (2022), Singapore Cruise Industry, Market Intelligence, 29 August, [https://www.trade.gov/market-intelligence/singapore-cruise-industry#:~:text=The%20outlook%20for%20the%20cruise,US%24239.1%20million%20in%202022](https://www.trade.gov/market-intelligence/singapore-cruise-industry#:~:text=The%20outlook%20for%20the%20cruise,US%24239.1%20million%20in%202022;); National Environment Agency (2018), *Singapore’s Fourth National Communication and Third Biennial Update Report*, Singapore; and World Bank, Total Fisheries and Aquaculture Production (Metric Tons) – Singapore, <https://data.worldbank.org/country/singapore> (accessed 26 September 2023). (2021).

## 8.5. Barriers

Singapore is making progress towards implementing a Blue Economy. The implementation, however, is not without barriers, risks, and challenges, including the following:

**Limited resources and spaces.** While being dependent on key maritime sectors (e.g. the port, shipping, offshore engineering, and tourism), limited resources and spaces do pose constraints, and the city-state is facing competition with the neighbouring countries, which are also eager to develop their maritime economies.

**High costs of development and labour.** As the country with the highest GDP per capita in South-East Asia, the high costs of development and labour are a barrier, as these can impact the competitiveness and sustainability of the traditional and emerging sectors as well as foreign investment. Singapore must manage and to mitigate the higher costs of doing business to maintain its position as a key maritime hub in the region.

**Climate change.** Singapore is vulnerable to rising sea levels, extreme weather events, and other impacts of climate change. Climate change can damage coastal infrastructure and key marine biodiversity that may hinder the development of the Blue Economy.

**Overfishing and habitat destruction.** Although Singapore has an extensive regulatory framework in place, overfishing and habitat destruction are still significant challenges to the Blue Economy. Singapore needs to promote sustainable fishing practices and to advance marine conservation efforts to achieve long-term viability.

## 8.6. Cross-Border Cooperation

Apart from the *ASEAN Leaders' Declaration on the Blue Economy*, the government has actively participated in numerous cross-border cooperation and initiatives to foster regional collaboration in marine-related areas including:

- (i) ASEAN Centre for Biodiversity,
- (ii) Coral Triangle Initiative,
- (iii) Centre for Maritime Studies (National University of Singapore and Norwegian University of Science and Technology),
- (iv) Southeast Asian Fisheries Development Center,
- (v) APEC Marine Sustainable Development Collaborative Network,
- (vi) Indian Ocean Rim Association,
- (vii) Singapore-Delft Water Alliance,
- (viii) Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia,
- (ix) Da Nang Compact, and
- (x) *Changwon Declaration toward an Ocean-Based Blue Economy*.

This list is not exhaustive, as there are bilateral or multilateral cooperation initiatives to which Singapore has signed, including on IUU fishing cooperation and/or tourism.

Singapore also works closely with the international community in sharing its experience and know-how. The Public Utilities Board engages international organisations that work on water issues, such as Asia-Pacific Water Forum; Global Water Partnership; United Nations Educational, Scientific and Cultural Organization (UNESCO); and World Water Council and contributes to the discourse on

sustainable urban water management. Singapore organises Singapore International Water Week, a global platform to share and co-create innovative water solutions.<sup>119</sup>

## 9. Thailand

### 9.1. Perspective

Thailand's embrace of the Blue Economy has created a monumental shift in policymakers' view of nature, as they now see natural resources as a source of creativity and innovation to be preserved and nurtured. Thailand first encompassed the Blue Economy as a development strategy in 2015, as part of coastal and ocean sustainable development. The concept can be found in several national strategies, including the *20-Year National Strategy (2017–2036)*, *Climate Change Master Plan (2015–2050)*, and *The Third Thailand Logistics Development Plan, 2017–2022*.<sup>120</sup> The Blue Economy is also incorporated into the Department of Marine and Coastal Resources' action plan. Related SDG 14 targets are enshrined in the national policy for protection and conservation of marine resources, which are implemented through marine spatial planning and MPAs.

Thailand's Blue Economy contributes to around 30% of GDP and employs 25% of the country's workforce in traditional industries such as marine fishing and coastal tourism.<sup>121</sup> Thailand's current development framework is based on a Sufficiency Economy Model, which centres on several key pillars similar to the SDGs. The Blue Economy in Thailand remains in its early stages, however, and it does not yet have a development framework or master plan.

In general, Thailand adopts the United Nations definition of the Blue Economy that seeks to promote economic growth and to preserve and to improve livelihoods across a range of sectors while ensuring the sustainable use of marine resources. It is an economy based on circularity, collaboration, resilience, opportunity, and interdependence, and its growth is driven by investments that reduce carbon emissions and pollution, enhance energy efficiency, harness the power of natural capital, and halt the loss of biodiversity and the benefits that these ecosystems provide. The government continues to refine this definition to the country's context and its development priorities.

The Blue Economy in Thailand is defined by four building blocks: equitable economic development, healthy ecosystem services, integrated approaches, and science-based innovations. The second concept specifically follows SDG 14 and is incorporated into in *20-Year National Strategy (2017–*

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<sup>119</sup> M.C. Ebarvia (2018), 'Blue Economy: Initiatives in the East Asian Seas', paper presented at the UNESCAP Asia and the Pacific Regional Expert Workshop on Ocean Accounts, Bangkok, 1–3 August, [https://www.unescap.org/sites/default/files/02\\_04\\_G\\_Blue\\_economy\\_PEMSEA\\_1-3Aug2018.pdf](https://www.unescap.org/sites/default/files/02_04_G_Blue_economy_PEMSEA_1-3Aug2018.pdf)

<sup>120</sup> Royal Gazette (2015), *Promotion of Marine and Coastal Resources Management Act 2059*, 132(21), 26 March; Royal Gazette (2015), *Royal Ordinance on Fisheries 2015*, 132(108), 13 November; Royal Gazette (1999), *The Plan and the Process of Decentralization to Local Government Act 1999*, 119(99), 11 November; Royal Gazette (1992), *Wildlife Conservation and Protection Act 1992*, 109(15), 19 February; Royal Gazette (1992), *National Environmental Quality Act 1992*, 109(37), 29 March; Royal Gazette (1961), *National Parks Act 1961*, 78(80), 3 October; Royal Gazette (1947), *Fishery Act 1947*, 64(3), 14 January; as well as Government of Thailand, Office of the National Economic and Social Development Council (2017), *The Third Thailand Logistics Development Plan, 2017–2022*, Bangkok.

<sup>121</sup> A. McIlgorm (2016), 'Ocean Economy Valuation Studies in the Asia-Pacific Region: Lessons for the Future International Use of National Accounts in the Blue Economy', *Journal of Ocean and Coastal Economics*, 2(2), <http://dx.doi.org/10.15351/2373-8456.1046>

2036), *Twelfth National Economic and Social Development Plan (2017–2022)*, and *Thirteenth National Economic and Social Development Plan (2023–2027)*. The *20-Year National Strategy (2017–2036)* also incorporates the bio-circular-green economic model and sufficiency economy philosophy.

## 9.2. Main Blue Economy Regulations and Policies

Marine governance falls under the *National Ocean Policy*, which includes several strategies and master plans such as the *Marine and Coastal Resources Master Plan*, *National Biodiversity Strategy and Action Plan*, and *National Maritime Strategy*. Most of the current initiatives depend on the *Thirteenth National Economic and Social Development Plan (2023–2027)* supervised by the National Economic and Social Development Council. Other regulations include Policy 9 of *20-Year National Strategy (2017–2036)*, which urges ‘maintaining the security of the resource base and creating balance between conservation and sustainable use’; Royal Ordinance on Fisheries 2017 (B.E. 2560); and 89 laws and regulations related directly to marine and coastal area conservation and governance.

**Table 2.12. Main Stakeholders and Relevant Regulations on Blue Economy in Thailand**

Sector	Stakeholder	Regulation
<b>Fisheries and aquaculture</b>	<ul style="list-style-type: none"> <li>Department of Fisheries</li> </ul>	<ul style="list-style-type: none"> <li>Fisheries Act 1947 (B.E. 2490) with amendments by the Fisheries Act No. 2 1953 Fisheries Act No. 3 1985 and 2015</li> </ul>
<b>Coastal and maritime tourism</b>	<ul style="list-style-type: none"> <li>Ministry of Natural Resources and Environment</li> <li>Department of Coastal Management</li> <li>Department of Marine</li> <li>World Wildlife Fund for Nature</li> <li>United Nations Environment Programme</li> <li>European Union</li> <li>United Kingdom</li> <li>Conservation International</li> </ul>	<ul style="list-style-type: none"> <li>Royal Proclamation Establishing a Contiguous Zone of the Kingdom of Thailand of 14 August 1995</li> <li>Royal Proclamation Concerning the Exclusive Economic Zone of the Kingdom of Thailand of 23 February 1982</li> <li>Enhancement and Conservation of National Environmental Quality Act 1992 (B.E. 2535)</li> <li>Announcement No. 2 of the Office of the Prime Minister Concerning the Straight Baselines and Internal Waters of Thailand of 2 February 1993</li> </ul>
<b>Maritime logistics and transport</b>	<ul style="list-style-type: none"> <li>Ministry of Transport</li> <li>Ministry of Natural Resources and Environment</li> <li>Marine Department</li> <li>Pollution Control Department</li> <li>Eastern Economic Corridor Office</li> <li>Greenpeace</li> </ul>	<ul style="list-style-type: none"> <li>National Maritime Strategy</li> <li>Act on Prevention of Collision of Ships 1979 (B.E. 2522)</li> </ul>

Sector	Stakeholder	Regulation
<b>Marine biotechnology</b>	<ul style="list-style-type: none"> <li>Ministry of Industry</li> <li>Ministry of Science and Technology, National Science and Technology Advancement Agency</li> <li>Ministry of Higher Education, Research, Science and Innovation</li> </ul>	<ul style="list-style-type: none"> <li>Biorefinery Regulation (draft)</li> <li>Biodiversity Act (draft)</li> </ul>
<b>Wellness and medical hub</b>	<ul style="list-style-type: none"> <li>Ministry of Public Health</li> <li>Ministry of Tourism and Sports</li> <li>Provincial local governments</li> <li>Eastern Economic Corridor Office</li> <li>Board of Investment</li> </ul>	<ul style="list-style-type: none"> <li>National Health Security Act 2002 (B.E. 2545)</li> <li>National Health Act 2007 (B.E. 2550)</li> <li>Hospital Law Sanatorium Act 1998 (B.E. 2541)</li> <li>Medical Professionals Act 1982 (B.E. 2525)</li> <li>Pharmaceutical Profession Act 1994 (B.E. 2537)</li> <li>Nursing and Midwifery Profession Act 1985 (B.E. 2528)</li> <li>Dental Profession Act 1994 (B.E. 2537)</li> <li>Consumer Case Procedure Act.</li> </ul>
<b>Future education</b>	<ul style="list-style-type: none"> <li>Office of National Education Standards and Quality Assessment</li> <li>Office on Non-Formal Education and Informal Education</li> <li>Ministry of Education</li> <li>Ministry of Higher Education, Research, Science and Innovation</li> <li>Eastern Economic Corridor Office</li> </ul>	<ul style="list-style-type: none"> <li>National Education Act 1999 (B.E. 2542)</li> <li>Higher Education Policy Sandbox (2022)</li> </ul>
<b>Oil and gas</b>	<ul style="list-style-type: none"> <li>Ministry of Energy</li> <li>Ministry of Natural Resources and Environment</li> </ul>	<ul style="list-style-type: none"> <li>Enhancement and Conservation of National Environmental Quality Act 1992 (B.E. 2535)</li> </ul>

Source: Office of Natural Resources and Environmental Policy and Planning.

### 9.3. Specific Blue Economy Policies

The *Thirteenth National Economic and Social Development Plan (2023–2027)* refers to the Blue Economy under the ‘eco-friendly growth’ objective, which outlines six development guidelines: promoting green growth and sustainable development; promoting sustainable maritime economy growth; promoting sustainable climate friendly-based societal growth; developing urban, rural, agricultural, and industrial areas with a key focus on sustainable growth; creating eco-friendly water,



energy, and agriculture security; and improving the paradigm for determining the country's future.<sup>122</sup>

In addition, the Blue Economy is guided by 12 principles articulated in the Enhancement and Conservation of National Environmental Quality Act (B.E. 2535). The Blue Economy under the 2015 Coastal Act is governed by the National Marine and Coast Resource Committee, which develops policy and planning for marine and coastal resources, with members represented by 19 relevant ministries. Additionally, 12 academic or independent experts in fields related to coastal and marine resources are on the committee, with a minimum of 6 individuals from coastal communities. The 2015 Coastal Act also establishes provincial committees, with similar membership and responsibilities, as well as supports the registration of coastal community organisations as another mechanism to enhance their participation in resources governance. In 2019, the National Marine Interest Act was enacted, aimed at integrating several issues under a governance framework and clearer institutional oversight. It consists of three core approaches: governance, management, and marine spatial planning. Under this arrangement, Blue Economy governance is deployed under two strategies: protected areas and integrated coastal management.

Thailand designates environmental protected areas under the 1992 National Environmental Quality Act. While managed by local governments, the central government allocates an annual budget for these areas.<sup>123</sup> Meanwhile, for MPAs, Thailand has set a 10.0% target for coastal and marine areas, which is almost double the current 5.6%.<sup>124</sup> In addition, Thailand has been promoting a sustainable fisheries policy that involves an integrated coastal management system.

Since 2003, the Department of Fisheries has encouraged good aquaculture practices for important commodities, such as shrimp and fish, through a governmental auditing system. The criteria include practices that are socially and environmentally responsible. In 2015, there were more than 10,000 shrimp farms certified with Good Aquaculture Practices.<sup>125</sup> Some farmers have taken further steps to meet international standards, including creating community model crab banks, shrimp farming in brackish water, protection of mangrove areas, coral reef protection, and preservation of natural breeding areas for sea turtles.

Some of the key strategies and action plans currently under implementation are strategies and action plans on coral reef management from 2009; strategies and action plans for seagrass and dugong conservation management from 2008; *National Maritime Security Plan (2015–2022)*; *Thailand Environmental Quality Management Plan, 2017–2021*; *20-Year Strategic Plan for the Ministry of Natural Resources and Environment, 2017–2036*; measures for mangrove reclamation; *The Third Thailand Logistics Development Plan, 2017–2022*, which includes green and safety

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<sup>122</sup> Government of Thailand, National Economic and Social Development Council (2023), *Thirteenth National Economic and Social Development Plan (2023–2027)*, Bangkok, [https://www.nesdc.go.th/nesdb\\_en/download/article/article\\_20230615134558.pdf](https://www.nesdc.go.th/nesdb_en/download/article/article_20230615134558.pdf)

<sup>123</sup> The 1992 National Environmental Quality Act (second amendment, 2018) requires that any environmental impact study be conducted on large-scale development projects that may affect coastal resources, with meaningful consultations with the communities to assess and mitigate impacts. There is also a mechanism that allows representatives of coastal communities to participate in committees at the provincial and national level.

<sup>124</sup> United Nations, Thailand towards Sustainable Management of Marine and Coastal Habitats, <https://sdgs.un.org/partnerships/thailand-towards-sustainable-management-marine-and-coastal-habitats>

<sup>125</sup> ASEAN–SEAFDEC (2018), *Executive Summary of 9th Meeting of the ASEAN Shrimp Alliance*, Jakarta.

logistics; Convention on Biological Diversity and *Master Plan for Integrated Biodiversity Management 2015–2021* (B.E. 2558-2564); *Sixth National Sports Development Plan (2017–2021)*, and *Second National Tourism Development Plan (2017-2021)*; *National Plan of Action for the Conservation and Management of Sharks, 2020–2024*; *National Scheme of Education 2017–2036* (B.E. 2560–2579); *One Tambon, One Product*<sup>126</sup> movement; and BIOFIN Plan (2021).<sup>127</sup>

Regarding integrated coastal management, Thailand undertook bureaucratic reform that resulted in the establishment of the new Ministry of Natural Resources and Environment in 2002. In 2015, the Promotion of Marine and Coastal Resources Management Act was enacted, with provisions for setting up institutions for managing coastal resources at the national and local levels, promoting community participation in coastal resources governance. Later that year, the Royal Ordinance on Fisheries came into effect, with the mandate of protecting fisheries resources through national and provincial fisheries committees and promoting fishing communities’ participation in fisheries governance. From 2019, the National Park Act and Marine Interest Protection Act – the two most recent laws enacted – play an enabling role in the governance of marine and coastal resources in Thailand today.

**Table 2.13. Regulations Relating to Integrated Coastal Management Model in Thailand**

Regulation	Principle Provisions
Local Government Organisation Act, 1999	<ul style="list-style-type: none"> <li>• Devolves power to provincial administrative organisations, municipalities, and sub-district administrative organisations (i.e. Or-Bor-Tor, a local governance arrangement with elected representatives who take responsibility over the daily operation of sub-districts in all areas including development and implementation of management plans for local natural resources, including coastal resources and fisheries).</li> </ul>
Fishery Act, 1947	<ul style="list-style-type: none"> <li>• General protection of coastal resources</li> </ul>
National Park Act, 1961	<ul style="list-style-type: none"> <li>• Designates marine national parks.</li> </ul>
Wildlife Conservation and Protection Act, 1992 (amendments in 2003, 2014, 2019)	<ul style="list-style-type: none"> <li>• Conserves rare marine wildlife at risk of extinction, including marine mammals (e.g. dugongs), whales (Bryde’s whales and Omura’s whales), reptiles (e.g. leatherback turtles), and whale sharks, which came under national protection in 2019.</li> </ul>
National Environmental Act, 1992 (amendment 2018)	<ul style="list-style-type: none"> <li>• Sets standards and monitoring of environment quality and environmental impact assessment system; designates environmental protected areas; and establishes the responsible committees or provincial committees for controlling and monitoring the environment.</li> </ul>

<sup>126</sup> This was a stimulus programme designed by Thailand’s Prime Minister in 2001. It aimed to support locally made and marketed products of each of Thailand’s *tambons* (sub-districts).

<sup>127</sup> The BIOFIN plan outlines a diverse set of actions that aims to significantly improve the management and financing of biodiversity conservation in Thailand by fostering cooperation amongst relevant agencies, stakeholders, the private sector, and wider society. See BIOFIN, <https://www.biofin.org/thailand>

Regulation	Principle Provisions
Promotion of Marine and Coastal Resource Management, 2015	<ul style="list-style-type: none"> <li>• Sets up national and provincial marine and coastal resources committees responsible for approving policy and management plans, and promotes community participation in coastal governance.</li> <li>• Creates eight sub-committees to support national committees on mangroves and beach forests, coastal erosion, marine environment protection, annual performance reports, stakeholders' participation in marine and coastal resources, managing marine and coastal resources, conservation of dugongs, and resolving coastal erosion around Mrigadayavan Palace.</li> </ul>
Royal Ordinance on Fisheries, 2015	<ul style="list-style-type: none"> <li>• Sets up the national and provincial fisheries committees with similar mandates of approving policy and management plans and promotes participation of fisheries communities in fisheries governance.</li> </ul>
National Park Act, 2019	<ul style="list-style-type: none"> <li>• Designates marine national parks and sets up provincial marine national park committees responsible for consultation, advising, and supporting marine national park governance.</li> </ul>
Maritime Interest Protection Act, 2019	<ul style="list-style-type: none"> <li>• Sets up the National Maritime Interest Protection Committee for approving policy, strategy, security plans, and measures to protect marine national interests; and establishes national and provincial maritime enforcement command centres to integrate and to facilitate the implementation of effective collaboration amongst diverse sectors.</li> </ul>
Information Act, 1997	<ul style="list-style-type: none"> <li>• Establishes the right of people to access public information and makes all state agencies legally responsible for disseminating it.</li> </ul>
National Environmental Quality Act (amendment, 2018)	<ul style="list-style-type: none"> <li>• Requires that any environmental impact study be conducted on large-scale development projects that may affect coastal resources, with meaningful consultations with the communities to assess and mitigate impacts. There is also a mechanism that allows representatives of coastal communities to participate in committees at the provincial and national levels.</li> </ul>

Source: Authors.

#### 9.4. Major Blue Economy Implementation

Thailand has been implementing several key projects related to the Blue Economy. Blue Ecotourism – also known as sustainable tourism – is a new tourism development strategy unveiled at APEC Thailand 2022, showcasing community and rural-based ecotourism, agrotourism, culinary agrotourism, and nature-based tourism. Ecotourism is estimated to contribute around 25% of general tourism revenue in Thailand, according to the Ministry of Tourism and Sports. Moreover, the marine tourism industry has expanded rapidly towards reviving the national tourism

development agenda post-pandemic. While there are no segregated data on the revenue generated from marine and coastal tourism, a general estimate reveals that coastal provinces report a much higher gross province product by as much as twice or more than other provinces. Some popular Blue Ecotourism initiatives include the Green Fins Project, low-carbon hotel operation, a low-carbon destination project in Koh Mak, and the BIOFIN Plan.

## 9.5. Barriers

Ongoing challenges for the Blue Economy in Thailand include the following:

**Unclear governance.** There are conflicting regulations between the state and communities. For instance, aquaculture is prohibited in MPAs by the Department of Marine and Coastal Resources, but it has often been practiced for generations in these areas.

**Rising climate risks and costs.** Thailand currently ranks as the eighth most vulnerable country to climate change.

**Food insecurity.** Aquaculture is the fastest-growing animal-protein production sector in the world; FAO estimated that aquaculture alone will provide two-thirds of seafood for human consumption by 2030. Yet to reach its full potential, sustainability is key.<sup>128</sup>

**Marine biotechnology issues.** There are uncertain regulations regarding intellectual property rights, which pertains to marine biotechnology. Moreover, Thailand does not have specific legislation to regulate adverse impacts from modern biotechnology on biodiversity, raising uncertainty for private investment and potential liability on redressing biodiversity damage derived from transboundary movement, transit, handling, and use of genetically modified organisms.

**Poor marine transport and logistics.** These are insufficient compared to other countries in the region and are not a priority for the government; however, Thailand's economy is highly dependent on international trade, as it is closely integrated into various global value chains. Blue Economy-related transport and logistics have not been emphasised in development policies – until *Thirteenth National Economic and Social Development Plan (2023–2027)*. Considering the importance of the Mekong area, a strategic policy is needed.

**Marine pollution.** Thailand is one of the main sources of plastic pollution in the world.<sup>129</sup> There were also around 230 oil spill incidents recorded in Thai waters from 1973 to 2015, caused by marine transport, installation, and vessel navigation, as well as the smuggling and dumping of oil waste from ships. Moreover, invasive alien species have been identified as a major threat to biodiversity.

**Decommissioned oil and gas platforms.** Another threat is the decommissioning of old oil and gas oil rigs in the Gulf of Thailand. Most of the offshore acreage is in Thailand's exclusive economic zone at a water depth of less than 100 metres, with installed facilities weighing less than 4,000 tonnes.

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<sup>128</sup> *The Economist* (2020), 'Fish Feed of the Future', 1 April, <https://ocean.economist.com/innovation/articles/fish-feed-of-the-future>

<sup>129</sup> N. Popattanachai (2020), 'The Legal, Policy and Institutional Frameworks Governing Marine Plastics in Thailand', Bonn: International Union for Conservation of Nature and Natural Resources Environmental Law Centre.

Under IMO guidelines, these facilities must be completely removed,<sup>130</sup> although pipelines can remain on the seabed after having been suitably cleaned. Safely decommissioning platforms is a significant challenge, requiring many critical engineering competencies, with mercury decontamination being foremost amongst them. In addition, these works consume exorbitant portions of the public budget.

## 9.6. Cross-Border Cooperation

Thailand has joined several international commitments related to the Blue Economy:

- (i) UNCLOS (1982);
- (ii) *ASEAN Leaders' Declaration on the Blue Economy*;
- (iii) Ramsar Convention on Wetlands (entry into force 1975);
- (iv) Convention Concerning the Protection of the World Cultural and Natural Heritage (entry into force 1975);
- (v) Convention on International Trade in Endangered Species of Wild Fauna and Flora (entry into force 1975);
- (vi) Convention on Biological Diversity (entry into force 1993);
- (vii) Convention on the Conservation of Migratory Species of Wild Animals (entry into force 1994);
- (viii) Memorandum of Understanding on the Conservation and Management of Marine Turtles and Their Habitats of the Indian Ocean and South-East Asia (entry into force 2001);
- (ix) International Convention for the Prevention of Pollution from Ships, 1973, as Modified by the Protocol of 1978 (entry into force 1983);
- (x) London Convention on the Marine Pollution by Dumping of Wastes and Other Matter 1992 (entry into force 1975);
- (xi) International Convention on Oil Pollution Preparedness, Response and Co-operation 1990 (entry into force 1995);
- (xii) Protocol on Preparedness, Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances 2000 (entry into force 2007);
- (xiii) International Convention on the Control of Harmful Anti-Fouling Systems on Ships 2001 (entry into force 2008);
- (xiv) International Convention for the Control and Management of Ships' Ballast Water and Sediments 2004 (entry into force 2008);
- (xv) International Convention on Civil Liability for Oil Pollution Damage 1969 (ratification in 2017);

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<sup>130</sup> IMO (2018), *Guidance on Best Practice for Fuel Oil Suppliers for Assuring the Quality of Fuel Oil Delivered to Ships*, <https://wwwcdn.imo.org/localresources/en/OurWork/Environment/Documents/MEPC.1-Circ.875-Add.1.pdf>

- (xvi) Protocol to the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage 1992 (ratification 2017);
- (xvii) ASEAN Council on Petroleum Decommissioning Guideline for Oil and Gas Facilities (2015) and HSSE Management System Guidelines;
- (xviii) United Nations Agreement Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks;
- (xix) ASEAN Heritage Parks; and
- (xx) International Convention for the Prevention of Pollution from Ships (1973), Modified Protocol 1978, 1997.

## **10. Viet Nam**

### **10.1. Perspective**

Viet Nam has begun to attach importance to Blue Economy development, with the view that the ocean offers numerous resources and economic opportunities. More recently, as Viet Nam needs to promote new economic space post-COVID-19 recovery, the Blue Economy has become more instrumental.

Viet Nam has no formal definition of the marine economy or the Blue Economy. A survey of the literature shows that the concept of a ‘marine economy’ has evolved in two major directions within the country. First, the concept is no longer confined to the marine area itself; instead, it builds more cohesion with coastal areas where marine-related activities are conducted. Second, the concept has an increasingly wider scope, with a more detailed list of activities. In 2007, the Vietnam Academy of Social Sciences and Ministry of Planning and Investment defined it as ‘all economic activities undertaken on the sea, including maritime transport; seaports; seafood catch and cultivation; offshore oil extraction; marine tourism; salt production; search and rescue services; islandic economy’.<sup>131</sup> A broader definition requires incorporation of related activities undertaken in the coastal provinces, such as construction and repair of ships and processing of oil and gas.

The Blue Economy is a newer concept, defined by the United Nations Development Programme and General Administration of Seas and Islands as ‘the alignment of marine economy with improvement of people’s livelihood and social equity, while minimizing environmental risks and ecological scarcity’.<sup>132</sup>

### **10.2. Main Blue Economy Regulations and Policies**

The Fourth Plenum of the 10th Party Central Committee passed Resolution No. 09-NQ/TW in 2007 on Viet Nam’s maritime strategy up to 2020. It aims to make Viet Na a strong country on the sea, get rich from the sea; build and comprehensively develop economic, social,

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<sup>131</sup> Vietnam Academy of Social Sciences, and Government of Viet Nam, Ministry of Planning and Investment (2007), ‘Workshop Report on “Vision of Marine Economy and Development of Viet Nam’s Marine Economy”’, Hà Nội.

<sup>132</sup> United Nations Development Programme (UNDP) and General Administration of Seas and Islands (2022), *Blue Marine Economy: Scenarios for Sustainable Development of Blue Economy in Viet Nam*, Hà Nội.

scientific, and technological fields in the direction of industrialisation and modernisation; and strengthen international cooperation, while firmly ensuring national sovereignty over seas and islands.

In 2018, following a review of the implementation of the resolution, the Communist Party of Viet Nam issued Resolution No. 36-NQ/TW on sustainable development of the marine economy to 2030. In 2020, it then issued Resolution No. 26/NQ-CP on the issuance of a master plan and 5-year plan to implement Resolution No. 36-NQ/TW, which clearly defines the purposes, requirements, tasks, and specific solutions to be implemented by 2025 and by 2030, respectively. Several other laws and regulations cover specific areas such as petroleum (2009), seas (2012), natural resources and the environment of the sea and islands (2015), and fisheries (2017).

Viet Nam has other policy documents related to the development of the Blue Economy. Resolution No. 55-NQ/TW in 2020 of the Communist Party on a national strategy for energy development identifies the tasks of developing primary energy sources in the direction of increasing autonomy and diversification and ensuring efficiency, reliability, and sustainability. Amongst these sources are oil and gas, wind (including offshore wind power), and waves. Provinces also have various policies to promote development; by 2022, 17 out of 28 coastal provinces and cities directly issued decisions approving a list of coastal protection corridors.<sup>133</sup>

### 10.3. Specific Blue Economy Policies

In 2021, the National Congress of the Communist Party of Viet Nam approved the *Socio-Economic Development Strategy for 2021–2030*, which emphasises the need to promote marine economic development. The strategy sets out key measures to promote sustainable development of the marine economy in accordance with international standards; control exploitation of marine resources; restore marine ecosystems; expeditiously develop national marine spatial planning; improve the mechanism of integrated and unified management of the sea; improve the efficiency of law enforcement at sea; and prioritise the development of marine economic sectors, especially tourism, marine services, the maritime economy, oil and gas and other marine mineral resources, offshore aquaculture, coastal marine industries, renewable energy, and new marine economic sectors.<sup>134</sup>

In addition, the strategy aims to increase applications of techniques and technologies in catching, farming, and processing aquatic products; raising the awareness of laws regarding fishing in sea areas; building and replicating models of coastal economic zones and eco-industrial parks in association with the formation of urban development and strong marine economic centres; enhancing environmental protection, conservation, and sustainable development of marine ecosystems and biodiversity, especially coral reefs, seagrass beds, mangroves, and coastal forests; improving the efficiency of exploitation of marine resources; establishing new marine conservation areas; setting up a digital database of seas and islands; and ensuring integration, sharing, and

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<sup>133</sup> Clause 1, Article 23 of the Law on Natural Resources and Environment of Sea and Islands stipulates that the Coastal Protection Corridor is ‘established in the areas where the ecosystem needs to be protected, maintain[ing] the service value of ecosystems and natural landscapes in the coastal area, reduc[ing] coastal erosion, respond[ing] to climate change [and] sea level rise, [and] ensuring the community’s right to access to the sea’.

<sup>134</sup> Communist Party of Viet Nam (2021), *Socio-Economic Development Strategy for 2021–2030*, Hà Nội.

updating of related information. It also aims to improve the capacity of forecasting disasters and monitoring the marine environment and climate-change impacts. Reducing pollution of the marine environment is another objective.

These strategies aim to have the economic scale of 28 coastal provinces and cities equal to 65%–70% of GDP by 2030, and the islands inhabited by people have adequate basic economic and social infrastructure, especially that related to electricity, fresh water, communications, health care, and education.<sup>135</sup> Resolution No. 26/NQ-CP sets out the tasks related to marine and coastal zone management; marine and coastal economy development; improvement of living conditions; fostering of the ocean culture and an ocean friendly society; development of marine human resources, science, and technology; response to disasters, climate change, and sea-level rise; and national defence and security, foreign affairs, and international cooperation.

#### 10.4. Major Blue Economy Implementation

The marine economy contributes about 47%–48% to GDP, and the ‘pure’ marine economy (i.e. that is created directly from the oceans, such as fisheries and aquaculture) contributed about 22%.<sup>136</sup> Major implementation initiatives of the Blue Economy are listed below.

**Fisheries and aquaculture.** As a major producer of fish and aquaculture, production has quadrupled over the past 2 decades, from only 2.00 million tonnes in 1999 to 8.15 million tons in 2019.<sup>137</sup> The country has also implemented various measures to improve the industry, such as investing in infrastructure and technology, sustainable fishing, and international cooperation.

**Oil and gas.** Viet Nam extracted nearly 700 million cubic metres of oil equivalent by the end of 2020, with the majority from the Cuu Long and Nam Con Son basins. Oil production peaked in 2012–2015 and is currently declining, while gas output has been stable. Viet Nam has a large oil and gas reserve–production ratio, with oil at 51 years and gas at 66 years, larger than the average values of Asia-Pacific and the world.<sup>138</sup>

**Renewable energy.** The country had two offshore wind power projects with a total installed capacity of 105 MW. The government is currently attracting more foreign investors to the development of offshore wind power projects, especially in Hai Phong and Binh Thuan. **Tourism.** Marine tourism plays a key role and is a crucial driver of socio-economic development, accounting for about 9.2% of GDP in 2019.<sup>139</sup>

**Marine transport.** In 2019, sea transport accounted for 23.2% of Viet Nam's total transport volume, with 493 million tonnes of goods and 95.6% of the volume of imported and exported goods.

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<sup>135</sup> *Ibid.*

<sup>136</sup> National Center for Socio-Economic Information and Forecasting (2007), *Về chiến lược phát triển kinh tế biển của Việt Nam* [Viet Nam's Strategy for Marine Economy Development], Hà Nội.

<sup>137</sup> UNDP and General Administration of Seas and Islands of Viet Nam (2022), *Kinh tế biển xanh Việt Nam: Kịch bản hướng tới phát triển bền vững kinh tế biển* [Blue Marine Economy: Scenarios for Sustainable Development of Blue Economy in Viet Nam], Hà Nội.

<sup>138</sup> General Statistics Office, <https://www.gso.gov.vn/en/homepage/>

<sup>139</sup> *Ibid.*



Although container cargo increased by 3.1 times from 2011 to 2019, about 90% of the international transport market share is controlled by foreign shipping lines.<sup>140</sup>

**Seaports.** These have witnessed significant growth in both quality and quantity, forming international gateway ports and renovating ports to receive larger ships. The system now has 588 wharves, a total length of 96,275 metres, total cargo volume of 663.6 million tonnes, and an average growth rate of 10%–12% per year from 2000 to 2019.<sup>141</sup>

### 10.5. Barriers

Viet Nam's efforts to implement Blue Economy projects are facing significant challenges and risks such as:

**Awareness of relevant authority.** Viet Nam faces challenges in achieving sustainable development of its marine economy due to a lack of awareness and strategic visions from some committees and authorities, as well as a lack of sub-national connectivity and inconsistent regulations on sea and island management.<sup>142</sup>

**Lack of infrastructure.** There is no system of highways running along the coast to connect urban areas, economic zones, industrial parks, seaports, and airports. In addition, human resources for the marine economy, resources management, and protection of marine and island environments are still limited.

**Scale of the Blue Economy.** The Blue Economy in Viet Nam is currently small and focussed on output, with little emphasis on the long-term benefits and quality of marine resources. This has led to issues with IUU fishing and a lack of focus on non-material values such as sea space, ecosystems, and cultural values.

**Unsustainable practices.** Marine, coastal, and island ecosystems – natural capital – are being violated in many places, and some marine ecosystems are in high-risk situations. For example, coral reef destruction, IUU fishing, pollution and plastic waste, and mangrove deforestation are still occurring. In fact, Viet Nam is the fourth-largest contributor to marine plastic pollution globally, accounting for 0.28–0.73 million tonnes per year of marine plastic leakage.<sup>143</sup>

**Disasters.** The number of storms is increasing, leading to heavy rains, floods, and landslides. Goals of preventing, combatting, and mitigating disasters and climate change in marine economic development plans have not kept up with the complicated changes of the weather.

**Limited marine-related goods and services.** Viet Nam has yet to develop diverse marine-related goods and services that can be marketed for high value added. In one instance, despite the provision of services for international tourists entering via sea channels, Viet Nam did not earn high revenues

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<sup>140</sup> Minh Trang (2022), 'Vị thế và chiến lược phát triển kinh tế biển của Việt Nam', [Position of and Strategy for Marine Economic Development of Viet Nam]', *Industry and Trade Journal*, 11 November.

<sup>141</sup> UNDP and General Administration of Seas and Islands of Viet Nam (2022), *Kinh tế biển xanh Việt Nam: Kịch bản hướng tới phát triển bền vững kinh tế biển [Blue Marine Economy: Scenarios for Sustainable Development of Blue Economy in Viet Nam]*, Hà Nội.

<sup>142</sup> T.T.P. Nguyen (2022), 'Improving State Management of Marine Economy in Viet Nam', *Tạp chí Tài chính*, 3 September, <https://tapchitaichinh.vn/nang-cao-hieu-qua-quan-ly-nha-nuoc-ve-kinh-te-bien-o-viet-nam.html>

<sup>143</sup> SEA Project, Viet Nam, <https://www.sea-circular.org/country/viet-nam/>

from these tourists. Reportedly, tourists of this category on average spent only \$100 per person for 9–11 hours of disembarkation from ships.<sup>144</sup> Various coastal provinces have not developed concrete actions to promote the night-time economy in their localities.

#### **10.6. Cross-Border Cooperation**

Viet Nam promotes international cooperation related to Blue Economy development. It signed UNCLOS in 1982 and the *ASEAN Leaders' Declaration on the Blue Economy* in 2021. The country has also engaged in various discussions on the Blue Economy, including those related to the Xiamen Declaration. More recently, under Agenda 21, Viet Nam made commitments for net-zero emissions by 2050 at the 2021 United Nations Climate Change Conference, which has important implications for energy transition, including the development of sectors related to the Blue Economy such as coastal wind power, offshore wind power, and oil and gas.

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<sup>144</sup> Thi Hong (2019), 'Bỏ quên nguồn thu lớn từ du khách đường biển [Forgotten Revenues from Foreign Tourists via Sea Channel] *Saigon Times*, 15 March, <https://www.sggp.org.vn/bo-quen-nguon-thu-lon-tu-du-khach-duong-bien-post511725.html>

## Chapter 3

### Conclusion: Future Trajectories of the ASEAN Blue Economy

Each AMS has taken a distinct approach to address the challenges to and to capture the opportunities offered by the Blue Economy. **Brunei Darussalam** has incorporated key components of the Blue Economy into *Wawasan Brunei 2035*, recognising the importance of sustainable development and the economic potential of the Blue Economy. **Cambodia** has implemented projects to promote the sustainability and resilience of its coastal communities, which are crucial for the long-term development of the Blue Economy in the country. **Indonesia** has made notable progress in developing its Blue Economy roadmap as well as establishing an Indonesia Blue Economy Index at the provincial level to measure the progress of various Blue Economy sectors and to see the potential of each sector in the area.

The **Lao PDR**, the only landlocked country in ASEAN – but with 80% of its area covered by the Mekong River Basin – has positioned itself as a significant player in the development of the Blue Economy in the region. The country is exploring the potential for sustainable fisheries, aquaculture, tourism, and renewable energy. **Malaysia's** Blue Economy has contributed significantly to its GDP, with the country's marine and fisheries sector alone contributing 23%. The government is taking steps to further develop the potential of its blue resources. **Myanmar's** natural gas and fisheries exports account for one-third of national income, underlining the importance of ocean resources for that country as well.

The **Philippines** is working towards establishing a legislative proposal that will provide a framework for the Blue Economy, which aims to promote the sustainable use of marine resources while ensuring the protection of the environment and welfare of coastal communities. **Singapore** already has extensive Blue Economy-related policies and initiatives in place. Similarly, **Thailand** has incorporated the Blue Economy into its national development plan, and the government has emphasised the need to promote sustainable aquaculture, marine tourism, and energy generation. **Viet Nam** is continually improving its marine regulations, and the government is working towards developing sustainable marine tourism and fisheries while addressing regional issues (e.g., marine pollution and climate change).

The South-East Asian region has significant potential to be at the forefront of Blue Economy development in the Indo-Pacific region. To achieve this, strong collaboration amongst AMS is essential, especially to tackle the current and future challenges including climate change, habitat destruction, lack of regulatory frameworks and awareness, poor resources management, and missing data and scientific knowledge.

The *ASEAN Leaders' Declaration on the Blue Economy* is key to recognising the potential of the Blue Economy as a new engine of growth. Although the ideas of protecting the environment and sustainable utilisation of marine and inland water resources have existed for a long time, the institutionalisation of the Blue Economy in ASEAN through the ABEF aims to direct the exploration, development activities, economic activities, and state intervention (e.g. financing and fiscal reform)

necessary for sustainable and inclusive development. The ABEF will be the guiding principle for all future Blue Economy activities.

The development of the ASEAN Blue Economy can serve as a means of enhancing ASEAN connectivity through encouraging cooperation, avoiding unnecessary competition, and exchanging ideas and sharing knowledge and technical know-how amongst AMS. It can also serve as a geostrategy for ASEAN, providing a working platform for improving productivity, value added, and value-chain creation. Therefore, establishing workable and implementable Blue Economy initiatives requires a well-functioning governance mechanism at the ASEAN and national levels, taking into consideration that the Blue Economy cuts across pillars and sectors. Further, it is necessary to realise that practical business strategies and investment plans require public–private partnerships and will provide a conducive ecosystem for the Blue Economy to thrive. With all these in place, it is hoped that ASEAN can position itself as a leader in the Indo-Pacific region and pave the way for a more sustainable and prosperous future of the region.

## Appendix 1

### ASEAN Initiatives on the Blue Economy

No.	Initiatives	Description	Relevant Sectoral Body	ASEC Division
Blue Science, Data, and Technology				
<b>Science, Technology, and Innovation</b> <i>(e.g. biotechnology; marine science; data, statistics, and data analytics, including on digitalisation and innovation)</i>				
1.	Development of an ASEAN Blue Economy roadmap – application of science, technology, and innovation (STI)	The project aims to develop new initiatives in smart aquaculture, marine ecosystem health, and integrated ocean monitoring (IOM) to advance the Blue Economy in South-East Asia. It will assess current conditions and analyse gaps; identify and design the application of STI to support the development of the roadmap; develop policy briefs for policymakers and other stakeholders; and disseminate the roadmap related to smart aquaculture, marine ecosystem health, and IOM.	Main: ASEAN Ministerial Meeting on STI/Committee on STI  Sub-committees: (i) Sub-committee on Marine Science and Technology (ii) Sub-committee on Microelectronics and Information Technology (iii) Sub-committee on Space Technology and Applications	Science and Technology Division

No.	Initiatives	Description	Relevant Sectoral Body	ASEC Division
2.	Inclusion of Sustainable Development Goal (SDG) indicator 14.4.1 (i.e. proportion of fish stocks within biologically sustainable levels) and indicator 14.5.1 (i.e. coverage of protected areas in relation to marine areas) to ASEAN SDG indicators	The ASEAN Community Statistical System (ACSS), through the Working Group on SDG Indicators, agreed to include SDG indicators 14.4.1 and 14.5.1 on the list of ASEAN SDG indicators, and to submit available data to ASEANStats.	ACSS	Statistics Division
<b>Blue Conservation Management</b>				
<b>Environment</b> (e.g. marine and coastal ecosystems protection, marine litter, and plastic pollution)				
3.	International Maritime Organization (IMO) MEPSEAS	MEPSEAS assists partner countries in developing environmental protection strategies to address high-priority marine environment issues, in particular relating to the transport and shipping industry.	Individual ASEAN Member State (AMS) representatives	
4.	IMO GloLitter project	This project aims to assist countries in the prevention and reduction of marine litter (particularly plastic litter) within the transport and fisheries sectors.	Individual AMS representatives	
5.	IMO GloFouling Partnerships Project	This project aims to address the challenge of invasive species introduction via biofouling on vessel hulls.	Individual AMS representatives	
<b>Blue Priority Sectors</b>				
<b>Fisheries</b> (e.g. illegal, unreported, and unregulated (IUU) fishing; sustainable aquaculture and fishing practices; food security)				
6.	ASEAN Network for Combating IUU Fishing	The network was established to facilitate the sharing of monitoring, control, and surveillance information amongst AMS.	ASEAN Ministers on Agriculture and Forestry	Food, Agriculture

No.	Initiatives	Description	Relevant Sectoral Body	ASEC Division
			(AMAF)/ASEAN Senior Officials on Forestry (ASOF)	and Forestry Division (FAFD)
7.	<i>ASEAN Roadmap for Combating IUU Fishing (2021–2025)</i>	The roadmap sets out priority actions and activities to address IUU fishing in the region.	AMAF/ASOF	FAFD
8.	<i>ASEAN Good Aquaculture Practices for Food Fish and ASEAN Guidelines for the Prudent Use of Antimicrobials in Aquaculture</i>	These were adopted to address the risks of aquaculture production in terms of food safety, animal health and welfare, environmental integrity, and socio-economic aspects.	AMAF/ASOF	FAFD
9.	Project on Mangrove Ecosystem Management in the ASEAN Region	The project aims to strengthen the network on mangrove ecosystems in the South-East Asian region for sustainable mangrove management.	AMAF/ASOF	FAFD
<b>Trade and Industrial Development</b> <i>(e.g. maritime trade, marine industrial development)</i>				
10.	ASEAN–Australia–New Zealand Free Trade Agreement (AANZFTA)	In the upgraded AANZFTA, the Blue Economy is listed as a possible area for economic cooperation under the chapter on trade and sustainable development.	AANZFTA Economic Cooperation Sub-committee	External Economic Relations Division
<b>Transport</b> <i>(e.g. maritime transport, security and safety of navigation)</i>				
11.	<i>ASEAN Green Ship Strategy</i>	The strategy promotes the use of environmentally friendly ships by encouraging AMS to develop policy menus and to exchange best practices on the use of alternative shipping fuels.	ASEAN Transport Ministers (ATM)/Senior Transport Officials Meeting (STOM)	Transport

No.	Initiatives	Description	Relevant Sectoral Body	ASEC Division
12.	ASEAN Same Risk Area	Relevant AMS are trying to establish an ASEAN Same Risk Area to protect regional marine environments from invasive aquatic species.	ATM/STOM	Transport
13.	ASEAN Ship Waste Management Project (2023–2025)	The project aims to develop a regional ship waste management strategy to limit the illegal discharge of ship waste into the marine environment of South-East Asia.	ATM/STOM	Transport
14.	<i>ASEAN Regional Oil Spill Contingency Plan</i>	The plan, which was adopted in 2018, provides a mechanism for AMS to respond to oil spills and establishes a common understanding and effective integration amongst affected and assisting AMS.	ATM/STOM	Transport
15.	Sustainable Port Development	Technical support by GIZ from 2009 to 2015, aimed to assist participating ASEAN ports to achieve and to maintain quality and sustainability in safety, health, and environmental management.	ATM/STOM	Transport
<b>Tourism</b> <i>(e.g. coastal tourism and heritage conservation)</i>				
16.	ASEAN Declaration on Cruise Tourism and Cruise Tourism Work Plan	The declaration agrees to accelerate cruise tourism development, focussing on the effectiveness of tourism destination management by considering environmental and social sustainability issues as well as the welfare of local communities. The 2022 work plan aims to drive awareness of South-East Asia as a regional cruise destination, while the 2023 work plan proposes organising trade engagement activities such as	ASEAN Tourism Ministers (ATM)/national tourism organisations (NTOs)	Tourism Unit



No.	Initiatives	Description	Relevant Sectoral Body	ASEC Division
		participating in joint ASEAN marketing initiatives at the annual Seatrade Cruise Global 2023 in Miami, collaborating with cruise tourism partners to promote cruising in South-East Asia , collaborating with cruise industry partners to develop relevant training content, and organising training and trade engagement sessions for cruise travel agents to provide them with updated skill sets and knowledge of cruise for tourism recovery.		
17.	Achieving Sustainable Tourism with Intangible Cultural Heritage and Creative City Network in Waterway Cities of ASEAN	A project, 'Achieving Sustainable Tourism with Intangible Cultural Heritage and Creative City Network in Waterway Cities of ASEAN, funded by the ASEAN-Turkey Fund covering Cambodia, Lao PDR, and Thailand under the pilot phase. The project aims to encourage public and private sectors in AMS to collaborate to promote sustainable tourism through their intangible cultural heritage and creative industries.	ATM/NTOs	Tourism Unit
18.	Pakse Declaration	The Pakse Declaration on the ASEAN Roadmap for Strategic Development of Ecotourism Clusters and Tourism Corridors encourages ASEAN to develop a network of tourism corridors to enable tourists to visit the region's rich ecotourism sites, especially its nature reserves, to experience the essence of ASEAN's nature-based products and services and to implement concerted actions for the balanced sustainable development of ecotourism through partnerships with relevant stakeholders.	ATM/NTOs	Tourism Unit

No.	Initiatives	Description	Relevant Sectoral Body	ASEC Division
<b>Energy and Minerals</b> <i>(e.g. ocean and renewable energy, activities to anticipate potential environmental impacts of offshore mining)</i>				
19.	East Asia Summit (EAS) Energy Cooperation Task Force workstream on renewable and alternative power generation	Under the workstream, continued efforts are given to innovative and emerging renewable energy technologies such as offshore wind and floating solar power including through floating solar applications; EAS Clean Energy Forum, which features dialogues on new solar photovoltaic and wind technologies and experience sharing on the prospects of floating solar photovoltaic, low-speed wind power, and offshore wind power; future cooperation with development partners to conduct project development, knowledge sharing, and capacity building activities to improve the deployment and utilisation of offshore wind and floating solar power in ASEAN.	Senior Officials Meeting on Energy (SOME)/Renewable Energy Sub Sector Network	Energy and Minerals Division (EMD)
20.	Activities to anticipate potential environmental impacts of offshore mining	The ASEAN-Intergovernmental Forum on the Environmental Impacts of Offshore Mining took place in 2021. Moreover, there is work with development partners to conduct activities related to offshore mining to further develop collaboration and knowledge exchange, including technologies and leading practices. Noting that offshore mining is yet to be developed as a major cooperation area under the ASEAN minerals sectoral body, such activities are to be considered further while implementing <i>ASEAN Minerals Cooperation Plan Phase 2, 2021–2025</i> .	ASEAN Senior Officials Meeting on Minerals	EMD

No.	Initiatives	Description	Relevant Sectoral Body	ASEC Division
Blue Enablers				
<i>(e.g. blue financing, blue investment, blue infrastructure, sustainable production and consumption, good ocean governance, connectivity, and inclusivity)</i>				
21.	Indian Ocean Rim Association (IORA): Sustainable Development Programme (ISDP)	The project-based programme aims to facilitate sustainable development for its member states and is expected to foster regional cooperation and partnerships.	Individual member state representatives	

Source: Authors.

## Appendix 2

### Regional Governance and Cooperation Mechanisms in ASEAN

Cooperation or Governance Mechanism	Regional Organisation	Signatory Countries
<p>Partnerships in Environmental Management for the Seas of East Asia (PEMSEA) project and development services:</p> <p>PEMSEA helps development organisations, including multilateral and bilateral agencies, international nongovernmental organisations, regional programmes, foundations, and development service providers with a focus on coastal and marine sustainable development to increase their efficiency and effectiveness in East Asia.</p>	PEMSEA	Cambodia, China, Indonesia, Japan, Lao People’s Democratic Republic (Lao PDR), North Korea, Philippines, Singapore, South Korea, Timor-Leste, Viet Nam, and other extra-PEMSEA partners.
<p>PEMSEA Network of Learning Centres (PNLC):</p> <p>A consortium of higher education and research institutes that provide academic training, extension services, policy advice, and other forms of technical assistance and capacity building, it consists of PEMSEA learning centres and regional centres of excellence (RCOEs). PEMSEA learning centres are higher education institutions that have the institutional capacity and track records to provide academic degree programmes and other means of capacity development, research, and technical advisory services on sustainable coastal and marine resource development. RCOEs are either higher education institutions or research institutions that may offer academic degree programmes but have received recognition of high distinction from their national governments for exemplary performance in capacity development, research, and technical advisory services on sustainable coastal and marine resource</p>	PEMSEA	Cambodia, China, Indonesia, Japan, North Korea, Philippines, Thailand, Timor-Leste, Viet Nam

Cooperation or Governance Mechanism	Regional Organisation	Signatory Countries
development.		
PEMSEA <i>Sustainable Development Strategy for the Seas of East Asia Action Plan 2023-2027</i>	PEMSEA	PEMSEA partners
<p>Indian Ocean Rim Business Forum (IORBF):</p> <p>The IORBF convenes business representatives from Indian Ocean Rim Association (IORA) member states and dialogue partners to advise IORA ministers and officials on business issues and ways to accelerate intraregional trade and to increase investment flows in the region. Members of the IORBF comprise senior members of chambers of commerce and the business community who can effectively represent the national business interests of their economies.</p>	IORA	Indonesia, Malaysia, Singapore, Thailand, and other IORA member states
<p>Indian Ocean Rim Academic Group (IORAG):</p> <p>IORAG has been positioned as the primary vehicle for academia, universities, think tanks, and scientific and technological centres to formulate policy and project recommendations to IORA member states. Its role is both advisory and catalytic, to service the needs of government and business, promote intellectual dialogue amongst participating member states, serve as a vehicle for the development and dissemination of the Indian Ocean Rim Concept, and serve the region through coordinated and rigorous research.</p>	IORA	<p>India (leading the IORAG Reform Sub-Committee and is the coordinating country for academic science and technology cooperation)</p> <p>South Africa (when chair of IORA, it took steps to reinvigorate IORAG with the establishment of the Sub-Committee on IORAG Reforms)</p> <p>Other IORA member states</p>
The IORA Working Group on Maritime Safety and Security:	IORA	Indonesia, Malaysia, Singapore, Sri Lanka, Thailand, and other IORA member states

Cooperation or Governance Mechanism	Regional Organisation	Signatory Countries
<p>It was established in September 2018 and is presently chaired by Sri Lanka for 2 years. It advances the <i>IORA Action Plan, 2017–2021</i> with member states developing a regional agenda through a maritime safety and security work plan.</p>		
<p>Indian Ocean Dialogue (IOD):</p> <p>The IOD is a stand-alone Track 1.5 dialogue, encouraging an open and free flowing dialogue by key representatives of IORA member states such as scholars, experts, analysts, and policymakers from governments, think tanks, and civil societies on a number of crucial strategic issues of the Indian Ocean Region.</p>	IORA	IORA member states and dialogue partners
<p>The Regional Centre for Science and Transfer of Technology (RCSTT):</p> <p>The RCSTT was established through a memorandum of understanding (MOU) with IORA in 2008. Its objective is to promote regional integration and cooperation amongst member states by supporting applied research, networking, technology transfer, and commercialisation. It was created following a recommendation by the IORA Academic Group and approved at the 7th Council of Ministers’ Meeting, held in March 2007 in Teheran.</p>	IORA	IORA member states (including Indonesia, Malaysia, Singapore, and Thailand)
<p>The Fisheries Support Unit (FSU):</p> <p>The FSU was created through an MOU between IORA and the Sultanate of Oman pursuant to a decision at the 4th Council of Ministers' Meeting in Sri Lanka in October 2003. Its objectives are to enhance cooperation within the fisheries sector of IORA, better utilise fisheries resources, and conduct joint research activities.</p>	IORA	IORA member states (including Indonesia, Malaysia, Singapore, and Thailand)

Cooperation or Governance Mechanism	Regional Organisation	Signatory Countries
MOU between IORA member states for the coordination and cooperation of search and rescue services in the Indian Ocean Region (2014)	IORA	IORA member states
MOU between the Institute of Seawater Desalination and Multipurpose Utilization of the Chinese State Oceanic Administration and RCSTT. This established the IORA RCSTT Coordination Centre for Desalination Technologies to deepen understanding of seawater technology and to facilitate technology transfers (2015).	IORA	IORA member states and China
MOU between IORA member states for the promotion of small and medium-sized enterprises (SMEs) was launched at the 17th Council of Ministers' Meeting held in Durban, South Africa. It created a framework for capacity building to grow and support SMEs, which are crucial economic units driving employment creation and poverty alleviation around the region (2017).	IORA	IORA member states and South Africa
MOU between IORA and the Indian Research and Information System for Developing Countries (RIS) to enhance academic cooperation in the region and other international economic and development issues (2018).	IORA	IORA member states (including Indonesia, Malaysia, Singapore, and Thailand)
MOU between the RCSTT and the Indian Council of Scientific and Industrial Research-Central Institute of Medicinal and Aromatic Plants (CSIR-CIMAP) for technical cooperation, technology transfer and commercialisation of medicinal plants to facilitate joint projects and transfer of scientific information in the field of medical plants (2018)	IORA	IORA, IORA member states including India

Source: Authors.