G20

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ACCELERATING THE TRANSITION TO A SUSTAINABLE AND RESILIENT BLUE ECONOMY PRESIDENCY DOCUMENT

JULY 2023

TECHNICAL STUDY DEVELOPED FOR G20

Disclaimer: The study does not necessarily provide exhaustive documentation of all Blue Economy related activities by G20 members and guest countries, rather it documents and analyses their on-going efforts and best practices at the time of the conduct of the study between April 2023 and July 2023.

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List of Abbreviations

AAMPL	Actions Against Marine Plastic Litter
ABNJ	Areas Beyond National Jurisdiction
ALDFG	Abandoned, Lost, or Discarded Fishing Gear
BBNJ	Biodiversity Beyond National Jurisdiction
CBD	Convention on Biological Diversity
CMS	Convention on the Conservation of Migratory Species of Wild Animals
CORDAP	Coral Research & Development Accelerator Platform
ECSWG	Environment and Climate Sustainability Working Group
FAO	Food and Agriculture Organization of the United Nations
GBF	Global Biodiversity Framework
GDP	Gross Domestic Product
GEF	Global Environment Facility
GGGI	Global Ghost Gear Initiative
GHG	Greenhouse Gas
GPML	Global Partnership on Plastic Pollution and Marine Litter
GVA	Gross Value Added
HLP	High Level Principles
ICRI	International Coral Reef Initiative
ICZM	Integrated Coastal Zone Management
INC	Intergovernmental Negotiating Committee
IOC	Intergovernmental Oceanographic Commission
IORA	Indian Ocean Rim Association
IPBC	International Partnership on Blue Carbon
IUU	Illegal, Unreported and Unregulated Fishing
MoEFCC	Ministry of Environment, Forest and Climate Change, Government of India
MPA	Marine Protected Area
MPL	Marine Plastic Litter
MSP	Marine Spatial Planning
NGO	Non-Governmental Organisation
OECD	Organisation for Economic Cooperation and Development
PPP	Public-Private Partnership
SDG	Sustainable Development Goal
UNCTAD	United Nations Conference on Traded and Development
UNEA	United Nations Environment Assembly
UNFCCC	United Nations Framework Convention on Climate Change

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1 INTRODUCTION

Blue Economy is one of the three themes identified by Indian Presidency for the Environment & Climate Sustainability Working Group of G20. The critical environmental issues that the oceans are facing, could hinder the prospects of a robust Blue Economy transformation in G20 members and beyond. Accordingly, within the Blue Economy themes, the Indian G20 Presidency identified three key priorities, namely: (i) Addressing Marine Litter for a Sustainable Blue Economy; (ii) Conservation and Restoration of Coastal and Marine Ecosystems; and (iii) Marine Spatial Planning for a Sustainable and Resilient Blue Economy. Each priority will be addressed in more detail in separate chapters of this study.

This chapter aims to provide a background and set the context for the transition to a sustainable and resilient Blue Economy. It will present basic definitions of the Blue Economy and explain the differences between the Ocean or Maritime Economy and the Blue Economy. Accordingly, in this chapter the Blue Economy will be defined and the challenges and priorities for the Blue Economy will be identified. A brief overview will be given of the methodological approach to the task as well as the rationale for the selection of the three priorities to be analysed in detail in the study.

1.1 Objectives and Scope

Home to over 80% of all life on Earth, the ocean is the world's largest carbon sink and a key source of food and economic security for billions of people.[1] While the relevance of the ocean for humanity's future is undisputed, it is not always fully appreciated. The ocean has much greater potential to drive economic growth and equitable job creation, sustain healthy ecosystems, and mitigate climate change than is realised today.

According to the OECD, projections for the ocean economy show that by 2030 it could overcome the growth of the global economy as a whole, both in terms of value added and employment.[2] However, there are many challenges that stand in the way of realising this prediction.

A wide range of human activities have been degrading the oceans for years. Increasing absorption of carbon dioxide is acidifying the oceans and reducing oxygen levels, harming or killing marine plants, animals, and other organisms. Rising sea levels are increasingly putting hundreds of millions of people in coastal areas at risk. In addition, an estimated 19-23 million tonnes of plastic waste enter the marine environment annually. Much of the plastic in the oceans comes from waste discharged on land or into rivers by the 2 billion people living without access to waste collection services. All the above seriously threaten marine ecosystems and the communities relying on the seas for their livelihoods. Fast population growth and rapid urbanisation in many cities around the world — particularly in coastal areas — exacerbate these problems.[3]

[1] Lubchenco, J. and Haugan, P.M. (eds.). 2023. *The Blue Compendium: From Knowledge to Action for a Sustainable Ocean Economy*. Springer: Cham, Switzerland.
[2] OECD. 2016. *The Ocean Economy in 2030*. Paris: OECD Publishing.
[3] European Investment Bank. 2022. *Clean oceans and the blue economy: Overview.*

Worldwide, nations and regions are increasingly advancing their ocean-based activities and resulting Blue Economy to accelerate their economic growth and food and energy security through the growth of established marine sectors, the expansion of historically terrestrial sectors into the marine space, or as emergent sector technologies advance marine resource accessibility. Therefore, the oceans and adjacent coastal areas are increasingly viewed as a new frontier for economic development. However, while various actors race to capitalise on marine and coastal resources, substantial risks can arise for people, in particular the local communities, and the environment. Hence, the dominant discourse that frames blue growth as beneficial for the economy, risks downplaying the uneven distribution of benefits and potential environmental harms.

Despite recognising the benefits of the Blue Economy, the concept is yet to be accepted worldwide for various reasons. For instance, while the scientific knowledge of the oceans has been steadily advancing, there is a lack of understanding on how best to develop and implement technologies, investment strategies, and respective partnerships. Lack of awareness of the potential as well as management and governance challenges pose impediments to more robust Blue Economy growth. Until these impediments are removed, ocean ecosystems will continue to degrade and opportunities for sustainable development will continue to be lost. A transition and a clear path to a thriving and vibrant relationship between humans and the ocean, resulting in an effective sustainable and resilient Blue Economy is urgently needed.

The main objective of this study is to establish a framework that may assist G20 members in promoting the transition to a sustainable and resilient Blue Economy. In doing so, the study identifies key priority areas and/or sectors that require immediate attention of the G20 members. In addition, the study focuses on contemporary threats to the ocean environment. Minimising these threats will raise the capacity of the ocean and its resources for national and global economic development and contribute to the transition to a sustainable and resilient Blue Economy. The study also identifies various approaches taken by G20 members to the Blue Economy and advocates for the inclusion of Blue Economy as a recurring agenda item for the G20 grouping. Finally, the study identifies measures to foster and facilitate collective G20 members' action for the preservation and sustainable utilisation of ocean resources.

To achieve the above objectives, the Study investigated the challenges and opportunities in three identified sub-priorities under India's G20 presidency – tackling Marine Litter, Conservation and Restoration of Coastal and Marine Ecosystems, and Marine Spatial Planning (MSP) in the context of future development in oceans and coastal areas. It also collated and analysed best practices from G20 members and developed specific policy recommendations and action points for G20 members in the three priority areas mentioned above.

The study aimed to do the following:

- Elaborate on the differences and commonalities between the Blue Economy and ocean/maritime economy definitions.
- Highlight contemporary threats to the ocean environment, the criticality of the ocean and its resources for national and global economic development, and the urgent need to transition to a sustainable and resilient Blue Economy.

- Contribute to the establishment of the Blue Economy as a recurring agenda point for the G20 to facilitate a continuing dialogue on the Blue Economy.
- Provide an overview of the Blue Economy strategies and policies adopted by G20 members and dig deeper into the challenges and opportunities within the three identified sub-themes identified by the Indian G20 Presidency:
  - Tackling Marine Litter
  - Conservation and Restoration of Coastal and Marine Ecosystems
  - Marine Spatial Planning
- Present best practices from G20 members in the sub-themes and provide recommendations for G20 members in the three sub-themes.

1.2 Methodological Approach: Data Collection Methods and Assessment Framework

The study relied on several sources for data and information, including national policy documents, strategies, National- and State-level action plans, white papers, independent reports and analyses by non-governmental organisations, etc., to collate and analyse current Blue Economy practices of G20 members, especially those related to the three key priority issues. These documents were supplemented by first-hand consultations and interviews with pertinent governmental and non-governmental agencies to collate the most up-to-date information. The analysis also accounted for official position papers, targets, updated reports, etc., submitted by G20 members in international forums such as the United Nations Framework Convention on Climate Change, the United Nations Convention on Biological Diversity, United Nations General Assembly, etc., to highlight their positions, priorities, and progress, in international negotiations on sustainable development and climate action.

The study also critically analysed the evolution of the sustainable development agenda, particularly in the context of ocean-related issues, in the G20 forum over the period of the last two decades. This involved studying the Ministerial communiques, high-level principles, reports, issue notes, and other supporting documents, from the previous G20 Presidencies, to identify recurring agenda points, any major gaps, and the progress so far in achieving the targets set by the previous Presidencies. Based on this analysis, the study highlighted the opportunities to institutionalise the ocean agenda in the G20 and facilitate and promote individual and collective endeavours in the Blue Economy.

A questionnaire was sent to all the G20 members as well as guest countries participating in the deliberations of the ECSWG under the Indian Presidency. The questionnaire asked the countries to respond to strategic, scientific, technological, and financial issues related to the Blue Economy in their countries, as well as those related to the three priority areas (see Annex 1). 15 of the 20 G20 members submitted responses to the questionnaire, namely Australia, Canada, European Union, France, Germany, India, Indonesia, Italy, Japan, Mexico, Republic of Korea, Russia, South Africa, Türkiye, and the United Kingdom. 7 out of the 10 guest countries also submitted responses to the questionnaire, namely, Bangladesh, Denmark, Mauritius, Netherlands, Singapore, Spain, and the United Arab Emirates. Note that a separate, detailed questionnaire was also circulated on the subject of marine plastic litter to collate information on actions and measures adopted by G20 members and invited countries to tackle marine plastic litter which are presented in the

5th G20 Report on Actions Against Marine Plastic Litter, coordinated by the Government of India and supported by the Government of Japan.

The content of this study was developed around the following guiding questions:

1. What is the potential for the Blue Economy in G20 members and beyond?
2. What governance and financial challenges are faced by G20 members while pursuing blue growth/ blue economy?
3. What actions on science, policy, technology, and practice have been or are being implemented by G20 members related to the three identified priorities: tackling marine litter, restoration and conservation of coastal and marine ecosystems, and Marine Spatial Planning (MSP)?
4. What institutional frameworks are required to promote a science-policy-practice interface and advance technical cooperation among the G20 on marine litter and plastic pollution reduction, conservation and restoration of coastal and marine ecosystems, and MSP?
5. How can MSP resolve marine resource use conflicts and ensure greater stakeholder participation, leading to improved social equity in Blue Economy activities, including the utilisation of local knowledge and increasing the participation of women?
6. How can digital and other next-gen technologies contribute to establishing business models to stimulate the transition to the Blue Economy?
7. What methods are G20 members using to evaluate and measure the size of the Blue Economy?
8. What aspects of community participation have been observed/planned by G20 members to ensure an equitable transition towards the Blue Economy?

The geographical scope of this study is limited to G20 members, namely: Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Republic of Korea, Mexico, Russia, Saudi Arabia, South Africa, Türkiye, the United Kingdom (UK), the United States of America (USA), and the European Union (EU). However, the recommendations of the report are anticipated to be useful for broader regional and global cooperation. This study also benefited from inputs submitted by observer and guest countries, who participated in the ECSWG discussions as well, namely, Bangladesh, Denmark, Egypt, Mauritius, Netherlands, Nigeria, Oman, Singapore, Spain, and the United Arab Emirates (UAE).

1.3 Decoding a Sustainable and Resilient Blue Economy

The term *"Blue Economy"* was first discussed at the world scale at the Rio+20 Conference in 2012 as a sort of an ocean parallel to the "Green Economy". The latter is considered to be an economy that aims for sustainable development without harming the environment.[4] Arguably, the Blue Economy concept arose from demands to address the failures of the green economy to adequately capture the unique characteristics and importance of coastal and marine environments to their nations and economies.[5] Over

[4] Cisneros-Montemayor, A. M., Croft, F., Issifu, I., Swartz, W. and M. Voyer. 2022. "A primer on the 'blue economy': Promise, pitfalls, and pathways". *One Earth*, Vol. 5, September 16, 2022.

[5] Niner, H. J., et al. 2022. "Issues of context, capacity and scale: Essential conditions and missing links for a sustainable blue economy". *Environmental Science and Policy*, Vol. 130, 25-35.

time, policy discussions around the Blue Economy have evolved dramatically, with the term now being one of the most recognised in the realm of ocean and coastal governance.

Traditionally, the ocean and its ecosystems have been viewed as cost-free spaces to dispose of waste and a source of limitless resources, resulting in excessive use and, in some cases, irreversible changes in marine resources and coastal areas. The ocean economy (or maritime economy) refers to the overall economic activities that take place in the marine and coastal environment, encompassing both traditional and non-traditional sectors. It includes economic activities such as shipping and transportation, offshore oil and gas exploration, marine tourism and recreation, fisheries and aquaculture, marine renewable energy, seabed mining, and marine biotechnology. The ocean economy emphasises the economic value generated by utilising marine resources and services. The ocean economy can also be defined as that portion of national income, output and employment that is derived directly or indirectly from the oceans. The term ocean economy emerged in the USA, where the first attempt to define and measure the portion of the economy related to the oceans was made in 1974.[6]

The ocean or maritime economy is the sum of all economic activities supported by the marine and coastal resources, together with goods and services provided by the marine and coastal ecosystems. Many economic sectors have exhibited phenomenal rates of growth over the last 50 years, with a sharp acceleration characterising the onset of the twenty first century. Figure 1.1 exhibits these trends of *"blue acceleration"* in marine aquaculture production, deep offshore hydrocarbon extraction, deep-sea mining for minerals, seawater desalination capacity, marine genetic resources, accumulated number of casts added to the World Ocean Database, container port traffic, total length of submarine fibre optic cables, cruise tourism (number of cruise passengers), installed offshore wind energy capacity, marine protected areas, and area of claimed extended continental shelf.[7]

[6] Colgan, C. S., Forbes, V. L., and I. Mwanyioka. 2021. "Measuring the blue economy" in: Sparks, D. L. *The Blue Economy in Sub-Saharan Africa.* New York: Routledge.

[7] Jouffray, J.B., Blasiak, R., Norstrom, A. V., Osterblom, H., and M. Nystrom. 2020. "The Blue Acceleration: The Trajectory of Human Expansion into the Ocean". *One Earth Perspective,* Vol. 2, January 24, 2020.

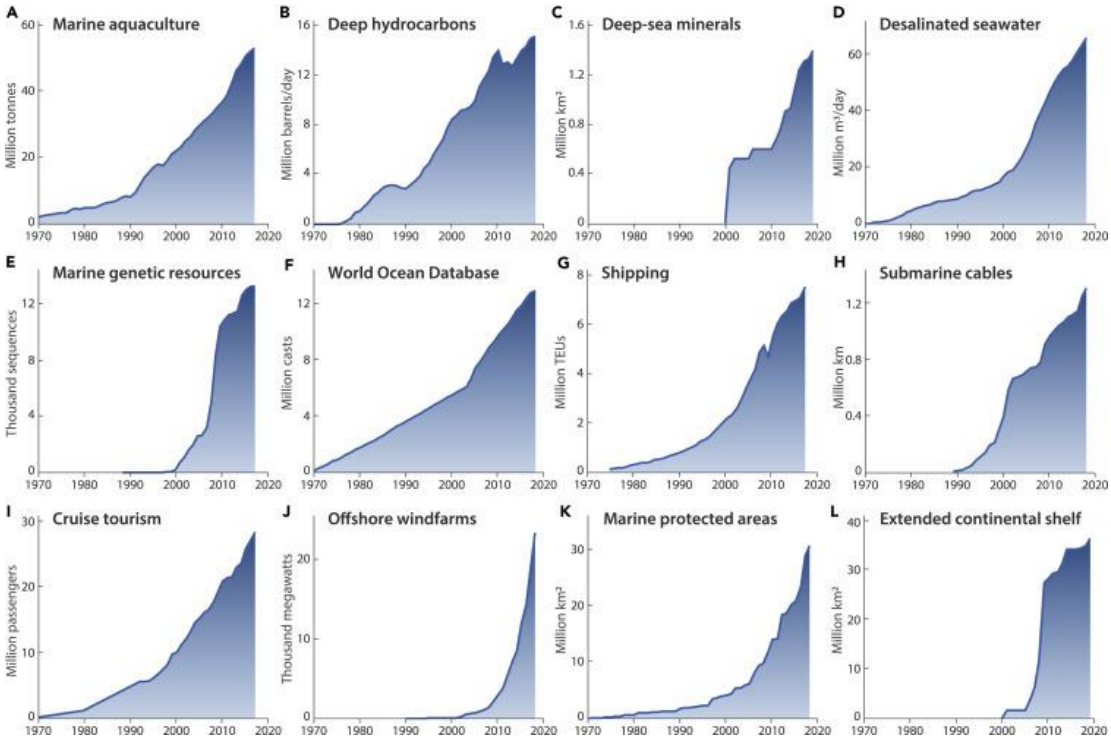

Figure 1.1: The Blue Acceleration.
Source: Jouffray, J.B., Blasiak, R., Norstrom, A. V., Osterblom, H., and M. Nystrom. 2020. "The Blue Acceleration: The Trajectory of Human Expansion into the Ocean". *One Earth Perspective,* Vol. 2, January 24, 2020.

Traditionally, the ocean economy has been driven by a narrower focus on resource exploitation, often with little consideration of the long-term sustainability and health of the coastal and marine ecosystems and biodiversity. Multiple environmental pressures from overfishing, increasing vulnerabilities to climate change impacts, marine pollution, loss of habitats and biodiversity, and uncontrolled coastal development have undermined their value. Figure 1.2, which shows almost a parallel and "coupled" growth in gross world product, overfishing and ocean pollution in the period 1980-2015, illustrates the "one-sided" nature of the ocean and/or maritime economies.

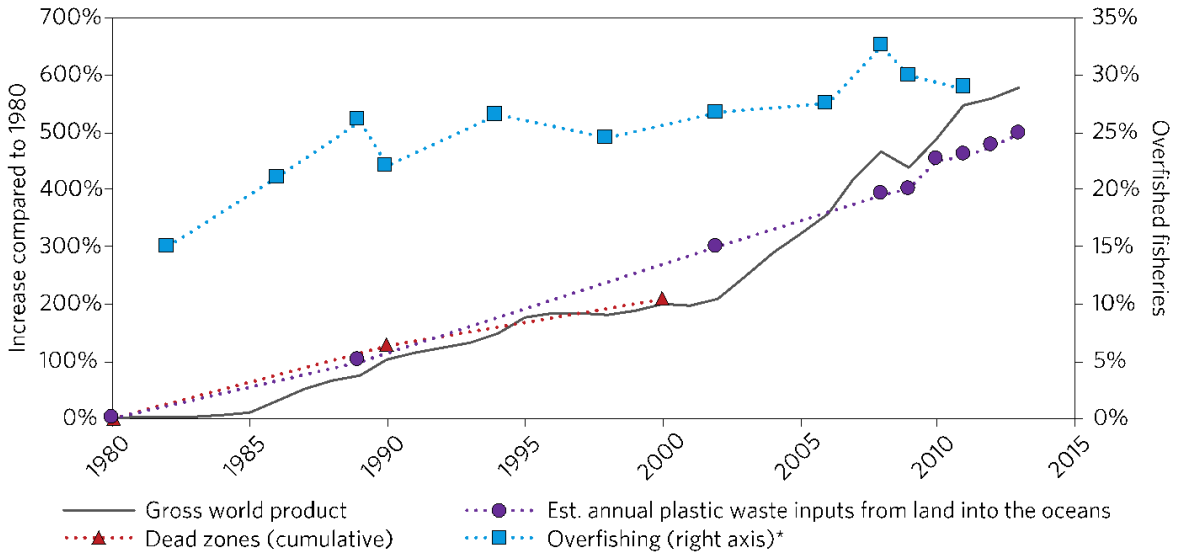

Figure 1.2: Trends in gross world product, overfishing, and ocean pollution.
Source: FAO. 2015. *State of the World's Fisheries and Aquaculture*. Rome: FAO.

The **Blue Economy**, on the other hand, is a concept that expands the understanding of the ocean economy by incorporating sustainable development principles and a holistic approach. The Blue Economy aims to promote economic growth, social inclusion, and environmental sustainability in the context of ocean-related activities. It emphasises the integration of economic development with the conservation and sustainable use of marine resources. The Blue Economy takes into account the long-term health and resilience of marine ecosystems, as well as the well-being of coastal communities. The Blue Economy can be regarded as the "decoupling" of socio-economic activities and development from environmental degradation and optimising the benefits for local communities, which may be derived from marine resources.[8]

There have been many attempts to define the Blue Economy and ocean economy. However, Colgan et al. state that "*…the terms are often used interchangeably, which is, in one way, positive because the use of the two terms offers many opportunities to raise awareness among governments and stakeholders of the importance of the ocean both as a key element of 'natural capital' and a driver of growth in national and regional economies. But there are some differences between the way in which the two terms have evolved that point to a clear separation of meaning with important implications for the future of ocean-related policies*".[9]

The EU defines 'Blue Economy' as all economic sectors which have a direct or indirect link to the oceans and seas. It further aims to ensure *"sustainable growth in marine and maritime sectors as a whole"*. The European Green Deal and the Recovery Plan for Europe are key policy initiatives aiming to achieve a sustainable future for the European economy, whereas the support for the Blue Economy is a fundamental pillar for achieving this objective. The Blue Economy is considered indispensable to meet the EU's environmental

[8] Bari, A. 2017. "Our Oceans and the Blue Economy: Opportunities and Challenges". *Procedia Engineering,* Vol.194, 5-11.
[9] Colgan, C. S., Forbes, V. L., and I. Mwanyioka. 2021. "Measuring the blue economy" in: Sparks, D. L. *The Blue Economy in Sub-Saharan Africa.* New York: Routledge.

and climate objectives. The ocean and seascapes are climate regulators, while offering clean energy, sustaining oxygen supply, food, and many other critical resources. To fully embed the Blue Economy into the Green Deal and the Recovery Strategy, the EU Commission adopted a new approach for a sustainable Blue Economy in the EU: Transforming the EU's Blue Economy for a Sustainable Future.

The World Bank, similarly, to the EU, defines the Blue Economy as "*sustainable use of ocean/marine resources for economic growth, improved livelihoods, and jobs while preserving the health of ocean ecosystem*".[10] The UNDP defines the Blue Economy as "*sustainable use of ocean resources for economic growth, jobs, and social and financial inclusion, with a focus on the preservation as well as restoration of the health of ocean ecosystem*".[11] Table 1.1 gives some of the definitions and related concepts of the Blue Economy, ocean economy and the marine economy.

Table 1.1: Concepts and definitions of the blue economy, marine economy, and ocean economy.

Concept	Authors	Definitions and related concept(s)
Blue Economy	Costa et al. (2013)	The concept of rethinking ongoing industrial processes and searching for a viable biological solution that reduces contamination.
	Phelan et al. (2020)	It has become synonymous with generating wealth from activities related to the oceans while protecting and supporting ocean ecosystems.
	Graziano et al. (2019)	It arises from the growing worldwide interest in the growth of water-based activities.
	Schutter and Hicks (2019)	It seeks to curb biodiversity loss while stimulating economic development, thereby integrating environmental and economic interests.
	Kathijotes (2013)	It is the mainstream of national development and can integrate land and sea-based socioeconomic sustainable development.
	Hoegh-Guldberg et al. (2015); Patil e al. (2016); UNECA (2016)	It has emerged in the last two decades from various forums, but above all from within the policy and practice of environmental development.
	The Economist (2015)	Sustainable ocean economy emerges when economic activity is in balance with the long-term capacity of ocean ecosystems to support this activity and remain resilient and healthy
	UNDP (2023)	Sustainable use of ocean resources for economic growth, jobs, and social and financial inclusion, with a focus on the preservation as well as restoration of the health of ocean ecosystem.
Marine Economy	Qi and Xiao (2019)	It is a dynamic and complex system that covers all industries and regions.
	Wenwen et al. (2016)	It is a new economic form that emphasizes a new development concept, a new operating mechanism, and a management model.
	Caban et al. (2017)	It is particularly exposed to dangers due to the environment of its operations. These risks are the result of deliberate and incidental actions (hydrometeorological,

[10] Patil, P.G., Virdin, J., Diez, S.M., Roberts, J., and A. Singh. 2016. *Toward A Blue Economy: A Promise for Sustainable Growth in the Caribbean: An Overview*. The World Bank, Washington D.C.
[11] UNDP. 2023. *Action Brief: An Ocean of Opportunities.*

		mechanical conditions, etc.)
	Bentlage at al. (2017)	A heterogenous innovation system with enduring relevance to the spatial and functional development of European regions.
	Spammer (2015)	It simultaneously fosters social inclusion, environmental sustainability, strengthening maritime ecosystems, transparent governance, and economic growth and development.
Ocean Economy	UNCTAD (2014)	A subset and complement of the evolving development paradigm emphasising greener, more sustainable, and more inclusive economic pathways.
	Potgieter (2008)	It is considered a crucial factor for global economic growth and development, offering excellent opportunities, challenges, and risks.
	Colgan (2013)	They are marine construction, resource, shipping, and tourism and recreation industries whose establishments are located near ocean shorelines or large lakes.

Source: Adapted from Martínez-Vázquez, R. M., Milán-García, J., & de Pablo Valenciano, J. 2021. "Challenges of the Blue Economy: evidence and research trends". *Environmental Sciences Europe*, *33*(1), 1-17; UNDP. 2023. *Action Brief: An Ocean of Opportunities*.

In summary, while the ocean economy focuses on all economic activities within the marine environment, the Blue Economy encompasses those activities that are sustainable while emphasising the conservation and restoration of coastal and marine ecosystems, and the equitable distribution of benefits. The Blue Economy seeks to ensure that economic development and resource utilisation are done in a way that preserves the health and productivity of the oceans, promotes social well-being, and safeguards the environment for future generations.

Components of the Blue Economy are presented in Table 1.2. However, this list should be considered as flexible and activities may differ per country and over time.

Table 1.2: Standard list of components of the Blue Economy.

Type of Activity	Ocean Service	Industry	Drivers of Growth
Harvest of living resources	Seafood	Fisheries	Food security
		Aquaculture	Demand for protein
	Marine Biotechnology	Pharmaceuticals, chemicals	R&D for healthcare and industry
Extraction of non-living resources, generation of new resources	Minerals	Seabed mining	Demand for minerals
	Energy	Renewables	Demand for alternative energy sources
	Fresh water	Desalination	Demand for fresh water
Commerce and trade in and around the oceans	Transport and trade	Shipping	Growth in seaborne trade; international regulations
		Port infrastructure and services	
	Tourism and recreation	Tourism	Growth of global tourism
		Coastal development	Coastal urbanisation; domestic regulations
Response to ocean health challenges	Ocean monitoring and surveillance	Technology and R&D	R&D in ocean technologies
	Carbon sequestration	Blue Carbon	Growth in coastal and ocean protection and conservation activities
	Coastal protection	Habitat protection and restoration	

	Waste disposal	Assimilation of nutrients and wastes	

Source: Adapted from The World Bank. 2016. Blue Economy Development Framework. Washington, DC: The World Bank.

1.3.1 The need for a transition towards Blue Economy

There are several reasons why it is important to make a transition towards the Blue Economy:

- Environmental sustainability: The oceans and seas, as well as adjacent coastal areas are vital components of the global ecosystem, providing a wide range of ecosystem services, including regulating the climate and acting as natural barriers against the impacts of climate change, providing food and livelihoods, and supporting biodiversity. A transition towards the Blue Economy can help to ensure that these services are preserved for future generations.
- Economic growth: The coastal and marine areas have enormous economic potential. A transition towards the Blue Economy can help to unlock this potential and support sustainable economic growth.
- Social development: Marine and coastal areas are a source of livelihoods for millions of people around the world. A transition towards the Blue Economy through increased social equity and inclusion can help create new employment and adequate income-generating opportunities.

Therefore, the concept of the Blue Economy encompasses the maritime economy idea, but expands it to explicitly consider the environmental and social dimensions in addition to economic uses of marine and adjacent coastal areas.

1.3.2 Benefits of the Blue Economy

The Blue Economy offers numerous benefits that can contribute to economic growth, social equity and environmental conservation. Some of the key benefits, in particular for most important blue economic sectors, include:

- Economic growth and job creation: The Blue Economy can stimulate economic growth by improving the sustainability of existing industries, creating new industries, generating employment opportunities, and attracting investments. Sectors such as fisheries, aquaculture, marine tourism, offshore energy, and maritime transport can contribute significantly to national economies, particularly in coastal regions.
- Food security and nutrition: Fisheries and aquaculture play a crucial role in providing a reliable source of protein and essential nutrients to communities around the world. Sustainable management of fish stocks and responsible aquaculture practices can enhance food security, reduce malnutrition, and support livelihoods in coastal areas.
- Renewable energy: The Blue Economy encompasses marine renewable energy sources such as offshore wind, wave, and tidal power. Expanding the sustainable

use of these clean energy sources can contribute towards the mitigation of global greenhouse gas emissions.

- Biodiversity conservation: The Blue Economy promotes the sustainable use and conservation of marine ecosystems and biodiversity. By implementing responsible fishing practices, protecting vulnerable species and habitats, and establishing marine protected areas, the Blue Economy contributes to the preservation of biodiversity and the long-term health of marine ecosystems and the sustainability of the services they provide.
- Climate regulation and resilience: Healthy ocean and coastal and marine ecosystems play a vital role in regulating the Earth's climate by absorbing and sequestering carbon dioxide and providing natural buffers against climate change impacts such as sea-level rise, salt-water intrusion, storm surges, and extreme weather events. The Blue Economy promotes the preservation of coastal ecosystems such as mangrove forests, salt marshes, coral reefs, and seagrass meadows, which act as carbon sinks and provide natural coastal protection.
- Innovation and technological advancements: The Blue Economy drives innovation and technological advancements in various sectors. This includes advancements in marine robotics, remote sensing, sustainable aquaculture techniques, marine biotechnology, and ocean exploration. These innovations can lead to improved resource management, increased efficiency, and new economic and employment opportunities.
- Sustainable tourism: The Blue Economy promotes sustainable tourism practices that allow communities to benefit from coastal and marine resources while minimising negative environmental and social impacts. Marine tourism activities such as diving, snorkelling, and wildlife watching, when properly managed, can provide economic benefits and also raise awareness about the importance of marine conservation.
- Social equity and community development: The Blue Economy emphasises the importance of inclusive and equitable development, ensuring that coastal communities have access to economic opportunities and benefits. It supports the empowerment of local communities, indigenous groups, and small-scale fishers by involving them in decision-making and management processes, promoting traditional knowledge, and providing capacity-building opportunities.

1.3.3 Role of technology and innovation in advancing Blue Economy

The ocean and its resources are being increasingly recognised as indispensable for addressing the multiple challenges that the planet faces and will continue to face in the decades to come. On the other hand, the ocean is being used more intensively than ever before, raising questions whether its physical and biological capacity will be able to cope in the long term. To respond effectively to the growing challenges associated with the development of economic activity in the ocean, increased attention must be paid to the possibilities for greater interaction and stronger synergies between ocean-related science on the one hand and ocean business on the other.[12] Science, technology and innovation, thus, play a crucial role as essential drivers in advancing the Blue Economy priorities by enabling sustainable and responsible management of ocean resources,

[12] OECD. 2019. *Rethinking Innovation for a Sustainable Ocean Economy*. Paris: Organisation for Economic Cooperation and Development.

promoting economic growth, and securing equitable distribution of economic benefits. They can contribute to the advancement of Blue Economy priorities in several ways, namely:

- Sustainable Fisheries Management: Technology such as satellite imagery, remote sensing, and artificial intelligence (AI) can be employed to monitor and manage fish stocks, identify illegal fishing activities, and support sustainable fishing practices. This helps in preserving marine biodiversity, preventing overfishing, and ensuring the long-term viability of fisheries.
- Aquaculture and Mariculture: Techniques like offshore aquaculture, underwater drones, and advanced monitoring systems can improve production efficiency, reduce environmental impacts, and enhance the sustainability of fish farming. Internet of Things (IoT) sensors are already being deployed in fish farms to monitor water quality parameters, feed consumption, and fish behaviour, optimising aquaculture practices.
- Ocean-based Energy: The development of innovative technologies for harnessing ocean-based energy, such as tidal, wave, and thermal energy, can contribute to the diversification of renewable energy sources. These technologies provide opportunities for job creation and sustainable economic growth in coastal regions, alongside mitigation of GHG emissions.
- Ocean Exploration and Mapping: Advanced underwater robotics, autonomous underwater vehicles (AUVs), and remotely operated vehicles (ROVs) enable deep-sea exploration and mapping. These technologies help scientists understand marine ecosystems, identify potential resources, and locate areas suitable for sustainable activities like deep-sea mining.
- Marine Biotechnology: Research in the field of marine biotechnology involves the discovery of new compounds and genetic resources from marine organisms for applications such as pharmaceuticals, nutraceuticals, biomaterials, and bioremediation.
- Waste Management and Pollution Reduction: Advanced filtration systems, waste-to-energy conversion technologies, and improved recycling methods can help mitigate the impacts of marine pollution, including plastic waste.
- Coastal Resilience and Climate Change Adaptation: Technology and innovation support the development of early warning systems, predictive models, and coastal monitoring tools to enhance resilience against disasters such as tsunamis, storm surges, and sea-level rise. These tools assist in effective disaster preparedness and climate change adaptation planning.
- Data Collection and Analysis: Technology enables the collection, analysis, and sharing of ocean data, including weather patterns, ocean currents, biodiversity information, and pollution levels. This data helps policymakers, researchers, and industries make informed decisions regarding the sustainable management of marine resources.
- Blue Economy Financing: Technology platforms and innovative financial mechanisms, such as crowdfunding, blockchain, and impact investment tools, can facilitate financing for Blue Economy projects. These mechanisms help attract investment, support start-ups and small businesses, and promote sustainable economic development in coastal communities.
- Capacity Building and Knowledge Sharing: Technology plays a crucial role in capacity building and knowledge sharing by facilitating access to educational

resources, online training programs, and virtual collaborations. This empowers individuals and communities with the skills and knowledge required to participate in and benefit from the Blue Economy.

1.3.4 Challenges undermining the transition to Blue Economy

While the Blue Economy offers significant benefits, it also faces several challenges that need to be addressed to ensure its development. Some of the key threats to the ocean include:

- Overfishing and unsustainable fisheries: Overfishing, illegal, unreported, and unregulated (IUU) fishing, and destructive fishing practices pose a significant threat to fish stocks and marine biodiversity and habitats. Ensuring sustainable ecosystem-based fisheries management, implementing effective monitoring and enforcement mechanisms, and promoting responsible fishing practices are crucial challenges for the Blue Economy.
- Pollution and Marine Debris: Pollution from land-based sources, marine litter, plastic waste, and oil spills degrade marine ecosystems and harm marine life. Addressing pollution and reducing marine debris require robust waste management systems, public awareness campaigns, and international cooperation to enforce regulations and reduce pollution inputs into the oceans.
- Climate change impacts: Climate change affects the oceans through rising sea temperatures, ocean acidification, and sea-level rise, leading to impacts on marine ecosystems and coastal communities. Adapting to climate change, mitigating its effects, and promoting resilience in coastal areas are essential challenges for the Blue Economy.
- Introduction of invasive alien species: Invasive species may cause great economic and environmental harm to the new areas in which they may be intentionally or unintentionally introduced, by destroying habitats, the places where other plants and animals naturally live, as well damaging the property.

Some of the barriers to the successful transition to the Blue Economy include:

- Limited access to technology and resources: Small-scale fishers and coastal communities often lack access to technology, infrastructure, and financial resources necessary for sustainable resource management and value addition. Bridging the technology and resource gap is crucial to empower these communities and enable their active participation in the Blue Economy.
- Limited access to finance: This is a challenge for governments and private sector. Unsustainable and fragmented financing in the Blue Economy can result in diminished opportunities for the transition.
- Governance and policy frameworks: Conflicting interests of stakeholders and competition for resources can hinder collaboration and hinder progress in achieving sustainable and equitable outcomes. Effective governance frameworks, policies, and regulations are necessary to support sustainable Blue Economy practices. Developing comprehensive and integrated MSP, improving coordination among government agencies, and addressing governance gaps are challenges that need to be overcome.

- Lack of data and information: Insufficient data and information about marine ecosystems, resource availability, and economic activities hinder effective decision-making and planning in the blue economy. Investing in scientific research, data collection, and monitoring systems is crucial for evidence-based decision-making and sustainable resource management.
- Limited public awareness and education: Raising public awareness about the importance of the oceans, sustainable practices, and the value of marine resources is essential. Promoting education and capacity-building initiatives to foster a sense of stewardship and encourage responsible behaviour are important challenges for the Blue Economy.

Despite a range of actors and large investments, current global, regional or national attempts to overcome the above challenges can benefit from the adoption of comprehensive strategies that maximise synergies across sectors. Even when one sectoral policy achieves some success, these results are often undermined by externalities from activities in another sector. Thus, for example, coastal zone management efforts, or support for coastal fishers, are undermined by unbridled sand mining, ill-sited ports or aquaculture farms, or unregulated tourism development. In coastal zones, declines in mangrove forest habitat resulting from wood harvest, sea level rise, and changes in sediment and pollutant loading from river basins combined with land reclamation for agriculture or infrastructure negatively impact fisheries by reducing or degrading spawning and feeding habitats.

1.4 Problem Statement: Accelerating the Transition to Blue Economy in G20 Members and Beyond

Habitat degradation largely due to coastal development, deforestation, mining, and unsustainable fishing practices, as well as pollution, in the form of excess nutrients from untreated sewage, agricultural run-off, marine debris such as plastics, coastal erosion destroying infrastructure and livelihoods, are the major issues still present in many parts of the world, hampering the potential of Blue Economy in most of the countries that need it to raise their development prospects. Ad hoc development taking the form of unplanned and unregulated development in the narrow coastal interface and near shore areas has led to significant externalities between sectors, suboptimal siting of infrastructure, overlapping uses of land and marine areas, marginalisation of poor communities, and loss or degradation of critical habitats.

Climate change related phenomena such as changes in sea temperature, acidity, and major oceanic currents, among others, that threaten marine life and habitats as well as slow onset events like sea level rise and more intense and frequent weather events, are the climate change impacts on ocean systems that bring uncertainty.

All of the above elevated the Blue Economy in political discourse, and it that has gained traction in recent years in many international forums (Table 1.3).

Table 1.3: Timeline of Blue Economy related events in international forums

United Nations Conference on Sustainable Development (2012)	The Rio+20 United Nations Conference on Sustainable Development highlights the importance of the Blue Economy as a means for sustainable development and poverty eradication.
The Global Ocean Commission (2014)	The Global Ocean Commission releases a report titled "From Decline to Recovery: A Rescue Package for the Global Ocean," which outlines recommendations for restoring the health of the ocean and advancing the Blue Economy.
United Nations (2015)	The United Nations adopts the 2030 Agenda for Sustainable Development, including Sustainable Development Goal 14 (SDG 14) focused on conserving and sustainably using the oceans, seas, and marine resources.
Our Ocean Conference (2016)	Our Ocean Conference is held in Washington, D.C., focusing on marine conservation and the Blue Economy. Various commitments and initiatives are announced by governments, NGOs, and private sector actors.
Blue Economy Summit, Seychelles (2017)	The Seychelles hosts the first-ever Blue Economy Summit bringing together governments, organisations, and experts to discuss strategies for advancing the Blue Economy.
The Ocean Conference (2017)	The Ocean Conference, the first United Nations Conference on this issue, discussed the opportunities and challenges to reverse the precipitous decline of the health of the oceans and seas with concrete solutions. The conference called for efforts to conserve and sustainably use the oceans, seas and marine resources for sustainable development.
The World Bank (2018)	The World Bank releases a report titled "The Potential of the Blue Economy: Increasing Long-term Benefits of the Sustainable Use of Marine Resources for Small Island Developing States and Coastal Least Developed Countries." The report emphasises the economic potential of the Blue Economy for coastal nations.
United Nations Environment Programme (2018)	The UN Environment Programme, together with over 100 delegations, presented various commitments at the first global conference on the sustainable Blue Economy that took place in Nairobi, Kenya.
The European Union (2020)	The European Union launches its new "Blue Economy Strategy," outlining its vision for sustainable blue growth, innovation, and investment in sectors such as offshore renewable energy, aquaculture, and tourism.
United Nations (2022)	The United Nations convened the second Ocean Conference to mobilise global action for the implementation of SDG 14. The conference aims to generate commitments and partnerships to advance the Blue Economy agenda.

The G20 members are not recent newcomers to the ocean-related issues and the Blue Economy debate. Their deliberations on ocean-related issues started soon after the Rio+20 conference. In 2017, the members agreed upon the G20 Action Plan on Marine Litter at the Hamburg Summit under the German Presidency, following which the G20 Implementation Framework for Actions Against Marine Plastic Litter was established in 2019. The G20 also agreed upon the Osaka Blue Ocean Vision to tackle marine plastic litter and committed to reduce additional pollution by marine plastic litter to zero by 2050 through a comprehensive life-cycle approach, in 2019, under the Japanese Presidency. In 2020, the Coral Research and Development Accelerator Platform (CORDAP) was launched, under the Saudi Arabian Presidency, to fast-track global research and develop solutions to save the world's coral reefs. In 2022, under the Indonesian Presidency, the 'Ocean 20 Launch Event' was conducted in Bali to draw attention towards the broader challenges and opportunities in the Blue Economy. Continuing this trend, in 2023, under the Indian Presidency the 'Ocean 20 Dialogue' was conducted in Mumbai, where the cross-cutting themes of science, technology and innovation, policy and governance, and sustainable blue finance were discussed in detail.

The G20 members have already acknowledged that the Blue Economy presents both opportunities and challenges for sustainable development in marine and coastal areas. They are aware of the need for a strategic framework, both at the group level as well as at the national level, that can help guide policy and decision-making and mobilise resources. The G20 countries also need to ensure that the transition to a Blue Economy is sustainable, inclusive and equitable, resilient, and integrated into national and regional development plans. In this context, the Chennai High-Level Principles on Sustainable and Resilient Blue Economy adopted by the G20, would guide further development of national and regional strategies and this study offers technical advice on how to implement those principles in practice.

1.5 Indian G20 Presidency and the Focus on Blue Economy

Recognising the unparalleled economic potential of the ocean and its resources on one hand and the daunting contemporary challenges facing ocean health and marine life on the other, India's G20 Presidency has identified *"Promoting a Sustainable and Resilient Blue Economy"* as a key priority area for the Environment and Climate Sustainability Working Group (ECSWG) under the Sherpa Track in 2023. Out of many pertinent issues, the G20 Indian Presidency proposed the following three priority issues/sub-themes, which should deserve more attention from the G20 countries, namely:

- Addressing marine litter for a sustainable Blue Economy;
- Conservation and restoration of coastal and marine ecosystems; and
- Marine Spatial Planning for a sustainable and resilient Blue Economy

1.5.1 Addressing marine litter for a sustainable Blue Economy

Following up on the G20 Action Plan on Marine Litter agreed upon at the Hamburg Summit in July 2017, the G20 Implementation Framework for Actions on Marine Plastic Litter was established in 2019. The Framework seeks to prevent and reduce marine litter by considering its socio-economic aspects. Subsequently, as part of the Osaka Blue Ocean Vision, the G20 Implementation Framework was endorsed by the G20 Osaka Leaders Declaration. In continuation of these efforts to tackle the varied challenges associated with reducing, collecting, and processing marine litter, the Indian Presidency aims to highlight the growing urgency of the threat and the need to develop end-to-end solutions.

The actions within this priority will emphasise the efforts made to reduce waste generation, create new sustainable alternatives to plastic products, and to better collect and process accumulated waste in the marine environment, taking into consideration the national circumstances and available technological and financial capacities, as well as highlight outstanding challenges and gaps in the effective implementation of national-level strategies to tackle marine litter.

1.5.2 Conservation and restoration of coastal and marine ecosystems

The coastal and marine ecosystems, such as mangrove forests, coral reefs, seagrass meadows, salt marshes, etc., play crucial roles in maintaining the health of the ocean environment and the marine ecology. They support the rich marine biodiversity and

provide invaluable socio-economic benefits for local communities, states, and countries, thus, a resource base for the Blue Economy. These ecosystems also sequester and store large amounts of carbon over their life cycles, more so than terrestrial forests. Importantly, they also act as natural barriers against sea level rise, storm surges, tropical revolving storms, and tidal flooding. Unfortunately, however, they are under severe stress from the adverse impacts of climate change, rapid coastal development, and overexploitation.

The actions within this priority issue will summarise the efforts made by the G20 countries to protect, restore, and conserve coastal and marine ecosystems and propose measures to improve international cooperation for science-based restoration of blue carbon and coral reef ecosystems and for conservation and restoration of shared marine ecosystems and biodiversity; promote experience sharing on ecosystem-based Marine Spatial Planning to improve conservation and restoration of marine and coastal ecosystems; and stimulate the establishment of a citizen partnership for the conservation of marine ecosystems through capacity building, awareness generation, and engagement with local communities.

1.5.3 Marine Spatial Planning for a sustainable and resilient Blue Economy

Management of the coastal and marine space presents unique challenges. Activities occurring within the maritime zones of a country or along its coastline, impact and are also affected by activities occurring in the hinterland of the country or even thousands of miles away on the shores of a different country. The interconnectedness of the ocean and interdependencies of maritime and hinterland activities necessitate that all maritime exploration, exploitation, development, and conservation activities take a holistic approach towards planning, considering the environmental, socio-economic, and trans-boundary impacts. As MSP emerges around the world as a practical tool for promoting a more rational use of the ocean space, it could also play a significant role in promoting the rapid and environmentally sound development of ocean-based activities and growth of a sustainable and resilient Blue Economy. Countries are increasingly recognising this fact and engaging in more effective MSP. While the concept of MSP is relatively new and incorporates many not-so-well-defined elements, it serves as a tool to facilitate the transition towards more sustainable and resilient maritime activities that contribute to the 'blueing' of the ocean economy.

Activities within this priority will aim at promoting effective MSP as an important tool in enabling the Blue Economy ambitions of the G20 member countries while preserving and restoring the health of ocean ecosystems; stimulate cooperation and collaboration to address the existing gaps in coastal and marine data management, including enhancing technological capacity for robust and regular monitoring of ocean conditions, exhaustive mapping of the marine space and the living and non-living resources, data collation and analysis to guide effective MSP endeavours; promote increased social inclusion and stakeholder engagement in the planning and implementation of Blue Economy projects and activities through the process of MSP; establish sharing of scientific research, best practices, and success stories in MSP amongst G20 member countries; and define standard elements of effective MSP for a sustainable and resilient Blue Economy.

2 EFFORTS OF G20 MEMBERS IN THE TRANSITION TO A BLUE ECONOMY

Blue Economy activities today account for a significant share of GDP of almost all the economies in countries bordering the sea. According to a recent estimate by the OECD, oceans can contribute nearly 3% of the global value added.[13] Moreover, Blue Economy activities have enormous potential to occupy a significant share of international trade (Figure 2.1). Ocean economies provide food and livelihoods to a large section of the world's population. Apart from economic benefits, oceans provide enormous environmental benefits. All of the above strengthens the strategic importance of the Blue Economy, both globally as well as nationally in many countries of the world. From that perspective, a Blue Economy should be considered a long-term strategy aimed at supporting sustainable economic growth through ocean-related sectors and activities, while improving human well-being and social equity and preserving the environment. The United Nations has provided, with the adoption of 2030 Agenda and Sustainable Development Goals (SDGs), an overall strategic framework which, however, has to be adapted to the specific needs of every maritime country and the G20 members can provide leadership in this regard.

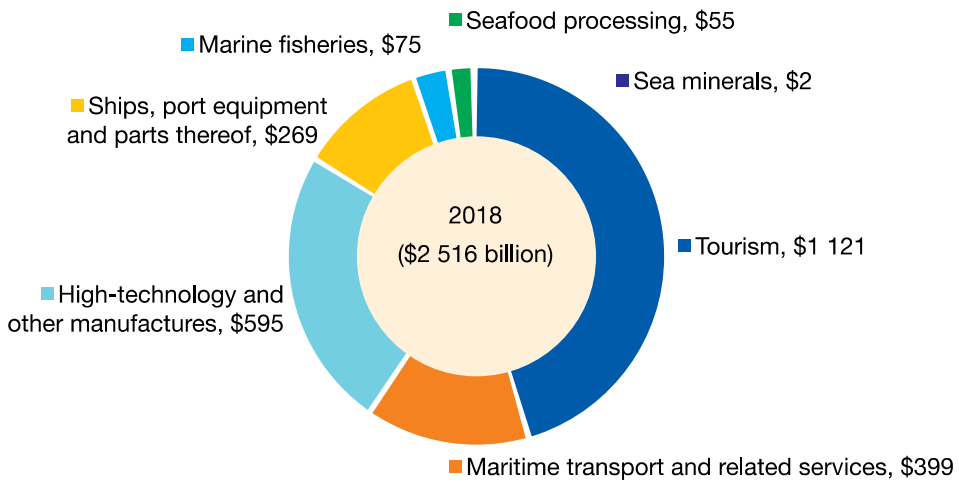

Figure 2.1: Ocean-based sectors export value (in US$ billion), 2018
Source: UNCTAD. 2021. *Advancing the Potential of Sustainable Ocean-Based Economies: Trade Trends, Market Drivers and Market Access*. Geneva: UNCTAD.

Transitioning to a Blue Economy requires a phased and iterative approach, with continuous monitoring, evaluation, and adaptation of strategies based on feedback and changing circumstances. As in any strategic approach, collaboration, political commitment, and stakeholder engagement are essential for a successful transition. As UNEP noted, "… *key challenge for governmental and intergovernmental institutions in addressing a Sustainable Blue Economy is understanding and managing competing policy objectives while ensuring protection of ocean ecosystems. Transition to a Sustainable Blue Economy requires a national focus on mainstreaming ocean sustainability into policy making, economic planning and decision-making, and the development of appropriate*

[13] OECD. 2016. *The Ocean Economy in 2030*. Paris: OECD Publishing.

policies, legislation, incentives, infrastructure and capacity. Reconciling environmental and economic objectives requires an integrated approach to ocean policy across all policy areas that affect the ocean, nationally and regionally, and the incorporation of ecological and social considerations into decision-making."[14] Careful reading of the above passage uncovers all the necessary generic ingredients of a strategy, which in this case has been applied to the Blue Economy.

The Economist stated that new waves of investment in the Blue Economy are rising with ambitious national strategies encouraging the development of industries such as blue finance, marine energy, bio-prospecting, sustainable aquaculture, and eco-tourism.[15] However, the existing Blue Economy strategies and plans typically prioritise economic growth over environmental conservation and restoration. This has contributed to environmental challenges for the ocean. The most pressing of these include overfishing, plastic pollution and ocean-related climate risks; further industrialisation will add new stresses to existing ones. There is also a need to look at ocean challenges from source to sea given the complex relationships between freshwater, coastal, and marine environments. This points to the fact that in order to change the development paradigm, many countries still have to mainstream the Blue Economy concept in their strategic thinking.

This chapter will elaborate on the measures taken by the G20 countries to stimulate and promote the Blue Economy transition, including an overview of relevant strategies, policies and plans that countries have adopted. It will also elaborate on the current value of the Blue Economy in G20 countries and point out the difficulties in appropriately measuring and evaluating the value of the Blue Economy. Additionally, the chapter will discuss the issue of social equity and inclusiveness in the Blue Economy.

2.1 Stocktake of G20 members' Approaches to the Blue Economy: Strategies, Policies, and Plans

A robust Blue Economy strategic framework can provide a roadmap for the transition process and help guide policy and decision-making and mobilise financial resources. It can ensure that transition to the Blue Economy is inclusive and equitable, in particular for local coastal communities. It can facilitate integration of the Blue Economy into national and regional development plans. As shown in Table 2.1, more than half of G20 countries have some strategic framework for the Blue Economy (more details are in the Annex 2 to this study). Note that Table 2.1 is only indicative, and the information was collected from available online sources and from the voluntary responses to the survey questionnaire submitted by G20 members; "Other" corresponds to technical guidelines and other Blue Economy related resources. A few examples of the strategies are presented below.

Table 2.1: G20 members' strategic Blue Economy interventions

MEMBER	TYPE OF BLUE ECONOMY STRATEGIC INTERVENTION

[14] UNCTAD. 2021. *Advancing the Potential of Sustainable Ocean-Based Economies: Trade Trends, Market Drivers and Market Access*. Geneva: UNCTAD.

[15] The Economist. 2015. *The Blue Economy: Briefing Paper.* https://impact.economist.com/sustainability/ecosystems-resources/the-blue-economy

	STRATEGY	POLICY	PLAN	SECTORAL PLAN/POLICY	OTHER
Argentina					
Australia	X		X	X	X
Brazil		X		X	X
Canada	X				X
China		X			
European Union	X				X
France	X		X		
Germany	X		X		
India		X	X		X
Indonesia	X	X			X
Italy	X		X		
Japan		X		X	X
Mexico	X				
Russia	X			X	X
Saudi Arabia					
South Africa	X		X		
Republic of Korea					
Türkiye	X				
United Kingdom	X				
United States		X	X		

Source: Voluntary responses to the questionnaire and various portals

Australia has developed a Roadmap for Blue Economy Science until 2025, which was adopted in 2015. While it focuses mainly on science, it nonetheless charts the direction for activities to develop the Blue Economy in the medium term. It gives an estimate of the value of the national Blue Economy, describes major contributing economic sectors, warns of the challenges and limitations, and estimates the investments needed.[16] Australia is in the process of the preparation of the Sustainable Ocean Plan, which will identify a long-term vision for the ocean. It has also adopted the Sustainable Oceans and Coasts National Strategy 2021-2030. While it is not an overarching Blue Economy strategy, it is relevant for its development.

Another example is the development of a new Blue Economy Strategy for Canada, which would support the continuing transition of Canada's ocean sectors to a sustainable Blue Economy model. This work is being facilitated by interdepartmental working groups at various levels, as well as an extensive public engagement process conducted in 2021 that included provincial, territorial and indigenous partners, industry associations and other sectoral participants, non-governmental organisations, academics, and others. As a companion initiative to the development of the Strategy, the Blue Economy Regulatory Review is being prepared, which was launched in December 2022 and is currently underway. The review is examining how regulatory practices across a number of Government of Canada departments that apply to ocean sectors can be adapted to better enable the introduction of new technologies and practices offering environmental and economic benefits, while continuing to prioritise health, safety, security, and environmental responsibilities in the Blue Economy.

[16] Brewster, D. 2015. "Australia's Roadmap for Blue Economy Science for the Next Decade". *Journal of Indian Ocean Studies*, Vol.23 No.3.

The European Commission adopted a new approach for a sustainable Blue Economy in the EU. This strategy sets out a detailed agenda for the sector to transition from "Blue Growth" to a sustainable Blue Economy, which drives the green transition along the European Green Deal's axes of decarbonisation, zero pollution, circularity, biodiversity and ecosystem preservation, and climate adaptation. The European Commission identified concrete transformation paths for public and private initiatives, in traditional and emerging maritime sectors, to replace unchecked expansion with clean, climate-proof and sustainable activities. It also underlines the need for investment in research, skills and innovation as well as complements other Commission's initiatives on biodiversity, sustainable food, transport and mobility, security, employment and more. This approach has been endorsed by the EU Member States that approved conclusions on a sustainable Blue Economy based on four pillars: healthy oceans, knowledge, prosperity, and social equity. The Member States underline the need for efficient ocean governance to enable the sustainable development of the Blue Economy.

Blue Economy Development Framework for Indonesia's Economic Transformation provides a solid basis for future Blue Economy policy planning and implementation in Indonesia. This framework explains the opportunities of a diverse range of marine and coastal-based economic activities while promoting long-term development, research, and innovative advances in the Blue Economy. This framework also identifies implementation challenges, such as limited institutional and technological capacities, as well as social and economic trade-offs associated with the transition to a Blue Economy. It also emphasises the importance of integrating various funding sources and partnerships to support innovation in the Blue Economy. Such partnerships and collaborations can help to strengthen the implementation of the Blue Economy by providing new data, project initiatives, evidence, and extensive application to Indonesia's current ocean-based economy. This document is the first attempt to build a framework for Indonesia's sustainable Blue Economy development concept. It will be an essential reference for the planning and implementation of Blue Economy-related policy and programs and for building collaboration among relevant stakeholders in Indonesia.

Operation Phakisa is an initiative of the South African government to fast track the implementation of solutions on critical development issues. The implementation of Operation Phakisa: Oceans Economy (2014 - 2019 review) has had varying successes and impacts, and further work is required in unlocking the economic potential of South Africa's oceans. It was noted that the COVID-19 pandemic negatively impacted many ocean-based sectors (although some sectors, notably boat building, actually grew), necessitating a review of Phakisa's initiatives to ensure economic recovery and growth post COVID-19. The South African ocean-based economic sectors face several structural challenges in realising their full potential, including infrastructure inefficiencies, limited private sector involvement and procurement bottlenecks, while simultaneously dealing with economic challenges and depressed regional markets. It is within this context that the National Department of Forestry, Fisheries and the Environment (DFFE) commissioned the drafting of a South African Oceans Economy Master Plan to further unlock the development of the sector and its ocean-based industries.

The UK, as a whole, does not have a Blue Economy Strategy, however, Scotland has published a Blue Economy Vision. As part of the Vision's first phase, a status review was undertaken to provide a clear picture of where they are now in relation to the Blue

Economy outcomes. The recently published Scotland's Blue Economy: Current Status Review expands on those summaries and describes the starting position in the transition to adopting a Blue Economy approach to marine sectors, communities, and the environment in Scotland. It provides the foundation to track progress, determine if significant and lasting change is occurring, and whether the Blue Economy approach is working in Scotland.

India is working on developing its National Policy on Blue Economy. The draft policy was formulated through extensive multi-stakeholder consultations, building upon the work of seven thematic working groups, set up by the Economic Advisory Council to the Prime Minister (EAC-PM), on seven key priority areas under the Blue Economy: (1) National accounting framework for Blue Economy and Ocean Governance, (2) Coastal and marine spatial planning and tourism, (3) Marine fisheries, aquaculture, and fish processing, (4) Manufacturing, emerging industries, trade, technology, services and skill development, (5) Logistics, infrastructure and shipping (including transhipments), (6) Coastal and deep-sea mining and offshore energy, and (7) Security, strategic dimensions and international engagement. These form the core areas of exploration in India's draft Blue Economy policy while ensuring sustainable livelihoods for coastal communities, conservation of marine biodiversity, and security of marine areas and resources. Importantly, the draft policy recognised the need for a cohesive, integrated ocean governance framework that ensures coordination, communication and clarity between multiple stakeholders and multiple levels of administrative authorities and coastal communities.

The analysis shows that none of the G20 countries have developed a targeted Blue Economy Strategy. While some of them are in the process of producing one, some countries have more comprehensive ocean strategic plans that also touch upon the Blue Economy issues. The existing strategies do not show uniformity, but that is to be expected considering countries' institutional, social and economic specificities. Very few have produced a specific ocean policy, such as Brazil, China, India, Japan, and the USA. Again, these are comprehensive ocean policies, but are not overarching Blue Economy frameworks. Finally, most of the countries have adopted plans for marine economic sectors, which rest on the basic principles of the Blue Economy. To conclude, Blue Economy is usually addressed as a subject in more comprehensive strategic initiatives, and it is questionable whether such an approach adequately responds to the need for an effective transition to the Blue Economy.

In addition to the national strategic initiatives, and given the large scale and complexity of the ocean ecosystem, there have been a number of global and regional initiatives to promote transition to the Blue Economy. The ocean is ecologically and physically connected across the entire globe and beyond national political borders, and changes in the ocean and marine ecosystem services in areas beyond national jurisdiction (ABNJ) can have large impacts on marine resources within exclusive economic zones, and vice versa. Large pelagic stocks, for example, cross the boundaries of several countries, and financing schemes that take this into account are necessary for ensuring that the ocean

economy is sustainable. The above strengthens the case for transboundary Blue Economy initiatives.[17] Table 2.2 shows some of these initiatives.

Table 2.2: Examples of regional collaboration on Blue Economy.

Geographical region	Sustainable ocean economy initiative/ strategy
Africa	African Union's Blue Economy Strategy; United Nations Economic Commission for Africa's Blue Economy Regional Action Plan
Asia	Asia Development Bank's Action Plan for Healthy Oceans and Sustainable Blue Economies; Indonesia's Sustainable Oceans Programme
Baltic Sea	Baltic Sea Initiative
Europe	European Union's Blue Growth Strategy
Indian Ocean	Indian Ocean Rim Association's Blue Economy Declaration
Pacific Ocean	Pacific Regional Oceanscape Program

Source: Sumaila, U.R., M. Walsh, K. Hoareau, A. Cox, et al. 2020. *Ocean Finance: Financing the Transition to a Sustainable Ocean Economy*. Washington, DC: World Resources Institute.

2.2 Value of the Blue Economy in G20 Members

The oceans and seas make a large and growing contribution to the global economy, driving growth in economic activity, jobs, innovation, and business opportunities. OECD (2016) estimated that the size of the ocean economy in terms of Gross Value Added (GVA) was around US$ 1.5 trillion in 2010, equivalent to around 2.5% of global GVA (roughly the size of the total economy of Canada that same year). By 2030 its contribution is projected to double in size from 2010 levels to US$ 3 trillion, providing full-time employment for around 40 million people. Another source (Sarda et al., 2023) stated that by 2017 the ocean economy's value was around US$ 2.6 trillion, or approximately 3.3% of the world gross domestic product (GDP), making the ocean the world's seventh-largest economy. It generated estimated annual revenues of US$ 5.2 trillion and employment for 168 million people. Among the established ocean economy sectors, coastal tourism (the most relevant activity both in terms of annual revenues and employment) accounted for half of the total ocean economy GVA, followed by offshore oil and gas (32%), maritime transport (10%), port and warehousing activities (5%), and ship building and repair activities (3%). Ocean economy industries provided 168 million jobs, with the largest employers being coastal tourism (34%), fisheries (24%), aquaculture (12%), and maritime transport (15%). The economic value of emerging and innovative sectors (i.e. marine renewable energy, desalination, seabed mining, and genetic and medical resources) was still limited at around just 0.5% of the total, but their potential was considered to be high.

The overall rate of return on investment in a sustainable ocean economy can be very high, with sustainable ocean-based investments yielding benefits at least five times greater than the costs. When assessing individual interventions, the average economic Benefits-to-Costs ratio ranges between 3-to-1 and 12-to-1 (Figure 2.2), and in some cases even higher (Konar and Ding, ND).

[17] Sumaila, U.R., M. Walsh, K. Hoareau, A. Cox, et al. 2020. *Ocean Finance: Financing the Transition to a Sustainable Ocean Economy*. Washington, DC: World Resources Institute.

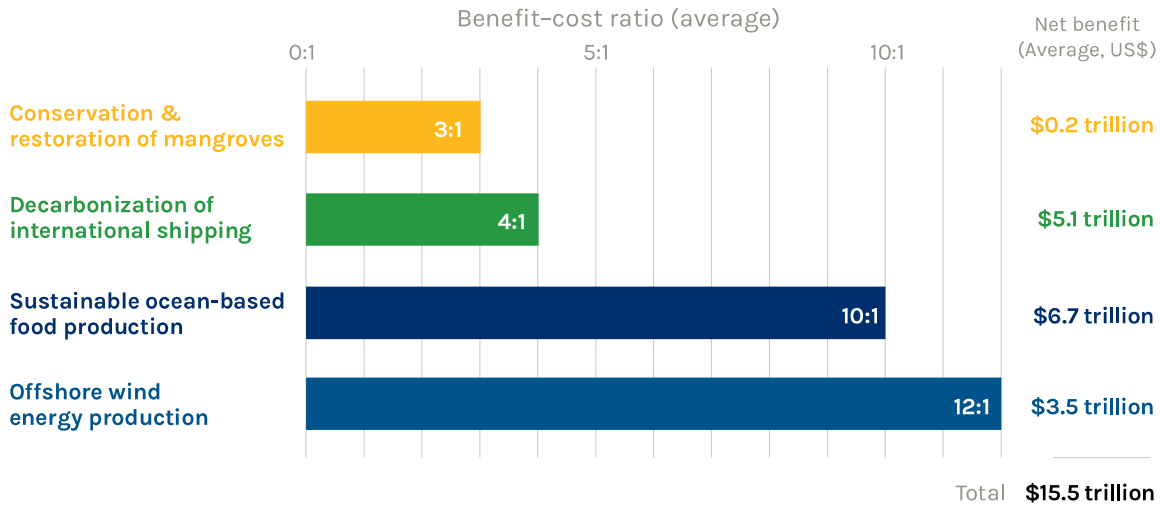

Figure 2.2: Benefits-to-Costs ratios for investments in sustainable ocean economy.
Source: Konar, M. and H. Ding. ND. *A Sustainable Ocean Economy for 2050: Approximating its Benefits and Costs.* World Resources Institute for The High Level Panel for a Sustainable Ocean Economy (Ocean Panel).

There is no uniform collection of data on financial aspects, or value, of the Blue Economy in G20 countries. However, various sources contain some data on the value of ocean or blue economy (this distinction is not clear in the respective statistics) and they are presented in Table 2.3. The data, unfortunately, are not comparable, and it is not easy to calculate the total global value of the Blue Economy, but it is safe to conclude that the sum of individual values per country probably exceeds the world total estimated by other sources mentioned above.

Table 2.3: Value of ocean/ blue economy of G20 members and guest countries

Country	Latest value			
	Year	Currency	Amount (GVA or GDP)	% of GDP
Argentina	2018	ARS	371 billion (GDP)	
Australia	2023	AUD	118.6 billion (GDP) [18]	3.8
Brazil	2018	R$	230,219 billion (GVA) 342,415 billion (GDP)[19]	
Canada	2020	CAD	34.2 billion (GDP)[20]	1.6
China	2021	RMB	9 trillion (GDP)[21] 3.6 trillion (GVA)	9.0
European Union	2020	Euro	523 billion (Turnover)[22]	3.9

[18] Australian Institute of Marine Science. 2023. *AIMS Index of Marine Industry 2023*. AIMS: Townsville
[19] Andrade, I.O., Hillebrand, G.R.L., Santos, T., Mont'alverne, T.C.F, and A. B. Carvalho. 2022. Brazilian Maritime GDP, Social, Economic and Environmental Motivations for its Measurement and Monitoring. IPEA
[20] Canada response to questionnaire
[21] Li Zheng, Hongyang Zou, Xiaofeng Duan, Zhongguo Lin, Huibin Du. 2023. "Potential determinants affecting the growth of China's ocean economy: An input-output structural decomposition analysis". *Marine Policy*, Vol. 150
[22] European Commission. 2023. The EU Blue Economy Report 2023. Publications Office of the European Union. Luxembourg

Table 2.3: Value of ocean/ blue economy of G20 members and guest countries

Country	Latest value			
	Year	Currency	Amount (GVA or GDP)	% of GDP
			129.1 billion (GVA)	
France	2019	Euro	22.5 billion (GVA)[23]	1.5 (GVA)
Germany	2019	Euro	32.2 billion (GVA)[24]	1.0 (GVA)
India	2017	INR	5.5 trillion (GVA)[25]	4.0 (GVA)
Indonesia		IDR	132 trillion (marine fisheries only)	
Italy	2019	Euro	24.4 billion (GVA)[26]	1.5 (GVA)
Japan		JPY	48.8 trillion	4.0
Mexico		MXN	254 billion	1.6
Russia		RUB	1.7 trillion	2.5
Saudi Arabia		SAR	140 billion	4.0
South Africa	2019	ZAR	32 billion	4.4
Republic of Korea		KRW	103.8 trillion	4.6
Türkiye		USD	38 billion	5.0
United Kingdom	2018	GBP	47 billion	1.4 (2.0 % of GVA)
United States	2018	USD	373 billion	1.7
Guest countries				
Denmark	2020	DKK	350 billion (direct) 57.2 billion (indirect)	10.0 (GDP) 5.0(GVA)[27]
Mauritius				10.0 (excluding tourism)[28]
Netherlands	2020	Euro	18.8 billion (direct) 4.7 (indirect)	2.9[29]
Spain	2020	Euro	32.8 billion (GVA)[30]	2.9 (GVA-2019)

The EU and the United States of America stand out with the total value of the ocean/blue economy contribution in absolute value, which could be explained by the sheer size of their economies as well as other advantages they have for the Blue Economy growth, including the extent of their Exclusive Economic Zones. EU's contribution of 523 billion euros in 2020 includes the contribution of all 27 EU member countries, while the contribution of three EU countries belonging to the G20 group (France, Germany, and Italy) is around 80 billion euros. In terms of the percentage share in the overall GDP of the country, China stands out with 9%, followed by Türkiye (5%) and Republic of Korea (4.6%). In the group of invited countries, Denmark and Mauritius stand out with 10% share of the Blue Economy in their GDP.

[23] European Commission. 2022. The EU Blue Economy Report 2022. Publications Office of the European Union. Luxembourg
[24] European Commission. 2022. *Idem.*
[25] Estimates produced by the Working Group on National Accounting Framework and Ocean Governance of the Economic Advisory Council to the Prime Minister, Coordinated by Ministry of Earth Sciences.
[26] European Commission. 2022. *Idem.*
[27] Denmark response to questionnaire
[28] Mauritius response to questionnaire
[29] Netherlands response to questionnaire
[30] Spain response to questionnaire

2.3 Measuring-of and Reporting-on the Blue Economy

As the immense potential of the ocean is being globally recognized, there is a growing need to develop effective measurement tools to assess the performance and impact of the Blue economy. However, measuring the blue economy is a complex task that requires a multidimensional approach. Measuring the Blue Economy goes beyond simple economic indicators and considers social, environmental, and governance aspects. By incorporating economic, social, and environmental indicators, as well as ecosystem-based methodologies, a comprehensive understanding of the Blue Economy's performance and impact could be gained. Therefore, accurate and holistic measurement is essential for shaping policies, directing investments, and promoting sustainable practices that maximise the potential of the Blue Economy while ensuring its long-term viability and resilience.

Currently, there is no standard framework to precisely measure the contribution of the Blue Economy to the GDP of a country. However, measuring the value of ocean economy exists and it is done primarily by rearranging existing publicly collected data with additional information as needed. Most nations already have the essential ingredients needed to measure the ocean economy in their national accounting and economic statistics and this data is collected and maintained in accordance with the international national account's standards. The EU has a very consistent measurement system of the Blue Economy and it reports annually for each member country arranged by sector in two major categories: Gross Value Added and Employment. The evolution of the EU's Blue Economy is shown in Table 2.4.

Table 2.4: Evolution of EU Blue Economy by sectors.

GVA (EUR million)	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Living resources	14,945	15,467	16,033	16,086	15,637	16,082	17,803	18,386	18,431	19,375	19,425	19,378
Non-living resources	11,190	11,325	11,935	11,237	9,684	8,215	8,431	4,723	3,940	4,291	4,704	2,810
Marine energy	41	115	167	189	297	396	723	991	1,299	1,397	1,926	2,145
Port activities	23,201	23,381	26,876	23,957	24,252	25,492	26,431	27,210	27,429	26,577	27,935	26,939
Shipbuilding and repair	11,263	11,815	11,750	10,912	11,060	11,607	11,264	12,383	13,540	14,748	15,650	14,469
Maritime transport	26,913	30,004	27,108	27,419	29,049	28,785	32,476	27,088	31,032	30,123	34,244	29,509
Coastal tourism	66,380	64,713	58,882	50,922	54,711	54,223	56,003	60,283	68,535	79,954	81,513	33,872
Blue Economy GVA	153,932	156,820	152,750	140,723	144,691	144,800	152,410	151,064	164,206	176,466	185,396	129,121
National GVA	9,536,725	9,853,556	10,150,557	10,211,897	10,319,741	10,555,397	10,938,710	11,228,272	11,689,383	12,095625	12,535,146	12,094,906
Blue Economy contribution (%)	1.6%	1.6%	1.5%	1.4%	1.4%	1.4%	1.4%	1.3%	1.4%	1.5%	1.5%	1.1%

Source: European Commission. 2023. The EU Blue Economy Report 2023. Publications Office of the European Union. Luxembourg

The Blue Economy Report takes stock of the latest developments and data in both the so-called "established sectors" (marine living resources, marine non-living resources, port activities, maritime transport; shipbuilding and repair, and coastal tourism) and in the "emerging sectors" (marine energy, blue bioeconomy desalination, marine minerals and maritime defence). The EU has established a Blue Economy Observatory**,** which aims at enhancing intelligence on the oceans, and boosting socio-economic analyses for

informing evidence-based policy. It is responsible for collecting, analysing and disseminating, on a periodical basis, socio-economic data and analysis on the EU Blue Economy.

Australia has published its Index of Marine Industry Report nine times. The Index tracks employment and total economic output by Australian marine-dependent sectors such as tourism, recreation, shipbuilding, ocean transport, fishing, and offshore oil and gas exploration and production, most of which depend on healthy and sustainably managed marine ecosystems. It provides a comprehensive picture of the growth and development of Australia's ocean economy over two decades (Figure 2.3).

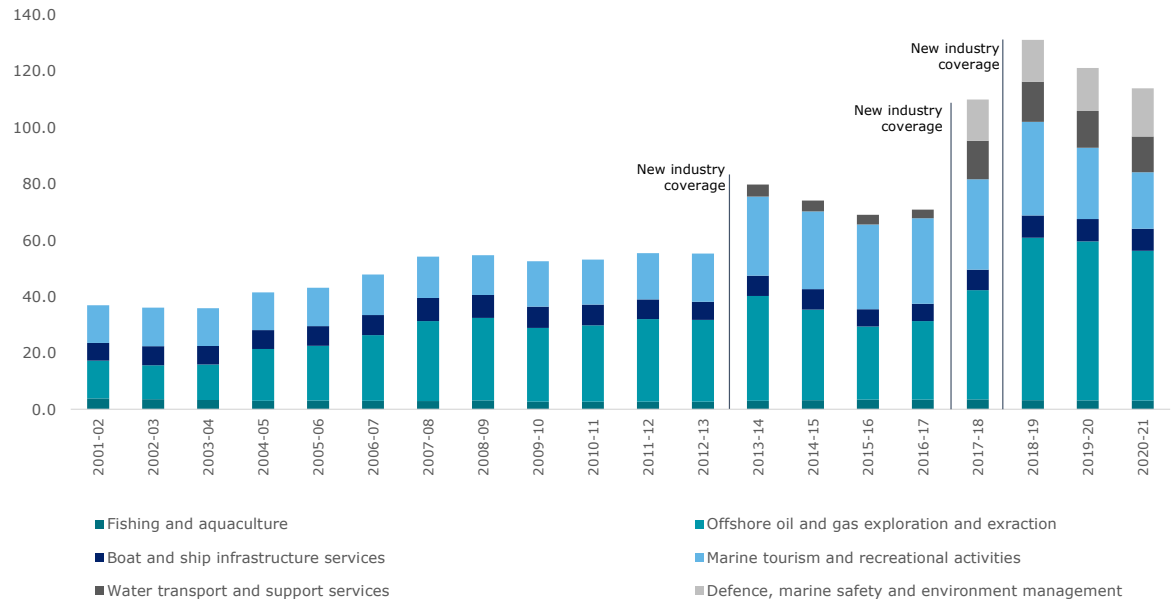

Figure 2.3: Evolution of marine industry economic output since 2001-2002.
Source: Australian Institute of Marine Science. 2023. *AIMS Index of Marine Industry 2023*. AIMS: Townsville

The above two examples show that G20 members have taken steps to monitor more closely the economy that depends on utilisation of coastal and marine resources and on a clean and healthy environment. However, we conclude that the economy being monitored is the "ocean economy" and not yet the "blue economy". Therefore, more efforts are needed to devise the Blue Economy measurement system that will be applied both to the G20 members' context as well as to other countries.

Measuring the Blue Economy faces several challenges due to its multifaceted nature:

- Data availability and quality: Access to reliable and up-to-date data is a significant obstacle. Many marine sectors lack standardised reporting mechanisms, hindering accurate measurement. Additionally, data on informal and small-scale activities are often scarce, impeding a comprehensive assessment.
- Complexity and interconnectedness: The Blue Economy is highly interconnected, with activities influencing each other. Measuring the impact of a specific sector in isolation may overlook its wider implications and interdependencies.
- Environmental considerations: Assessing the Blue Economy necessitates accounting for ecological impacts. Monitoring factors such as biodiversity loss,

pollution, and climate change adaptation and mitigation efforts are crucial for comprehensive measurement.

Such a system would require several sets of representative indicators, namely:

- Economic Indicators: Traditional economic metrics, such as gross domestic product (GDP) and employment statistics, provide a baseline understanding. However, they fail to capture non-market values, externalities, and social dimensions. Complementary indicators such as gross marine product (GMP), which includes direct and indirect contributions, could help address this limitation.
- Social Indicators: Measuring the social aspects of the Blue Economy involves evaluating livelihoods, equity, and human well-being. Indicators such as employment in marine sectors, income distribution, and access to essential services will help assess social outcomes and inclusivity.
- Environmental Indicators: Environmental indicators are vital for evaluating sustainability. Measures like marine protected areas (MPAs) coverage, carbon footprint, pollution levels, and the health of key species aid in assessing the ecological impact of the Blue Economy.
- Ecosystem-Based Approaches: Ecosystem-based approaches consider the interaction between economic activities and the marine ecosystem. Methods like ecosystem services valuation and integrated assessment models help quantify the benefits and trade-offs associated with different sectors.

The concept of "Ocean Accounts" has recently gained prominence as a comprehensive framework for measuring and valuing the contributions of the ocean to economies and societies. Ocean Accounts (OA), also known as the System of Environmental-Economic Accounting for the Oceans (SEEA-O), provide a structured approach to integrate environmental, social and economic data related to the ocean.

OA organises ocean data in a common framework, integrated with existing national accounts. In other words, OA represent an integrated record of sectoral economic activities (e.g., sale of fish), social conditions (e.g., coastal employment, inclusivity and poverty), and spatial environmental conditions (e.g. extent / condition of mangroves) that are compiled on a regular basis and are compatible with existing statistical standards. OA are based on the System of National Accounts (SNA), and System for Environmental Economic Accounting (SEEA), which is now used by at least 80 countries to account for policy-relevant environment-economy relationships on land. At least 15 countries were actively developing ocean accounts in 2022.[31]

Ocean Accounts are useful for the Blue Economy because of their ability to provide comprehensive and integrated information on the economic, social and environmental aspects of ocean-related activities. Some of the reasons why Ocean Accounts are beneficial for the Blue Economy include:

- Holistic measurement

[31] *GOAP. 2022. Linking Ocean Accounting to Marine Spatial Planning.* Sydney, Australia: Global Ocean Accounts Partnership.

- Informed decision-making
- Sustainable development planning
- Environmental valuation
- Monitoring progress and accountability
- International comparisons and cooperation

2.4 Advancing Social Equity in the Blue Economy

While the Blue Economy holds significant potential for economic growth and sustainable development, it is crucial to ensure that this growth is accompanied by social equity, inclusivity, and justice. It is important to note that nine of the 17 Sustainable Development Goals (SDGs) specifically address equity issues, while all of the SDGs touch on equity. What is social equity in the Blue Economy context? Colgan et al. (2021) state that the appropriate definition of equity for the Blue Economy is a contested subject and that it is not clear whether there will ever be an agreement on a universal definition of equity. But they rightly conclude that equity is a more localised affair that will have to be defined in the specific contexts of local history, culture and economic circumstances.[32] In more generalised terms, social equity in the Blue Economy should, *inter alia*, refer to fair and inclusive access to resources, benefits, and opportunities for all individuals and communities, irrespective of their socio-economic status, gender, ethnicity, or geographic location. Figure 2.4 depicts some key elements of ocean (blue economy) equity.

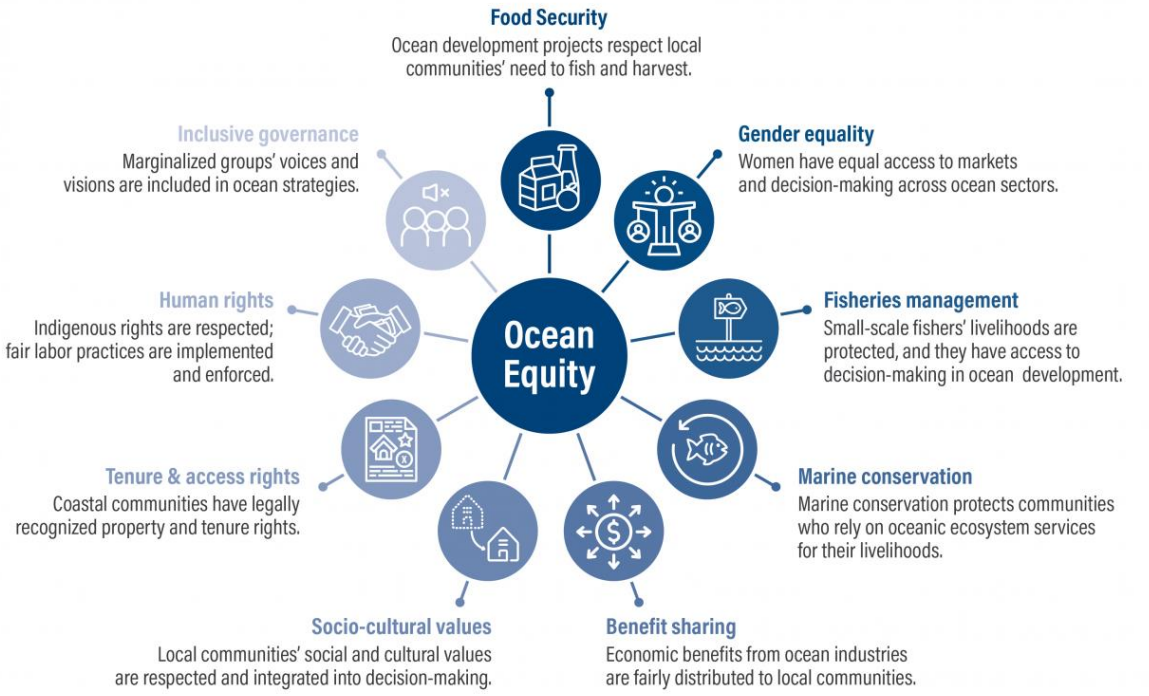

Figure 2.4: Key elements of ocean equity.
Source: Khan, M. and E. Northrop. 2022. "5 Ways to Build an Equitable Ocean Economy". World Resources Institute. https://www.wri.org/insights/5-ways-build-equitable-ocean-economy

[32] Colgan, C. S., Forbes, V. L., and I. Mwanyioka. 2021. "Measuring the blue economy" in: Sparks, D. L. *The Blue Economy in Sub-Saharan Africa.* New York: Routledge.

There are many manifestations of lacking social justice when it comes to utilisation of benefits of an ocean economy. Bennett et al. (2021) highlighted ten social injustices that might be produced by blue growth, namely: (1) dispossession, displacement and ocean grabbing; (2) environmental justice concerns from pollution and waste; (3) environmental degradation and reduction of ecosystem services; (4) livelihood impacts for small-scale fishers; (5) lost access to marine resources needed for food security and well-being; (6) inequitable distribution of economic benefits; (7) social and cultural impacts; (8) marginalisation of women; (9) human and indigenous rights abuses; and (10) exclusion from governance.[33]

Advancing social equity in the Blue Economy is essential for several reasons:

- Poverty alleviation: By promoting inclusive economic growth, the Blue Economy can contribute to poverty alleviation and reduce inequalities, particularly in coastal communities that heavily rely on ocean resources for their livelihoods.
- Human rights and justice: Social equity recognizes the rights of individuals and communities to access and benefit from ocean resources while ensuring equitable decision-making processes and fair distribution of benefits. It acknowledges the rights of indigenous peoples, traditional communities, and marginalised groups and seeks to address historical injustices.
- Sustainable development: Social equity is a key principle of sustainable development. It ensures that the benefits of the Blue Economy are shared equitably, enhancing social well-being, fostering social cohesion, and minimising social conflicts or tensions that could hinder sustainable development efforts.

Despite the potential for social equity in the Blue Economy, several challenges exist:

- Unequal access and benefits: In many instances, certain groups or communities face barriers to accessing and benefiting from ocean resources and economic opportunities. This could be due to limited access to education, capital, technology, or discriminatory practices.
- Gender inequality: Gender disparities persist in the Blue Economy, with women often facing limited access to resources, decision-making positions, and economic opportunities. Addressing gender inequalities is crucial for achieving social equity and empowering women as key stakeholders in the Blue Economy.
- Displacement and vulnerability: Expanding economic activities in the Blue Economy, such as coastal development or industrial activities, can lead to the displacement of communities and disrupt their social fabric. Displaced communities may face challenges in adapting to new livelihoods or suffer adverse social impacts.

Several strategies can be employed to advance social equity in the Blue Economy:

- Inclusive governance and participation: Promoting inclusive and participatory decision-making processes ensures that all relevant stakeholders, including

[33] Bennett, N.J., Blythe, J., White, C.S. and C. Campero. 2021. "Blue growth and blue justice: Ten risks and solutions for the ocean economy". *Marine Policy* Volume 125, March 2021.

marginalised groups, have a voice in shaping policies and strategies related to the Blue Economy. This involves engaging local communities, indigenous peoples, and civil society organisations in decision-making processes.

- Capacity building and skills development: Investing in education, skills development, and capacity building programs can enhance the capabilities of individuals and communities to participate in the Blue Economy. This includes training programs, entrepreneurship support, and technical assistance to improve access to employment, markets, and financing.
- Gender mainstreaming: Implementing gender mainstreaming approaches in the Blue Economy is crucial for addressing gender disparities and ensuring equal opportunities for women. This involves integrating gender perspectives into policies, programs, and projects, as well as promoting women's leadership and empowerment.
- Social safeguards and benefit sharing: Incorporating social safeguards into the Blue Economy ensures that potential negative social impacts are minimised, and the benefits are equitably distributed among all stakeholders. This includes mechanisms for compensation, community-based management approaches, and participatory monitoring of social impacts.

2.5 Financing and Institutional Mechanisms for the Blue Economy

The Blue Economy, with its vast potential for economic growth and environmental and social sustainability, requires adequate financing and robust institutional mechanisms to support its development. Financing plays a pivotal role in unlocking the potential of the Blue Economy. Adequate financial resources are required to support sustainable development, conservation efforts, innovation, and capacity building. Key reasons highlighting the importance of financing in the Blue Economy include:

- Infrastructure Development: Funding is necessary for the development of critical infrastructure, including ports, harbours, coastal protection, renewable energy facilities, and marine transportation. Investments in infrastructure enhance connectivity and facilitate the growth of various Blue Economy sectors.
- Technological Innovation: Financial resources are vital to support research and development of innovative technologies and practices that promote sustainable fisheries, aquaculture, renewable energy, and marine conservation. Investment in innovation drives efficiency, reduces environmental impacts, and fosters the adoption of sustainable practices.
- Capacity Building: Financial support is needed to build the capacity of individuals, institutions, and communities engaged in the Blue Economy. Capacity building initiatives encompass training programs, education, skills development, and knowledge-sharing platforms, enabling stakeholders to effectively participate and contribute to sustainable Blue Economy activities.

The total amount of financing that various actors on the national and global scales are providing for the transition to the Blue Economy is not known. However, it is worth noting that there has been an increasing recognition of the importance of financing the Blue Economy in recent years. International organisations, including financial institutions, governments, and private investors have been mobilising financial resources to support sustainable ocean-related projects and initiatives. For example, the World

Bank launched the Global Sustainable Fisheries Program, a $300 million initiative aimed at supporting sustainable fisheries and aquaculture projects worldwide.

The United Nations Environment Programme (UNEP) has established the Sustainable Blue Economy Finance Initiative, an UN-convened global community focused on the intersection between private finance and ocean health. The aim of this initiative is to provide guidance and frameworks to ensure investment, underwriting and lending activities are aligned to the SDG14

The European Union (EU) has allocated significant funds to support the Blue Economy through various initiatives and programs. The exact amount of funding may vary from year to year as the EU's budget and priorities evolve. Some of the key funding programs and initiatives that have been established to support the Blue Economy within the EU are:

- European Maritime and Fisheries Fund (EMFF): The EMFF is a major funding instrument of the EU specifically dedicated to the maritime and fisheries sectors. It aims to support the sustainable development of these sectors, including the Blue Economy. The EMFF provides financial assistance for activities such as fisheries and aquaculture management, marine environmental protection, investments in fishing ports and infrastructure, innovation, and training. The total budget for the EMFF for the 2014-2020 programming period was approximately 6.4 billion euros.
- Horizon Europe: Horizon Europe is the EU's research and innovation framework program for the period 2021-2027. It includes funding opportunities for research and innovation projects related to the Blue Economy, such as marine and maritime research, sustainable fisheries, aquaculture, and ocean observation. The specific amount earmarked for the Blue Economy within Horizon Europe may vary depending on the annual budget allocations.
- European Regional Development Fund (ERDF): The ERDF is one of the EU's structural and investment funds aimed at promoting economic development and reducing regional disparities across Europe. The fund supports various sectors, including the Blue Economy, by providing financial assistance for investments in infrastructure, innovation, business development, and environmental sustainability. The specific amount allocated to the Blue Economy through the ERDF can vary depending on regional priorities and strategies.
- BlueInvest Fund: The BlueInvest Fund is an initiative under the European Investment Fund (EIF) that supports innovative and sustainable companies in the Blue Economy. It aims to boost innovation and investment in sustainable technologies for the Blue Economy, by supporting readiness and access to finance for early-stage businesses, SMEs and scale-ups. It is enabled by the European Maritime and Fisheries Fund. It provides equity financing, guarantees, and technical assistance to small and medium-sized enterprises (SMEs) and start-ups operating in sectors such as ocean energy, aquaculture, marine biotechnology, and maritime transport. The total investment capacity of the BlueInvest Fund is 75 million euros.

Additionally, there has been a growing emphasis on innovative financing mechanisms for the Blue Economy, such as blue bonds (Table 2.5), impact investment funds, and green

finance initiatives. These mechanisms aim to channel financial resources specifically toward sustainable ocean-related projects and activities.

Table 2.5: Examples of blue bonds.

Bond	Purpose	Size	Duration	Investors	Financing Terms
Seychelles Blue Bond	Transition support to sustainable fisheries	$15 million	10 years	World Bank; Private Placement; Calvert Impact Capital; Nuveen; and Prudential Capital Market	The loan from the Global Environment Facility decreased the interest rate for the government from 6.5% to 2.8%
Nordic-Baltic Blue Bond	Water resource management and protection	$213 million	5 years		0.375% coupon

Source: Mumtaz, M.Z. and Z.A. Smith. 2022. "The Blueness Index, Investment Choice, and Portfolio Allocation" in: Morgan, P.J., Huang, M.C., Voyer, M., Benzaken, D. and A. Watanabe (eds.). *Blue Economy and Blue Finance: Toward Sustainable Development and Ocean Governance.* Tokyo: Asian Development Bank Institute.

Strong institutional mechanisms are crucial for effective governance, coordination, and regulation of the Blue Economy. These mechanisms facilitate decision-making, policy implementation, and stakeholder engagement. The World Bank (2017) emphasises the role of institutional mechanisms in promoting the Blue Economy. It highlights the need for national bodies or frameworks responsible for formulating policies, setting priorities, and ensuring coordination among relevant stakeholders.[34] These bodies could include ministries, agencies, or committees dedicated to overseeing and coordinating Blue Economy activities.

Key institutional mechanisms in the Blue Economy include:

- National ocean governance: Establishing dedicated national bodies or frameworks to oversee and coordinate Blue Economy activities can enhance governance and promote sustainable development. These bodies could include ministries, agencies, or committees responsible for formulating policies, setting priorities, and ensuring coordination among relevant stakeholders.
- Public-Private Partnerships (PPPs): Collaborations between public and private sectors are essential for leveraging financial resources, technical expertise, and innovation in the Blue Economy.[35] PPPs can enhance investment opportunities, mobilise private capital, and promote sustainable practices through mutually beneficial partnerships.
- Multilateral and bilateral cooperation: International collaboration and cooperation among nations, regional organisations, and multilateral institutions are vital for promoting the Blue Economy.[36] Collaborative mechanisms facilitate

[34] The World Bank and United Nations Department of Economic and Social Affairs. 2017. *The Potential of the Blue Economy: Increasing Long-term Benefits of the Sustainable Use of Marine Resources for Small Island Developing States and Coastal Least Developed Countries*. Washington DC: World Bank.
[35] Ibid
[36] UNCTAD. 2019. Blue Finance: A Guide to Financing Sustainable Ocean Economies.

knowledge exchange, capacity building, and financial support for Blue Economy initiatives, including through initiatives such as the Global Environment Facility (GEF) and the United Nations Sustainable Development Goal 14.

- Sustainable financing mechanisms: Developing and implementing sustainable financing mechanisms, such as blue bonds, impact investment funds, and green finance initiatives, can mobilise funds specifically for the Blue Economy. These mechanisms promote responsible investment, incentivize sustainable practices, and facilitate the integration of environmental and social considerations into financial decision-making.

3 MARINE LITTER: A GROWING IMPEDIMENT TO BLUE ECONOMY

Marine litter poses one of the most significant and pervasive environmental challenges to the world today. Any anthropogenic, manufactured, or processed solid material (regardless of size) that is discarded, disposed of, or abandoned in the marine environment is referred to as marine litter.[37] Plastic makes up to 85 percent of all marine litter and it is also the most challenging form of marine litter because of its long lifetime and complex degradation process in the marine environment. Recent estimates suggest that around 19-23 million tonnes of plastic waste enter the marine environment annually from land-based sources, which account for the majority of marine litter.[38] Combined with ocean-based sources, such as lost or abandoned fishing gear, waste produced from shipping and transportation, and ocean-based recreational activities, the amount of plastic entering the ocean annually is astronomical.

Marine litter has several direct impacts on coastal and marine ecosystems and biodiversity, which in turn have ripple effects for coastal populations, livelihoods, and local and national economies. Plastic litter is responsible for the deaths of hundreds of marine animal species, including seabirds, fish, turtles, and whales, primarily due to ingestion, suffocation, and entanglement. Over time, plastic debris in the ocean breaks down, due to dynamic processes such as winds, waves and solar radiation, into smaller and smaller fragments called microplastics. This breakdown process also results in the release of harmful chemicals into the marine environment.

Microplastics and the chemicals produced during the decomposition of plastic can enter the marine food chain when ingested by small fish species which can then even enter the human food chain through consumption of contaminated seafood. In addition to the direct health impacts, there are other socio-economic impacts as well. Marine litter, particularly when deposited along beaches, diminishes the aesthetic value of the tourist locations, thereby affecting the coastal and marine tourism sectors and the livelihoods dependent on them. Cleaning up and processing this waste also requires significant financial, technological, and human resources.

Due to the direct and indirect impacts mentioned above, it is estimated that damage from marine litter globally is about $18.3 billion per year in 2014, which is an eight-fold increase compared to 2008. This is equivalent to $21.3 billion in 2020. This is expected to rise significantly, *"in 2020 the present value of global economic damage costs to 2030 and 2050 are $–197bn and $–434bn respectively"*.[39] If the projected increase in plastic production is taken into account, the damages could be as high as $–229bn and $–731bn, by 2030 and 2050, respectively.

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[37] UNEP, 2011. The Honolulu Strategy: A Global Framework for Prevention and Management of Marine Debris, vol. 51.

[38] United Nations Environment Programme (2021). Drowning in Plastics – Marine Litter and Plastic Waste Vital Graphics.

[39] Mcllgorm, A., Raubenheimer, K., Mcgllorm, D.E. and Nichols, R. 2022. "The cost of marine litter damage to the global marine economy: Insights from the Asia-Pacific into prevention and the cost of inaction". Marine Pollution Bulletin Volume 174, January 2022. https://www.sciencedirect.com/science/article/abs/pii/S0025326X21012017

Importantly, marine litter poses a trans boundary challenge – it affects not only the coastal areas where it is first introduced into the ocean but also ecosystems, coastal and marine species, economies, and local communities across national boundaries – which requires concerted global efforts. Once it is introduced into the marine environment, litter can be carried across vast distances, depending on the size of the pollutants, by ocean currents, winds, and tides. Modelling studies show that marine plastic waste that is released into the ocean by one country can find its way to another country thousands of kilometres away through a complex web of ocean pathways.[40]

Recognising the scale of the problem and its wide-ranging and far-reaching impacts, many countries across the world have adopted measures to tackle marine litter, ranging from efforts to minimise the use of single-use plastics, generate eco-friendly alternatives for plastics, adopt environmentally-sound waste management practices, and invest in technologies for recycling of waste, among others. Several international initiatives have also been taken in recent years to enhance international cooperation on the issue of marine litter.

For instance, the UN Clean Seas campaign is one of the largest global coalitions of governments, civil society groups, industry, and individuals to address marine plastic pollution. Launched in 2017, the campaign gathered momentum quickly and now has 69 countries, both coastal and land-locked, as members, working towards accelerating action against marine litter by transforming habits, practices, standards, and policies. The campaign contributes to the goals of the Global Partnership on Plastic Pollution and Marine Litter (GPML) which is a voluntary multi-stakeholder partnership launched at the Rio+20 Conference in 2012. Member countries (which include several G20 members) have made ambitious pledges to address plastic pollution through a lifecycle approach, including to reduce or eradicate single-use plastics through appropriate legislation and regulation, invest in recycling and waste management facilities, and prevent harm to the coastal and marine environment.

The Global Ghost Gear Initiative (GGGI) was launched in 2015 with the goal to produce solutions to the problem of abandoned, lost, or otherwise discarded fishing gear (ALDFG), colloquially known as "ghost gear". Ghost gear is the primary sea-based source of marine litter, according to recent estimates it makes up at least 10 percent of all marine litter. It is estimated that between 500,000 and 1 million tonnes of fishing gear is abandoned in the ocean each year.[41] The GGGI is an international alliance which, as of June 2023, comprises 20 national governments (including 5 G20 members), 51 private entities, 72 non-governmental organisations, 9 academic institutions and 2 intergovernmental organisations.[42] The initiative promotes a collaborative, science-based approach to tackle ghost gear through enhanced data management and analysis, capacity building, policy advocacy, and the sharing of best practices and technology.

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[40] Chasignet, E.P., Xu, X., and Zavala-Romero, O. "Tracking Marine Litter With a Global Ocean Model: Where Does It Go? Where Does It Come From?". *Frontiers in Marine Science* Volume 8, (2021). https://doi.org/10.3389/fmars.2021.667591

[41] "Stopping Ghost Gear", *World Wide Fund for Nature*. https://www.worldwildlife.org/projects/stopping-ghost-gear

[42] "Members", *Global Ghost Gear Initiative*. https://www.ghostgear.org/members

Global efforts to address plastic pollution reached a significant milestone in 2022 at the fifth session of the United Nations Environment Assembly when a historic resolution (5/14) was adopted to develop an international legally binding instrument on plastic pollution, including in the marine environment with the ambition to complete the negotiations by end of 2024. Following the resolution, the Intergovernmental Negotiating Committee (INC) has conducted two sessions so far, the second session concluded on 03 June 2023 with a mandate for the INC Chair, with the support of the Secretariat, to prepare a zero draft of the agreement ahead of the third session which is scheduled to be held in Nairobi, Kenya, in November 2023.

3.1 G20 Initiatives to Tackle Marine Litter

Within the G20 forum, marine litter has emerged a crucial subject of discussion, in recent years. In 2017, the G20 agreed to the "G20 Action Plan on Marine Litter" under the German Presidency. In 2019, the G20 established the "G20 Implementation Framework for Actions on Marine Plastic Litter" under Japan's Presidency. In the same year, the G20 members recognised the "Osaka Blue Ocean Vision" with the aim to reduce additional pollution by marine plastic litter to zero by 2050 through a comprehensive life-cycle approach. As of August 2022, 87 countries and regions have committed to the Osaka Blue Ocean Vision.

Following the 2019 Implementation Framework for Actions on Marine Plastic Litter, the G20 have produced reports on Actions Against Marine Plastic Litter (AAMPL) each year which provide a compilation of policies, strategies, and measures adopted by the participating countries and international organisations on marine plastic litter. The reports allow us to track progress on national/ regional actions to address marine litter as per the Osaka Blue Ocean Vision. Continuing the trend, India's G20 Presidency will produce the 5th edition of the G20 AAMPL report under the leadership of the Government of India and supported by the Government of Japan.

While the 5th G20 AAMPL report, published elsewhere,[43] provides a detailed analysis of the measures taken and challenges faced by the participating countries and organisations, some of the key findings are summarised here. Over 30 countries and 10 international organisations participated in the study. 17 G20 members, namely, Australia (AUS), Brazil (BRA), Canada (CAN), China (CHN), European Union (EU), France (FRA), Germany (DEU), India (IND), Italy (ITA), Japan (JPN), Mexico (MEX), Saudi Arabia (KSA), South Africa (ZAF), South Korea (KOR), Türkiye (TUR), United Kingdom (UK), and United States of America (USA), participated in the study. The participants completed a detailed survey questionnaire and shared their actions/ initiatives including those related to prevention and reduction of plastic waste generation, environmentally sound waste management, promotion of innovative solutions, education and awareness raising, etc.

Table 3.1: National/ regional initiatives of G20 members on marine litter. [Y: Yes, N: No, UD: Under Development]

[43] MoEFCC (2023). G20 Report on Actions Against Marine Plastic Litter. Fifth Information Sharing Based on the G20 Implementation Framework. Ministry of Environment, Forest and Climate Change, New Delhi, India 575 pp.

	AUS	BRA	CAN	CHN	EU	FRA	DEU	IND	ITA
National Action Plan	Y	UD	Y	Y	Y (Regional Strategy)	Y	Y	UD	Y
Legislation	Y	Y	Y	Y	Y (Regional Directive)	Y	Y	Y	Y
MPL-specific Indicators	Y	Y	Y	Y	Y	Y	Y	Y	Y
	JPN	KOR	MEX	KSA	ZAF	TUR	UK	USA	
National Action Plan	Y	Y	UD	Y	Y	Y	Y	Y	
Legislation	Y	Y	Y	Y	Y	Y	Y	Y	
MPL-specific Indicators	Y	Y	N	Y	Y	Y	Y	N	

Source: Voluntary responses to survey questionnaire for the 5th G20 AAMPL report.

At the national-level, the participants were asked if, 1) they have a National Action Plan on marine litter/ plastic pollution, 2) they have developed appropriate legislation on plastic pollution/ waste management, and 3) they have developed marine plastic litter (MPL) specific indicators to measure and track MPL flows. The responses by G20 members are summarised in Table 3.1. All G20 members that participated in the study have developed or are currently developing national action plans/ policies/ strategies on marine plastic litter. Importantly, all participating members have developed appropriate legislation on plastic pollution, waste management, and/ or protection and conservation of coastal and marine biodiversity which incorporate measures to mitigate marine pollution. Nearly all participating members have developed or are developing specific indicators to measure the volume and flow of marine plastic litter. However, several members acknowledge the challenges in recording and analysing this data and the need for more standardised approaches towards this end. A detailed description and analysis of these national-level actions may be found in the 5th G20 AAMPL report published by the Indian Presidency.[44]

[44] Ibid

4 CONSERVING AND RESTORING COASTAL AND MARINE ECOSYSTEMS

Coastal and marine ecosystems such as coral reefs, mangrove forests, seagrass meadows, salt marshes, etc., provide a range of ecological, economic, and social services. They provide critical habitats, nurseries, and breeding grounds for a wide variety of terrestrial and marine plant and animal species, including several commercially important species. They regulate water quality, by filtering pollutants and excess nutrients from runoff before they enter the ocean. They regulate the carbon cycle, and in turn the climate, by sequestering large amounts of carbon dioxide from the atmosphere and storing it in sediments and biomass. In addition to their ability to mitigate contemporary climate change by sequestering carbon, they provide natural solutions to adapt to the impacts of climate change by acting as barriers against floods, cyclonic storms, storm surges, and coastal erosion. Coastal and marine ecosystems and the rich biodiversity supported by them also serve as major tourist attractions, generating significant revenue for local economies.

Figure 4.1: Global distribution of blue carbon ecosystems including mangrove forests, salt marshes and seagrass meadows. G20 member countries are highlighted by orange markers and invited countries are highlighted by blue markers.
Source: Image adapted from The Blue Carbon Initiative, 2019.

Figure 4.1 depicts the global distribution of blue carbon ecosystems including mangrove forests (shown in black), salt marshes (shown in blue), and seagrass meadows (shown in green). The G20 member countries are highlighted by orange markers and the invited countries are highlighted by green markers. Figure 4.2 shows the distribution of coral reefs across the world. While mangrove forests and coral reefs are typically found in tropical and sub-tropical regions, salt marshes and seagrasses have a much wider distribution across the world. Clearly, all G20 member countries and invited countries have one or more coastal and marine ecosystems which provide significant ecological, social, and economic benefits.

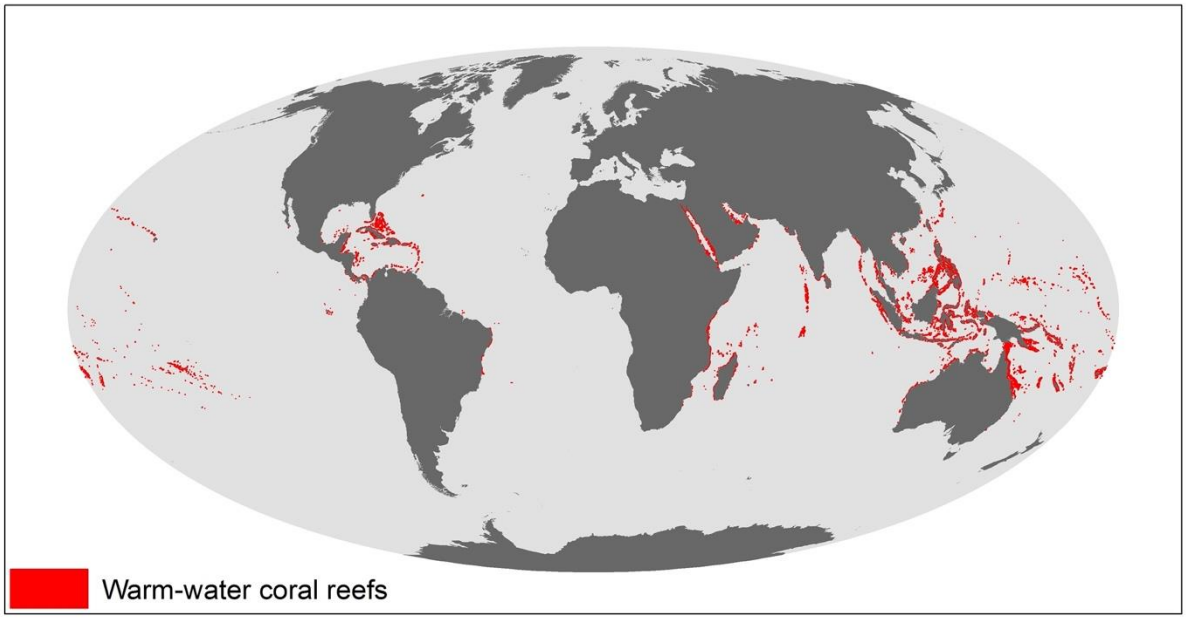

Figure 4.2: Global distribution of coral reefs in tropical and sub-tropical regions.
Source: UNEP-WCMC, WorldFish Centre, WRI, TNC (2021). Global distribution of coral reefs, compiled from multiple sources including the Millennium Coral Reef Mapping Project. Version 4.1, updated by UNEP-WCMC. Includes contributions from IMaRS-USF and IRD (2005), IMaRS-USF (2005) and Spalding et al. (2001). Cambridge (UK): UN Environment Programme World Conservation Monitoring Centre. Data DOI: https://doi.org/10.34892/t2wk-5t34

These ecosystems are experiencing continued degradation from a combination of contemporary environmental threats such as marine pollution, overexploitation, climate change, and unplanned coastal development. According to the Status of Coral Reefs of the World Report:2020, produced by the Global Coral Reef Monitoring Network of the International Coral Reef Initiative, the world lost 14 percent of its coral reefs in the period of 2009-2018.[45] Coral reefs are considered to be the most vulnerable of all the coastal ecosystems to climate change due to their high sensitivity towards ocean warming and ocean acidification and inherently low adaptive capacity.[46] The Estimates by the Global Mangrove Watch show that the total area of mangroves in the world decreased by around 5,245 sq. km. between 1996 and 2020. Seagrass meadows are among the most threatened ecosystems in the world, declining at a rate of 110 sq km per year globally since 1980.[47]

[45] Cite executive summary document of the report.
[46] Bindoff, N.L., W.W.L. Cheung, J.G. Kairo, J. Arístegui, V.A. Guinder, R. Hallberg, N. Hilmi, N. Jiao, M.S. Karim, L. Levin, S. O'Donoghue, S.R. Purca Cuicapusa, B. Rinkevich, T. Suga, A. Tagliabue, and P. Williamson, 2019: Changing Ocean, Marine Ecosystems, and Dependent Communities. In: *IPCC Special Report on the Ocean and Cryosphere in a Changing Climate* [H.-O. Pörtner, D.C. Roberts, V. Masson-Delmotte, P. Zhai, M. Tignor, E. Poloczanska, K. Mintenbeck, A. Alegría, M. Nicolai, A. Okem, J. Petzold, B. Rama, N.M. Weyer (eds.)]. In press.
[47] Waycott, M., Duarte, C.M., Carruthers, T.J.B., and Williams, S.L. "Accelerating loss of seagrasses across the globe threatens coastal ecosystems". *Biological Sciences* Volume 106, No 30, 2009. https://doi.org/10.1073/pnas.0905620106

4.1 National/ Regional Initiatives by G20 Members and Guest Countries

Recognising the challenges and declining trends, all G20 members and invited countries have taken initiatives in recent decades to conserve and sustainably manage their coastal and marine ecosystems and biodiversity. Table 4.1 shows some of the key national legislation, policies, and strategies adopted by these countries for biodiversity conservation, including specific ones on coastal and marine biodiversity. A more detailed list of national/ regional initiatives is provided in Annex 4. Traditionally, most coastal nations have addressed issues related to coastal and marine conservation within the broader area of biodiversity conservation in general. However, it is now well understood that conservation of coastal and marine ecosystems requires different methods and techniques than terrestrial ecosystems. Importantly, this is being increasingly recognised by the scientific and political stakeholders and more countries are now creating strategies and legislation that are specifically tailored for coastal and marine areas. It is also important to note that many countries have created and adopted 'National Biodiversity Strategies' as per their commitments under the Convention on Biological Diversity (also discussed in Section 4.2).

Table 4.1: National/regional initiatives of G20 members and invited countries that participated in the Technical Study questionnaire (Annex 1).

Country	National Policies/ Strategies/ Laws related to Coastal and Marine Conservation
G20 Members	
Australia	Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act); Blue Carbon Conservation, Restoration and Accounting Program (2021-25); Ghost Nets Initiative;
Canada	Oceans Act; 2023 MPA Protection Standard; Federal Marine Protected Area Strategy; National Framework for Canada's Network of Marine Protected Areas; Canada's Ocean Strategy;
China	Law of Marine Environmental Protection; National Biodiversity Conservation Strategy and Action Plan (2011-2030); Master Plan on Major Projects for the Conservation and Restoration of National Key Ecosystems (2021-2035);
EU	EU Marine Strategy Framework Directive; 2030 Biodiversity Strategy; EU Mission – Restore Our Ocean and Waters; EU Water Framework Directive;
France	Law for the Recovery of Biodiversity, Nature and Landscapes (2016); Protection of Endangered Fish Species; National Biodiversity Strategy 2030; National Strategy for Protected Areas 2030;
Germany	National Strategy on Biological Diversity; Nature Conservation and Landscape Management Act; Protected area regulations and management plans for national marine protected areas; National marine strategy (in preparation);
India	Environmental Protection Act; Coastal Regulation Zone (CRZ) Notification; Biological Diversity Act; Wetland (Conservation and Management) Rules; National Biodiversity Strategy and Action Plan (NBSAP); Mission MISHTI;
Indonesia	Law No.1/2014 about Management of Coastal Area and Isles, amending Law No.27/2007; Law No.32/2014 about the Sea; Law No.5/1990 Conservation of the living natural resources and its ecosystem; Forestry Law No. 41/1999;
Italy	Italian Legislative Decree n.190 of October 13th 2010 – implementing the Marine Strategy Framework Directive 2008/56/CE; National Biodiversity Strategy 2030 (In preparation);
Japan	Basic Act on Biodiversity; The National Biodiversity Strategy of Japan 2012-2020; Nature Conservation Act; Marine Biodiversity Conservation Strategy of Japan; Action Plan to Conserve Coral Reef Ecosystems in Japan 2022-2030;
Mexico	Mangrove reforestation and preservation of species projects and Port Management

	Systems under Port Development Master Plans;
ROK	Conservation and Management of Marine Ecosystems Act; Act of the Sustainable Management and Restoration of Tidal Flats(gaetbeol) and Adjacent Area Thereof;
Russia	**No response in questionnaire
South Africa	National Environmental Management: Biodiversity Act (NEMBA); National Environmental Management: Protected Areas Act; National Environmental Management: Integrated Coastal Management Act;
Türkiye	Environment Law; Aquaculture Law; Strategic Plan of Ministry of Agriculture and Forestry for 2019-2023; Coastal Law; Strategy of Ministry of Environment, Urbanization and Climate Change; Regulation for Conservation of Wetlands;
UK	Environment Act 2021; UK Marine Strategy Parts 1, 2, 3; Restoring Meadows, March, and Reef Initiative;
Guest Countries	
Bangladesh	Environment Conservation Act 1995; Ecologically Critical Area Management Rule (2016);
Denmark	Statutory Order on Determination and Administration of International Conservation Areas and Certain Protected Species; Danish Marine Strategy Act; Danish Marine Strategy; Water Management Plan;
Mauritius	Fisheries and Marine Resources Act 2007; Environment Protection Act 2002; Maritime Zones Act 2005; Merchant and Shipping Act 2007; National Coast Guard 1988; Petroleum Act 1970 Amended 2021;
Netherlands	National implementation of EU Marine Strategy Framework and EU Natura2000;
Singapore	Integrated Urban Coastal Management Framework;
Spain	Law on Natural Heritage and Biodiversity; Law on the Protection of the Marine Environment; Law 22/1988, on Coasts; Law on Sustainable Fisheries and Fisheries' research; And corresponding Royal Decrees;
UAE	Federal Law (No 23/ 1999) – on living aquatic resources; Federal Law (No 24/ 1999) – Protection and Development of the Environment;

In their efforts to conserve and sustainably manage marine biodiversity, nearly all participating countries have designated ecologically sensitive areas as Marine Protected Areas (MPAs). Table 4.2 shows the total area (in sq km) assigned as MPAs by the participating countries. Note that, MPAs have different categories that are defined by the levels of restrictions and conservation objectives. For instance, 'No-take Zones' correspond to MPAs where all extractive activities are prohibited but recreational and tourism activities are allowed, 'Multiple-use MPAs' correspond to areas where a range of fishing, tourism, and recreational, activities are allowed but in a sustainable manner, 'Marine Sanctuaries' correspond to areas where certain extractive activities may be restricted or prohibited to protect specific species or habitats, etc. Table 4.2 does not make a distinction between the different categories of MPAs and provides the total area covered by all types of MPAs. The MPA coverage is expected to continue to grow in the future as nearly all G20 members and invited countries recently adopted the Kunming-Montreal Global Biodiversity Framework under the Convention on Biological Diversity (also discussed in Section 4.2).

Table 4.2: Total MPA coverage in G20 members and invited countries. Data collated from voluntary responses to the Technical Study questionnaire (Annex 1) and secondary sources.

Country	Total MPA Coverage (sq km)		Country	Total MPA Coverage (sq km)
G20 Members			G20 Members	

Argentina	127,455[48]
Australia	3,276,764
Brazil	985,042[49]
Canada	842,821
China	48,126[51]
EU	604,104
France	3,401,267
Germany	10,392**
India	8,717
Indonesia	235,622[54]
Guest Countries	
Bangladesh	7,362
Denmark	27,700
Egypt	11,716[58]
Mauritius	650,140
Netherlands	17,248[59]

Italy	2,289
Japan	594,000
Mexico	649,587
ROK	7,979[50]
Russia	171,392[52]
Saudi Arabia	5,495[53]
South Africa	58,825
Türkiye	11,718
UK	338,545
USA	1,636,523[55]
Guest Countries	
Nigeria	31[56]
Oman	2,101[57]
Singapore	0
Spain	132,064
UAE	6,947

4.2 International Initiatives

At the global level, there are several important conventions and multilateral partnerships on biodiversity conservation, in general, and on coastal and marine ecosystems, in particular. Some of the most notable initiatives include the United Nations Convention on Biological Diversity (CBD), the Ramsar Convention on Wetlands, the Convention on the Conservation of Migratory Species of Wild Animals (CMS), the International Coral Reef Initiative (ICRI), and the International Partnership for Blue Carbon. Many of the G20 members and invited countries are parties to these conventions and initiatives which indicates their commitment towards international cooperation for conservation of coastal and marine ecosystems and biodiversity (see Figure 4.3).

The Ramsar Convention on Wetlands is the oldest of all the initiatives mentioned above. Signed in 1971, the Ramsar Convention provides a framework to strengthen international cooperation for the conservation and sustainable management of wetlands.

[48] "Argentina", Protected Planet. Accessed on 18 July 2023. https://www.protectedplanet.net/country/ARG
[49] "Brazil", Protected Planet. Accessed on 18 July 2023. https://www.protectedplanet.net/country/BRA
[50] "Republic of Korea", Protected Planet. Accessed on 18 July 2023. https://www.protectedplanet.net/country/KOR
[51] "China", Protected Planet. Accessed on 18 July 2023. https://www.protectedplanet.net/country/CHN
[52] "Russia", Protected Planet. Accessed on 18 July 2023. https://www.protectedplanet.net/country/RUS
[53] "Saudi Arabia", Protected Planet. Accessed on 18 July 2023. https://www.protectedplanet.net/country/SAU
[54] White, A., Rudyanto, Agung, M.F., Minarputri, N., Lestari, A.P., Wen, W., Fajariyanto, Y., Green, A. and Tighe, S. Marine Protected Area Networks in Indonesia: Progress, Lessons and a Network Design Case Study Covering Six Eastern Provinces. Coastal Management Vol. 49, No. 6, 2021. https://doi.org/10.1080/08920753.2021.1967560
[55] "United States of America", Protected Planet. Accessed on 18 July 2023. https://www.protectedplanet.net/country/USA
[56] "Nigeria", Protected Planet. Accessed on 18 July 2023. https://www.protectedplanet.net/country/NGA
[57] "Oman", Protected Planet. Accessed on 18 July 2023. https://www.protectedplanet.net/country/OMN
[58] "Egypt", Protected Planet. Accessed on 18 July 2023. https://www.protectedplanet.net/country/EGY
[59] "Netherlands", Protected Planet. Accessed on 18 July 2023. https://www.protectedplanet.net/country/NLD

18 of the 20 G20 members and 9 of the 10 invited countries are parties to the Ramsar Convention. Under the convention, the parties are encouraged to designate wetlands of high ecological, cultural and socio-economic value as 'Ramsar sites' which must be managed sustainably while also taking into account the needs and aspirations of the local communities. Currently, there are over 2400 Ramsar sites across the world, covering a total area of over 2.5 million square kilometres. Over 970 Ramsar sites are located in the G20 member countries and over 200 are located in the invited countries.

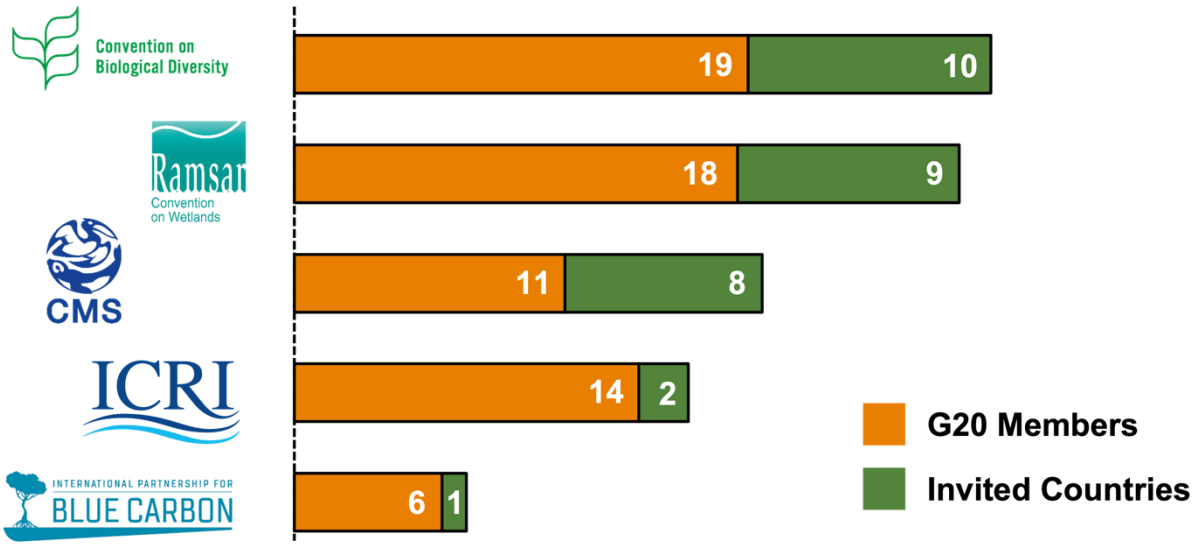

Figure 4.3: Participation of G20 members and invited countries in international initiatives on the protection, conservation, and restoration of coastal and marine ecosystems.

The Convention on the Conservation of Migratory Species of Wild Animals (CMS) (or the Bonn Convention) is a global treaty that aims to conserve migratory species and their habitats. Recognising that the conservation of migratory species requires international cooperation, the convention was signed in 1979 and entered into force in 1983. The convention is particularly relevant for the protection of marine species that often cross national maritime boundaries. In this context, several initiatives have been taken for marine migratory species, such as the Memorandum of Understanding on the Conservation of Migratory Sharks, Memorandum of Understanding on the Conservation of Dugongs, and the Indian Ocean South-East Asian (IOSEA) Marine Turtle Memorandum of Understanding. 11 of the 20 G20 members and 8 of the 10 invited countries are parties to CMS.

The Convention on Biological Diversity (CBD) is another international treaty that has played a critical role in shaping national and international policies on biodiversity conservation and sustainable development over the last three decades. The convention was opened for signature at the Rio Earth Summit on 05 June 1992 and entered into force on 29 December 1993. 19 of the 20 G20 members and 10 of the 10 invited countries are party to the CBD. As a part of their commitments under the CBD, many G20 members and invited countries have developed National Biodiversity Strategies which were also highlighted earlier. Over the years, CBD has led to the adoption of other international initiatives such as the International Coral Reef Initiative, the UN Decade on Biodiversity, Nagoya Protocol on Access and Benefit-sharing, etc. In 2022, at the fifteenth meeting of the Conference of Parties (COP15), the parties adopted the Kunming-Montreal Global

Biodiversity Framework (GBF) which outlines four overarching goals for 2050 and 23 ambitious targets for 2030.

Recognising the unparalleled ecosystem services provided by coral reefs and the need to address their fragility towards contemporary threats emerging from climate change and marine pollution, the International Coral Reef Initiative was first announced in 1994 at the First Conference of the Parties of the Convention on Biological Diversity. The founding members included eight countries: Australia, France, Japan, Jamaica, the Philippines, Sweden, the UK, and the USA. Since then initiative has grown significantly to comprise 90 members, including national governments, non-governmental organisations, private corporations, and international organisations. 14 of the 20 G20 members and 2 of the 10 invited countries are also part of the initiative. The initiative utilises a combination of high-level meetings, events, publications and reports to create awareness about the challenges facing coral reef systems across the world, facilitate exchange of best practices, and build local capacities to reverse and prevent further degradation of coral reefs.

The International Partnership for Blue Carbon (IPBC) is the most recent initiative of the ones mentioned above. Launched in 2015 at COP21 of the UNFCCC in Paris, the partnership now comprises 54 partners including national governments, non-governmental organisations, research organisations, and international/ intergovernmental organisations. 6 of the 20 G20 members and 1 of the 10 invited countries are also involved in the partnership. The IPBC aims to provide a forum for its members to "connect, share and collaborate to build solutions, take actions and benefit from the experience and expertise of the global community".

In addition to the conventions and initiatives mentioned above, several G20 members are also parties to some regional initiatives on coastal and marine biodiversity and ecosystems conservation such as the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (also known as the Barcelona Convention).

5 MARINE SPATIAL PLANNING FOR A SUSTAINABLE AND RESILIENT BLUE ECONOMY

As our ocean spaces are increasingly being used, with multiple spatial conflicts and a not yet fully realised potential for synergies and coexistence among uses of the oceans, they face numerous, often cumulative, threats from pollution, overfishing, habitat destruction, and climate change. Efforts to implement effective sectoral management of ocean-based human activities and address issues such as climate change are necessary but insufficient for achieving a Blue Economy. Integrated Ocean Management (IOM) is essential. It considers multiple uses and pressures simultaneously and helps reconcile competing uses with the objective of ensuring the sustainability of societies and marine ecosystems. There are, however, still many challenges relating to the implementation of existing governance frameworks, including knowledge and capacity shortages, incomplete legislation, a lack of enforcement, poor coordination, and no overarching mandate or mechanisms to harmonise conflicting mandates among ministries.[60] Another set of challenges was identified by UNESCO-IOC (2021).[61] They are grouped according to four main causes: fragmentation, capacity and awareness, uncertainties, and scale issues (Figure 5.1).

The goal of IOM is to support a "sustainable ocean economy" or "the Blue Economy". The functions of IOM include promoting environmentally sound economic development,

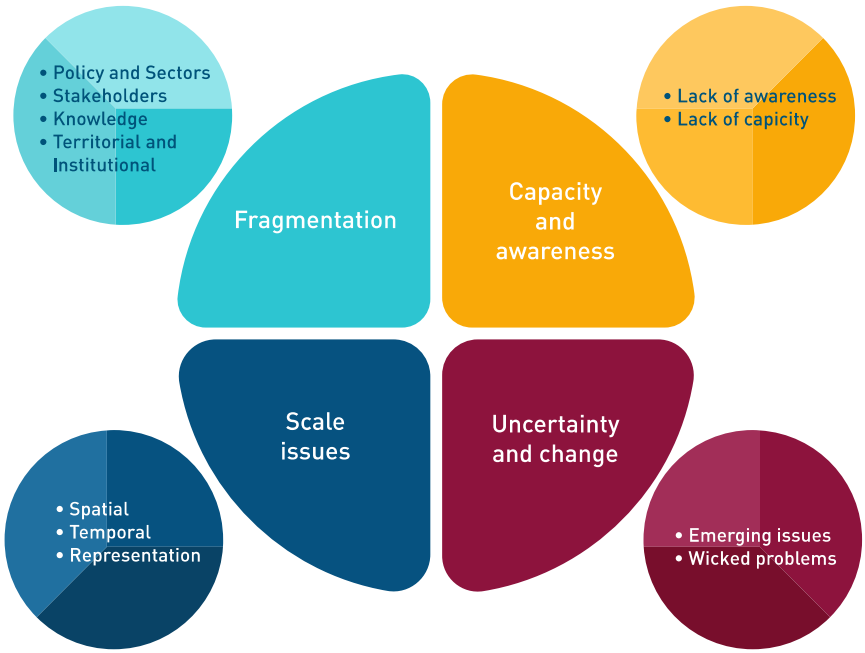

Figure 5.1: Overview of key challenges for ocean governance (Source: UNESCO-IOC, 2021)

[60] Lubchenco, J. and P. M. Haugan (eds.). 2023. *The Blue Compendium: From Knowledge to Action for a Sustainable Ocean Economy*. Springer: Cham, Switzerland.
[61] UNESCO-IOC. 2021. *MSPglobal Policy Brief: Ocean Governance and Marine Spatial Planning*. Paris: UNESCO. (IOC Policy Brief no 5).

protecting coastal and marine habitats and biodiversity, providing ecosystem services, and balancing and deconflicting interests through spatial planning.[62]

Management of the coastal and marine space presents unique challenges – activities occurring within the maritime zones of a country or along its coastline, impact and are also affected by activities occurring in the hinterland of the country or even thousands of miles away on the shores of a different country. The interconnectedness of the ocean and interdependencies of maritime and hinterland activities necessitate that all maritime exploration, exploitation, development, and conservation activities take a holistic approach towards planning, considering the environmental, socio-economic, and trans-boundary impacts.

As Marine Spatial Planning (MSP) emerges around the world as a practical tool for promoting a more rational use of the ocean, it could also play a significant role in promoting the rapid and environmentally sound development of ocean-based activities and growth of the Blue Economy.

5.1 Marine Spatial Planning as an Enabler for the Blue Economy

While the concept of MSP is relatively new and incorporates many not-so-well-defined elements, it serves as a tool to facilitate the transition towards more sustainable and resilient maritime activities that contribute to the 'blueing' of the ocean economy. During the past 105years, MSP has become increasingly recognized as a crucial process in making integrated management in the marine environment a reality, either in the form of integrated coastal and ocean management or more recently ecosystem-based, sea use management. Marine spatial planning is a process that allows the allocation of space in a more effective, efficient, and equitable manner. The problem with the current practice of allocating space in the marine environment is that it is done on a single-sector basis, mainly without a plan-based approach and with little or no consideration of objectives from other uses or conservation requirements that may be conflicting or compatible. The huge demand for space, together with the lack of an integrated approach that pays attention to the heterogeneous characteristics of ocean space, leads to conflicts among uses, and between human use and the natural environment.

Marine Spatial Planning can be defined as a "*public process of analysing and allocating the spatial and temporal distribution of human activities to achieve ecological, economic and social objectives that are usually specified through a political process*".[63] Article 3 of the EU Directive 2014/89/EU defines it as "*a process by which the relevant Member State's authorities analyse and organise human activities in marine areas to achieve ecological, economic and social objectives*".[64]

[62] Lubchenco, J. and P. M. Haugan (eds.). 2023. *The Blue Compendium: From Knowledge to Action for a Sustainable Ocean Economy*. Springer: Cham, Switzerland.
[63] UNESCO-IOC. 2009. *Marine Spatial Planning: A step-by-step approach toward ecosystem-based management*. Intergovernmental Oceanographic Commission and Man and the Biosphere Programme. IOC Manual and Guides, No. 53, ICAM Dossier No. 6 Paris: UNESCO.
[64] European Parliament. 2014. Directive 2014/89/EU of the European Parliament and of the Council of 23 July 2014 establishing a framework for maritime spatial planning.

More broadly, MSP is considered to be a practical way to create and establish a more rational organisation of the use of marine space and the interactions between its uses, to balance demands for development with the need to protect marine ecosystems, and to achieve social and economic objectives in an open and planned way. It aims to "*create and establish a more rational organisation of the use of marine space and the interactions between its uses, to balance demands for development with the need to protect the environment, and to achieve social and economic objectives in an open and planned way. An agreed plan should provide a firm basis for rational and consistent decisions on licence applications, and allow users of the sea to make future decisions with greater knowledge and confidence*".[65]

MSP has many objectives, many of which can be found in a single MSP intervention. The most common objectives of MSP are to:

- secure planned use of marine space, not the ad-hoc solutions that are dominant today;
- mitigate multiple conflicts among sea space users;
- enable strategic overview of the hitherto coastal and marine development;
- help assess the cumulative impacts of projects and policies in marine environment);
- enable government, industry and conservationists to work together to identify suitable locations for development and uses, and to identify sites where important assets need safeguarding and where conservation should take precedence;
- increase integrated, rather than sectoral management;
- inform industry of appropriate development sites and to enable more effective forward planning;
- integrate the interests of different stakeholders; etc.
- secure planned use of marine space, not the ad-hoc solutions that are dominant today

The following basic principles are applied to MSP:

- Ecosystem-Based Approach: Plan development needs to address the land, water and living resources in an integrated manner, including humans and their institutions in a way to promote conservation and use in an equitable way. This can be considered as the guiding principle for MSP.
- Adaptive Approach: Policies, plans and programmes are identified on the basis of the best available knowledge, and are then implemented, monitored, periodically evaluated and improved based on evaluation results.
- Multi-scale Approach: Multi-scale approach, combines top-down and bottom-up perspectives. MSP can be prepared on different scales: regional; sub-regional by addressing transboundary MSP issues; national, with particular reference to the territorial sea; sub-national; and local scales, at all levels addressing priority areas.
- Integration: MSP is not dealing only with the Blue Economy. Environmental, social and governance aspects have to be equally taken into consideration to pursue sustainability goals. In addition, integration among sectors, administrations and technical agencies at different levels as well as integration between land-based

[65] DEFRA. 2006. *A Marine Bill*. A Consultation Document. London: UK House of Commons.

and marine planning is essential to harmonise and ensure coherence among parts of the same ecosystem, interacting with each other in different ways.

- Land-sea interactions: Defined as "*interactions in which land-based natural phenomena or human activities have an influence or an impact on the marine environment, resources and activities and vice versa interactions in which marine natural phenomena or human activities have an influence or an impact on the terrestrial environment, resources and activities*".[66]
- Four dimensions of MSP: MSP operates in three spatial dimensions, taking in consideration maritime uses and related conflicts operating on the: ocean surface, water column and seabed. Time can be taken into account as a fourth dimension.
- MSP is knowledge-based: MSP must rely on high-quality data, focusing on key relevant information.
- Suitability and spatial efficiency: Improving the sustainability of the use of marine resources (including marine space), minimises conflicts among uses (including nature protection) and exploits possible synergies.
- Connectivity: MSP does not only focus on proper and efficient spatial allocation of maritime uses, but also deals with connectivity. Improved connections aim to generate social, economic, environmental and governance benefits.
- Cross-border cooperation: Although MSP can be seen primarily as a country-based process, cross-border cooperation is essential to ensure the MSP plans are coherent and coordinated across the coastal zones and the marine regions.

Expected benefits of MSP are numerous, namely:

- Increased horizontal and vertical coordination between administrations and among different sectors using a single process (MSP) to balance the development of a range of maritime activities.
- Reduction of conflicts and exploitation of synergies among different uses of the marine space.
- Contribution to equitable access to marine resources.
- Increased stakeholder involvement, public participation and information sharing.
- Encouragement of investment, by instilling predictability, transparency and clearer rules.
- Improved protection of the environment, through early identification and reduction of impacts as well as promotion of opportunities for multiple use of the same marine space.
- Identification of (spatial) measures that can support the achievement of the Good Environmental Status of the marine ecosystems.
- Improve protection of cultural heritage and preservation of intangible values of the sea.
- MSP can provide a framework that facilitates the sustainable development of different economic activities, therefore helping to enhance income and employment.
- MSP can help to ensure that maximum benefits are derived from the use of the sea by encouraging activities to take place where they bring most value and do not devalue other activities.

[66] Ramieri, E., Bocci, M. and M. Marković. ND. *Land Sea Interactions in the framework of ICZM and MSP*. Split: PAP/RAC.

- MSP can reduce costs of information, regulation, planning and decision-making.

Over the past 15 years, MSP has gained considerable importance all around the world. About 70 countries/territories have undertaken MSP initiatives, ranging from early stages (new authority, new funding arrangements) to plan revisions and adaptation (Figure 5.2).

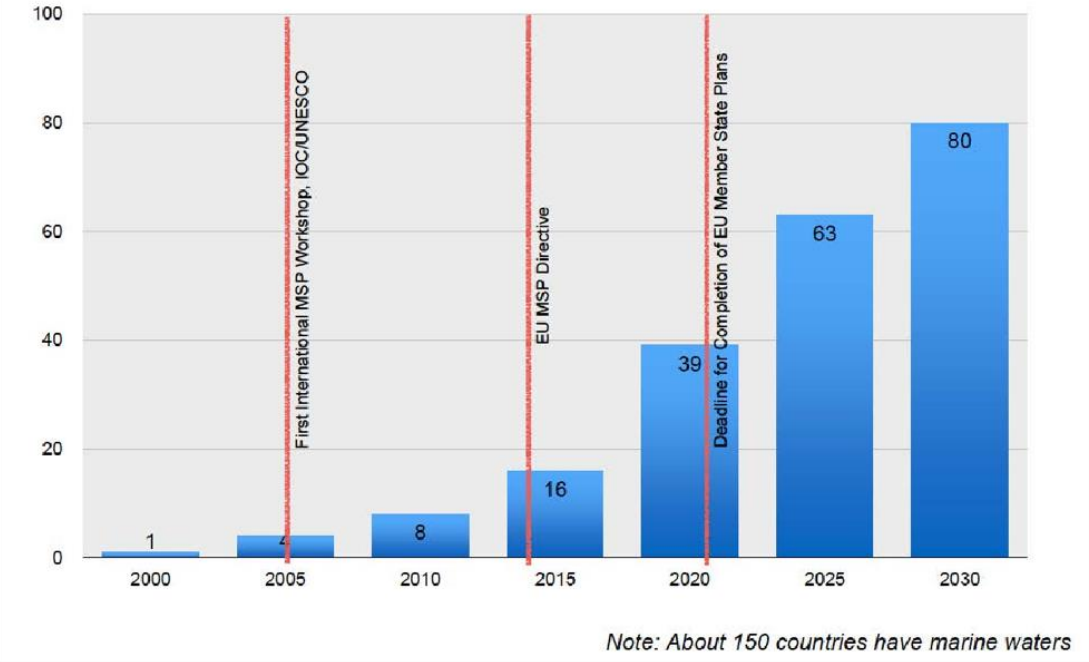

Figure 5.2: Estimated cumulative number of countries engaged in MSP.
Source: GEF LME: LEARN. 2018. *Marine Spatial Planning Toolkit*. Paris: IOC/UNESCO.

Although the benefits of MSP may offer a sufficient set of justifications to start an MSP process, particularly in the transboundary context (MSP involving several countries), current experience indicates that it is important to define a concrete set of motivations and drivers for a given MSP process. These should be clear enough without any detailed stocktake and/or mapping exercise, which is part of the MSP process itself. Table 5.1 gives examples of drivers. The examples include cases from several G20 members as well.

Blue Economy is the concept where the ocean is considered a development space. MSP is increasingly gaining traction as a powerful instrument to put 'ocean space' on the sustainable development agenda and provide a breeding ground for new development paths towards a sustainable Blue Economy. MSP brings together different stakeholders, such as industry, government, conservation and recreation, and enables them to jointly make thoughtful decisions about how to allocate space among competing economic activities while protecting marine ecosystems. MSP works across sectors and national borders to encourage investments. It does so by creating more transparent rules and a more predictable investment climate. At the same time, it aims to ensure that human activities at sea do not further jeopardise the health of our oceans and seas. Economic benefits of MSP are many, including:

- Creation of greater certainty to the private sector when it plans new investments, often with a 30-year lifetime;
- Identification of compatible uses within the same area for development;
- Reduction of conflicts among incompatible uses and between uses and nature;
- Streamlined permitting process; and
- Promotion of the efficient use of resources and space.

Table 5.1: Examples showing specific drivers for MSP.

CASE	COUTRIES	DRIVER(S)
CTI-CFF	Indonesia, Malaysia, Papua New Guinea, Philippines, Solomon Islands, Timor Leste	Reversing degradation of coral reefs, ensuring food security through improved fisheries management, addressing climate change
Xiamen MFZ	China (states within China)	Sea-use conflicts, marine environmental degradation, lack of institutional coordination
Western Baltic Sea	Latvia, Estonia, Lithuania	Small sea space with many different maritime uses and emergence of offshore wind industry
Wider Baltic Sea	Germany, Sweden, Finland, Latvia, Lithuania, Estonia, Poland, Denmark, Russia	Grey areas with disputed country borders in busy areas, emergence of autonomous shipping
North Sea	UK, Germany, Netherlands, Belgium, Norway, Denmark, Sweden	Establishment of super grid, joint approach to offshore wind energy production
Adriatic Sea	Italy, Slovenia, Croatia, Macedonia, Albania	Small busy sea space shared by many countries
Black Sea	Bulgaria, Romania	Joint approach Bulgaria & Romania necessary to shift old shipping lane to comply to new needs
Great Barrier Reef	Australia (states within Australia)	Reversing degradation of coral reefs
All EU member States	23 coastal EU member States	Legal obligation based on national legislation and coherence of national MSP plans under MSP directive

Source: GEF LME: LEARN. 2018. *Marine Spatial Planning Toolkit*. Paris: IOC/UNESCO.

The European Commission and UNESCO's Intergovernmental Oceanographic Commission (IOC) jointly launched the MSPglobal program to support the effective implementation of marine spatial plans worldwide. Planning for coastal and marine areas, spanning coastal to open-ocean regions, is being developed worldwide by several nations to foster sustainable coastal and Ocean management and governance. The International Union for the Conservation and Nature (IUCN) has given its commitment to support the 'Great Blue Wall Initiative', a regionally connected network to develop a regenerative Blue Economy. On similar lines, the Indian Ocean Rim Association (IORA), an intergovernmental organisation, was established in 1997 and India is a member of IORA along with 22 other countries. One of the priorities and focus areas of IORA is networking and promoting the 'Blue Economy'.

5.2 G20 Members' Initiatives to Promote MSP: Regional and National Strategies, Policies, and Plans

The G20 countries have a special responsibility towards the oceans, being collectively responsible for 45 percent of the world's coastlines and over 21 percent of Exclusive Economic Zones (EEZs). Recognizing the importance of MSP in achieving effective and integrated ocean governance, G20 members have taken various initiatives to promote MSP at national and international levels. Table 5.2 shows the extent of the G20 countries' initiatives to implement the MSP process (more detailed presentation is in Annex 5).

Table 5.2: G20 members' MSP initiatives

COUNTRY	LEGAL FRAMEWORK	PLANS	TECHNICAL GUIDES
Argentina	X	X	X
Australia	X	X	X
Brazil		X	
Canada	X	X	X
China	X	X	X
European Union	X		X
France	X	X	X
Germany	X	X	X
India		X	X
Indonesia	X	X	X
Italy	X	X	X
Japan	X		
Mexico	X	X	
Republic of Korea	X	X	
Russia			
Saudi Arabia			
South Africa	X	X	
Türkiye	X	X	
United Kingdom	X	X	X
United States	X	X	X

Source: Technical Study questionnaire and secondary sources

MSP is, generally, widely accepted among G20 countries as a tool to facilitate and make an effective transition to the Blue Economy. Most of them have adopted a legal framework for MSP, but it is not uniform. Some countries have adopted clearly defined MSP legislation, in the form of an act, strategy or a policy, while others have adopted more comprehensive ocean-related acts, policies or strategies, within which the MSP is being regulated. Legal framework for MSP is an important prerequisite for the MSP, because a planning initiative when embedded in the national legal framework can be more effective.

The EU introduced the Maritime Spatial Planning Directive in 2014, which requires member states to develop and implement Maritime Spatial Planning frameworks. The directive aims to achieve sustainable use of marine resources, promote economic development, and preserve marine ecosystems.[67] The EU's Maritime Spatial Planning Directive could be considered, as appropriate, in developing Maritime Spatial Planning policies and frameworks, in accordance with national circumstances and policy priorities.

Canada has made significant efforts to promote MSP through its Oceans Protection Plan (OPP). The OPP focuses on improving marine safety, protecting ecosystems, and managing ocean activities. MSP plays a key role in the OPP by integrating multiple sectors, such as shipping, fishing, energy, and conservation, to enhance coordination and spatial management.[68] Through this initiative, Canada aims to ensure the sustainable use of marine resources and protect marine biodiversity.

Some of the key active endeavours and policies in the maritime sector of India include the Shipbuilding Financial Assistance Policy 2015 (to promote domestic shipbuilding), Maritime India Vision 2030 (under the Ministry of Ports, Shipping and Waterways), the Pradhan Mantri Matsya Sampada Yojana 2020 (for the fisheries sector), and Sagar Manthan: The Mercantile Maritime Domain Awareness Centre, to name a few. Under the aegis of the Ministry of Ports, Shipping, and Waterways, the Maritime India Vision 2030 aims to expand India‘s maritime trade sector and significantly enhance the cargo handling capacity of Indian ports. Amongst its priorities are the creation of world-class greenfield ’smart‘ ports, modernising existing ports, enhancing hinterland connectivity, and promoting public-private partnerships. It offers potential opportunities for utilising Marine Spatial Planning as a tool to realise India‘s ambition of becoming a major Blue Economy in the world. Similarly, in 2021, the Government of India put out the draft “National Policy for India’s Blue Economy”, which highlights the need to adopt Coastal and Marine Spatial Planning (CMSP).

Australia has implemented the Integrated Marine Observing System (IMOS), which supports MSP by providing valuable data and information for decision-making. IMOS collects and integrates data from various sources, including sensors, satellite observations, and research cruises. This information assists in understanding marine ecosystems, identifying potential conflicts, and informing spatial planning processes. Australia's IMOS contributes to evidence-based MSP and supports sustainable management of its coastal and marine areas.

Most of the G20 member states have developed various forms of marine spatial plans, which are covering either the entire territorial waters’ area or are extended over to the Exclusive Economic Zone, or plans have been prepared for sub-national regions. The extensive list of these plans is provided in the Annex 5. The G20 members' initiatives to promote MSP offer several potential benefits. These include:

- Improved coordination and integration of sectors, leading to more sustainable and efficient use of marine resources.

[67] European Parliament. 2014. Directive 2014/89/EU of the European Parliament and of the Council of 23 July 2014 establishing a framework for maritime spatial planning.
[68] Government of Canada. 2021. Oceans Protection Plan. Retrieved from https://tc.canada.ca/en/campaigns/oceans-protection-plan

- Enhanced stakeholder engagement and participatory decision-making, ensuring social equity and avoiding conflicts.
- Protection and conservation of marine ecosystems and biodiversity through ecosystem-based management approaches.
- Promotion of sustainable economic development, including sectors such as fisheries, tourism, energy, and transportation.
- Strengthened maritime safety and risk management through better spatial planning and coordination of activities.

To conclude, most G20 members have recognised the importance of MSP as a tool for effective and integrated ocean governance. These efforts contribute to the sustainable use of marine resources, the protection of marine ecosystems, and socioeconomic development. By adopting MSP as a strategic approach, most G20 members are taking steps towards ensuring the long-term health and prosperity of our oceans and coastal communities.

6 THE WAY FORWARD

The analysis of questionnaire responses submitted by G20 members, complemented by a review of relevant documents, as well as discussions during the ECSWG meetings and the Ocean20 Dialogue, identified a number of opportunities to speed up the transition to the Blue Economy in G20 countries. This chapter outlines a list of actions and recommendations for the G20 members to further the case of Blue Economy including sustainably using marine and coastal resources, achieving economic growth for concerned population groups, and adapting to the impacts of climate change. The chapter will be divided into two groups of proposals: (1) recommendations to assist countries in their transition to Blue Economy; and (2) recommendations for the three sub-priorities: addressing marine litter for a sustainable Blue Economy, conservation and restoration of coastal and marine ecosystems, and mainstreaming Marine Spatial Planning for a sustainable and resilient Blue Economy.

6.1 Brief Overview of the Potential for Blue Economy

While it is impossible to predict precisely how the Blue Economy will look like in 30-40 years from now on, there has been an attempt to describe the "optimistic" scenario that contains all crucial Blue Economy elements (Figure 6.1).[69]

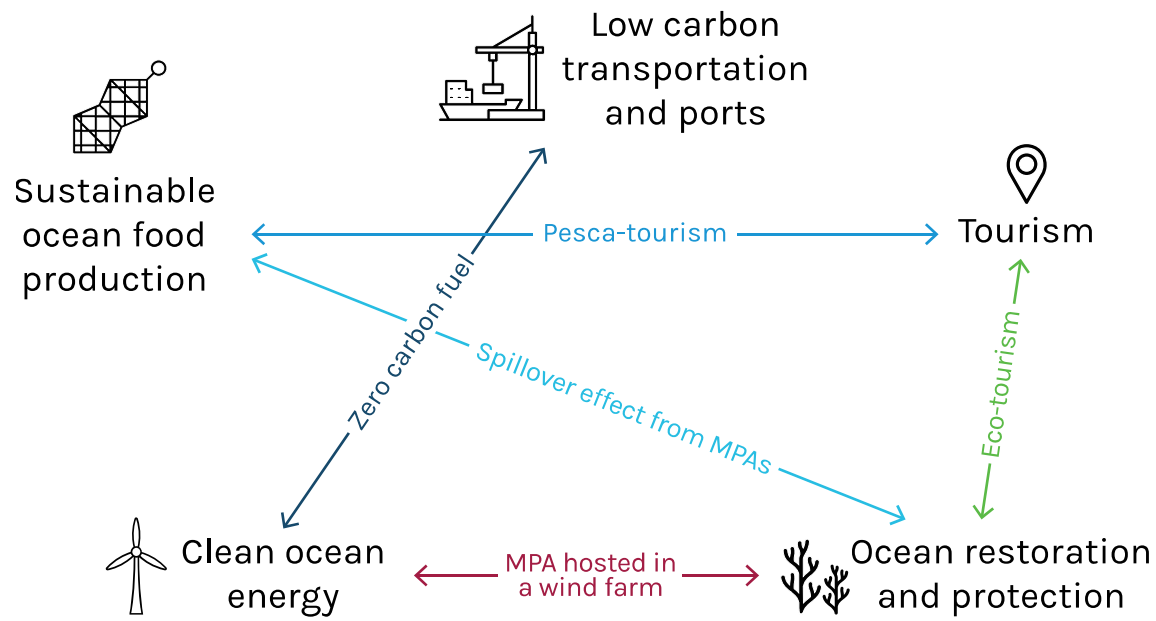

Figure 6.1: The new contours of a sustainable ocean economy
Source: Stuchtey, M.R., Vincent, A., Merkl, A., Bucher, M., 2020. *Ocean Solutions That Benefit People, Nature and the Economy*. World Resources Institute, Washington, D.C.

[69] Stuchtey, M.R., Vincent, A., Merkl, A., Bucher, M., 2020. *Ocean Solutions That Benefit People, Nature and the Economy*. World Resources Institute, Washington, D.C.

The above scenario can bring enormous benefits for the coastal countries and, in particular, for local coastal communities. Stuchtey et al. (2020) have also estimated the benefits a sustainable ocean economy can bring (Figure 6.2).[70]

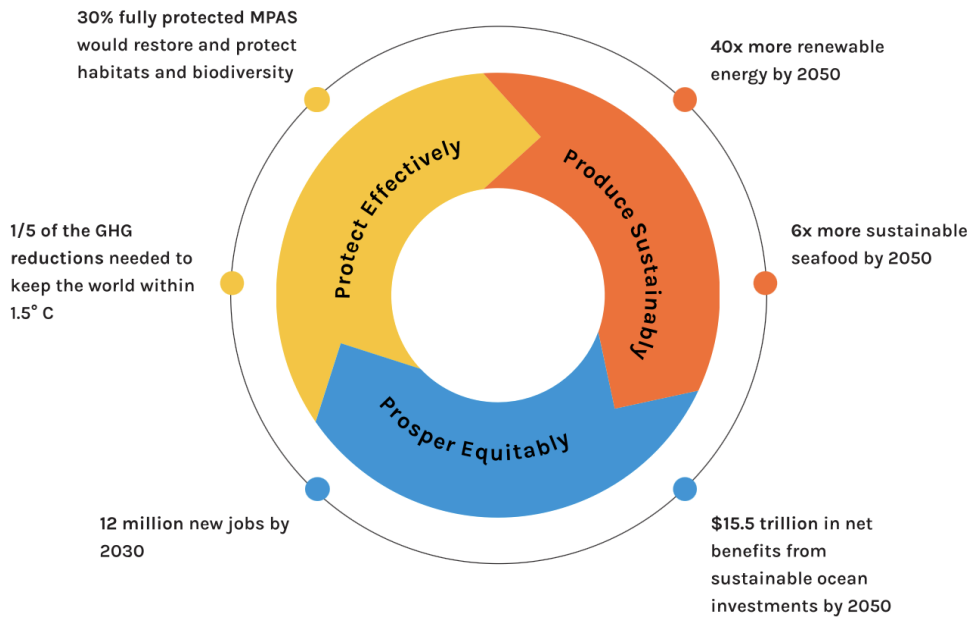

Figure 6.2: Sustainable ocean economy's wins for people, nature, and economy.
Source: Stuchtey, M.R., Vincent, A., Merkl, A., Bucher, M., 2020. *Ocean Solutions That Benefit People, Nature and the Economy*. World Resources Institute, Washington, D.C.

It is important to note that the Blue Economy potential may vary within each country depending on specific regional characteristics, local communities, and existing policies and infrastructure. However, since each one of them has unique characteristics, coastal resources, and priorities that influence the potential for the Blue Economy, assessing the specific opportunities and challenges in each G20 country would require a more detailed analysis and consideration of their unique circumstances, which is outside the scope of this study.

6.2 Accelerating the Transition to a Blue Economy

The first group of recommendations is aimed to assist countries in their efforts to transform their ocean economies into sustainable and resilient Blue Economies. These efforts should be implemented through three groups of activities:

1. Improving sectoral integration and inter-institutional collaboration may include:

    a. Establishing multi-stakeholder platforms: Create inclusive platforms that bring together government agencies, industry representatives, academia, civil society organisations, and local communities. These platforms can serve as forums for dialogue, collaboration, and decision-making, fostering a shared understanding of the Blue Economy and enabling stakeholders to identify a common vision and work together towards common goals.

[70] Ibid

b. Strengthening policy and regulatory frameworks: Develop robust policy and regulatory frameworks that support the integration of various sectors and promote sustainable practices in the Blue Economy. These frameworks should provide clarity on roles, responsibilities, and processes, while also considering environmental and social considerations. Collaboration among different government agencies is crucial to align policies and regulations across sectors and ensure effective implementation.
c. Enhancing data sharing and transparency: Improve the sharing of data and information among stakeholders in the Blue Economy. This includes establishing mechanisms for data collection, management, and dissemination, while ensuring data privacy and security. Open data initiatives and digital platforms can facilitate transparent and accessible information sharing, enabling better decision-making and promoting collaboration.
d. Encouraging cross-sectoral partnerships: Foster partnerships and collaborations among different sectors of the Blue Economy. For example, collaborations between fisheries, tourism, renewable energy, and conservation sectors can lead to synergistic approaches that balance economic growth with environmental protection. Public-private partnerships can also play a significant role in leveraging resources and expertise for sustainable development.
e. Promoting capacity building and knowledge sharing: Invest in capacity-building initiatives and knowledge-sharing platforms to enhance the skills and expertise of individuals and organisations in the Blue Economy. This can include training programs, workshops, and networking events that facilitate the exchange of best practices, lessons learned, and innovative approaches. Collaboration with academic institutions and research organisations can help generate and disseminate knowledge to inform decision-making and foster continuous learning.
f. Strengthening international cooperation: Enhance international collaboration and cooperation in the Blue Economy. This includes sharing experiences, lessons, and best practices across countries, and jointly addressing common challenges such as marine pollution, climate change impacts, and illegal, unreported, and unregulated fishing. International organisations and agreements, such as the United Nations, regional fisheries management organisations, and the Intergovernmental Oceanographic Commission, play a crucial role in facilitating coordination and collaboration among nations.

2. Increasing awareness among stakeholders on Blue Economy may include:

a. Educational campaigns: Develop and implement educational campaigns to raise public awareness about the importance of the Blue Economy and its impact on sustainable development. These campaigns can target schools, universities, communities, and the general public, using various mediums such as workshops, seminars, documentaries, and social media platforms to disseminate information.
b. Collaboration with media: Engage with media organisations to highlight success stories, challenges, and opportunities related to the Blue Economy.

Encourage journalists and content creators to feature stories and documentaries that showcase sustainable practices, innovative initiatives, and the importance of ocean conservation. Promote accurate and science-based reporting to ensure that the public receives reliable information.

c. Partnerships with non-governmental organizations (NGOs) and Civil Society: Collaborate with NGOs, environmental organisations, and civil society groups to amplify the message of the Blue Economy. Joint initiatives can include awareness-raising events, community-based projects, and advocacy campaigns. NGOs can also play a role in mobilising public support, conducting research, and advocating for sustainable policies and practices.
d. Engaging business and industry: Work with businesses and industry associations to promote sustainable practices within the Blue Economy. Encourage corporate social responsibility and support companies that adopt environmentally friendly approaches. Highlight the economic benefits of sustainable business practices and showcase successful examples of businesses that have integrated sustainability into their operations.
e. Involvement of local communities: Involve local communities in the decision-making processes related to the Blue Economy. Engage with coastal communities, indigenous groups, and traditional knowledge holders to understand their perspectives, involve them in sustainable development planning, and empower them as stewards of their local marine resources. Local ownership and participation can lead to greater awareness and support for the Blue Economy.
f. Collaboration with governments: Collaborate with governments to incorporate Blue Economy concepts into national policies, strategies, and development plans. Advocate for the inclusion of sustainable ocean management in national agendas, and support the development of regulations and incentives that promote responsible practices. Engaging policymakers and providing them with scientific evidence and best practices can contribute to informed decision-making.
g. International awareness campaigns: Support international awareness campaigns and events focused on the Blue Economy. Collaborate with international organizations such as the United Nations, regional bodies, and research institutions to organize conferences, workshops, and campaigns that highlight the importance of sustainable ocean management. These events can facilitate knowledge sharing, networking, and the exchange of best practices among countries.

3. Establish measurement and evaluation frameworks for the Blue Economy:

a. Develop comprehensive frameworks: The first step is to develop comprehensive frameworks that capture the various dimensions of the Blue Economy, including economic, social, and environmental aspects. These frameworks should incorporate both quantitative and qualitative indicators to assess the overall performance and sustainability of the blue economy.

b. Enhance data collection and analysis: Accurate and reliable data collection is crucial for measuring the Blue Economy. Efforts should be made to improve data collection systems, enhance data quality, and ensure data availability. This can be achieved through partnerships between governments, research institutions, and industry stakeholders. Additionally, advanced data analysis techniques, such as big data analytics and remote sensing technologies, can be employed to extract valuable insights and trends from large-scale data sets.
c. Explore the potential of integrating Natural Capital Accounting. Natural capital refers to the stock of natural resources and ecosystems that provide valuable goods and services. Integrating natural capital accounting could lead to a better understanding of the dependence of the Blue Economy on natural resources and helps assess the potential impacts and trade-offs associated with economic activities.
d. Emphasise social equity and inclusion: The measurement of the Blue Economy should also take into account social equity and inclusion. This involves considering the distribution of benefits and costs among different stakeholders, ensuring fair access to resources and opportunities, and addressing the needs and aspirations of marginalised groups. Social indicators, such as employment rates, income distribution, and community well-being, should be integrated into the measurement frameworks.
e. Promote international collaboration: The measurement of the Blue Economy requires international collaboration and knowledge sharing. Governments, international organisations, and research institutions should collaborate to develop standardised methodologies, share best practices, and promote capacity-building initiatives. International frameworks, such as the United Nations Sustainable Development Goals (SDGs), can serve as a common reference point for measuring and monitoring the Blue Economy at a global scale.
f. Foster innovation and technology: Advancements in technology and innovation can significantly contribute to the measurement of the Blue Economy. Emerging technologies, such as satellite imagery, remote sensing, and blockchain, can provide new tools for data collection, analysis, and transparency. Encouraging research and development in these areas can help overcome measurement challenges and improve the accuracy and timeliness of Blue Economy assessments.

In addition to the above, the G20 member states should continue the discussions on Blue Economy and consider making it a recurring agenda item for the G20 meetings. Also, the member states should consider the establishment of a 'Blue Economy Task-force' composed of the representatives from the Troika members, to encourage continued efforts and monitor the progress made under the Blue Economy agenda.

6.3 Specific Recommendations for the three Sub-priorities

6.3.1 Addressing Marine Litter for a Sustainable Blue Economy

As discussed in Chapter 3, marine litter poses a global challenge that requires a multi-faceted approach involving various stakeholders, including governments, industries,

communities, and individuals. Collaboration, awareness, and effective policies are key to addressing marine litter and achieving a sustainable Blue Economy. In this context some of the key recommendations and interventions for the G20 members at the national and regional levels are outlined below:

1. National-Level Recommendations:

    a. Implement effective waste management systems to prevent land-based litter from entering water bodies. This includes proper waste collection, recycling infrastructure, and public awareness campaigns.
    b. Encourage the development and implementation of extended producer responsibility (EPR) policies to hold producers accountable for the life cycle of their products, including proper disposal and recycling.
    c. Promote research and innovation for the development of eco-friendly packaging and materials, as well as sustainable alternative products that reduce marine litter.
    d. Strengthen enforcement of existing laws and regulations related to marine litter.
    e. Invest in educational programs and knowledge dissemination campaigns to raise awareness about the impacts of marine litter and promote responsible behaviour among citizens, businesses, and industries.

2. Regional-Level Recommendations:

    a. Establish regional collaborations and partnerships to share best practices, data, and resources for addressing marine litter effectively.
    b. Implement regional strategies for monitoring, assessing, and reducing marine litter, including regular surveys and clean-up efforts.
    c. Encourage cooperation among neighbouring countries to tackle transboundary marine litter issues and promote joint initiatives for waste management and pollution prevention.
    d. Foster regional initiatives to support research, technology development, and innovation in waste management, recycling, and circular economy practices.
    e. Coordinate efforts to address specific sources of marine litter, such as fishing gear, microplastics, or abandoned vessels, through targeted regulations, clean-up campaigns, and education programs.
    f. Play a leadership role in the negotiations under the Intergovernmental Negotiating Committee (INC) on the development of an international legally binding instrument to end plastic pollution, including in the marine environment, as per the UNEA Resolution 5/14.
    g. Accelerate efforts towards achieving the G20 Action Plan on Marine Litter (2017) and the Osaka Blue Ocean Vision (2019).

6.3.2 Conserving and Restoring Coastal and Marine Ecosystems for a Healthy Ocean

Protecting, conserving, and restoring coastal and marine ecosystems is essential for preserving the rich coastal and marine biodiversity and ensuring a sustainable Blue

Economy. Some specific recommendations for the G20 members at the national and regional levels are highlighted below for consideration, as per National circumstances and policy priorities:

1. National-Level Recommendations:

    a. Establish and enforce marine protected areas (MPAs) including through rigorous site-selection processes and clear management plans, ensuring representation of diverse ecosystems and species. MPAs should have adequate funding, monitoring systems, and community involvement.
    b. Invest in scientific research and monitoring programs to improve understanding of marine ecosystems, biodiversity, site-specific requirements, and the impacts of human activities, helping guide effective conservation actions.
    c. Strengthen regulations and enforcement mechanisms to prevent overfishing, destructive fishing practices, and illegal, unreported, and unregulated (IUU) fishing. Implement sustainable fisheries management practices, including science-based quotas and gear restrictions.
    d. Invest in habitat restoration projects, such as the restoration of coral reefs, seagrass beds, and mangrove forests. These projects can help enhance ecosystem resilience and provide valuable habitat for marine species.
    e. Promote sustainable coastal development practices, including coastal zoning, to protect critical habitats and maintain the integrity of coastal ecosystems.
    f. Develop and implement climate change adaptation and mitigation strategies specifically tailored to coastal and marine ecosystems, considering potential impacts such as sea-level rise, ocean acidification, and increased storm events.
    g. Encourage the use of sustainable ecosystem based approaches for coastal protection, such as the restoration of natural buffers like wetlands and dunes, instead of relying solely on hard infrastructure.

2. Regional-Level Recommendations:

    a. Foster regional cooperation and coordination to address shared challenges and promote integrated management of shared marine and coastal resources.
    b. Develop regional strategies for ecosystem-based management, considering the interconnectedness of marine ecosystems and the impacts of human activities on them.
    c. Facilitate knowledge exchange and capacity building among G20 countries to enhance understanding of coastal and marine ecosystems, their value, and effective conservation strategies.
    d. Collaborate on research and monitoring initiatives to gather comprehensive data on the state of coastal and marine ecosystems, enabling evidence-based decision-making and adaptive management.
    e. Foster partnerships with international organizations, NGOs, and private sector entities to leverage expertise and resources for large-scale conservation and restoration projects.

f. Promote sustainable and responsible ocean governance frameworks at the regional level, ensuring effective coordination and cooperation in managing shared resources and addressing cross-border challenges.
g. Support initiatives that encourage sustainable livelihoods and economic opportunities for coastal communities, such as sustainable fisheries, ecotourism, and community-based conservation projects.
h. Accelerate national and collaborative efforts towards achieving the mission, goals, and targets agreed under the Kunming-Montreal Global Biodiversity Framework of the United Nations Convention on Biological Diversity.
i. Strengthen G20 initiatives such as the Coral Research and Development Accelerator Platform (CORDAP) and global initiatives such as the UN Decade on Ecosystem Restoration to facilitate science-based conservation and restoration efforts for coastal and marine ecosystems.

6.3.3 Mainstreaming Marine Spatial Planning for a Sustainable Blue Economy

To utilise Marine Spatial Planning (MSP) as an instrument for the transition to a Blue Economy, the following steps can be considered:

1. Policy integration: Integrate MSP into national and regional policy frameworks as a key component of transitioning to a Blue Economy. Ensure that MSP is aligned with broader sustainable development goals and objectives. This integration should involve collaboration among relevant government agencies responsible for sectors such as fisheries, tourism, energy, transportation, and conservation.
2. Stakeholder engagement: Foster meaningful stakeholder engagement throughout the MSP process. Involve a wide range of stakeholders, including industry representatives, local communities, indigenous groups, environmental organisations, and academia. By incorporating diverse perspectives and local knowledge, MSP can be more inclusive, responsive, and successful in supporting the transition to a Blue Economy.
3. Data and information sharing: Enhance the collection, management, and sharing of spatial data and information relevant to MSP. This includes environmental data, socioeconomic data, cultural information, and traditional knowledge. Investing in data infrastructure, promoting open data principles, and utilising innovative technologies can facilitate data sharing and collaboration among stakeholders.
4. Ecosystem-based approach: Adopt an ecosystem-based approach in MSP, considering the ecological interconnections and functions of marine ecosystems. Promote the preservation and restoration of key habitats, biodiversity conservation, and the sustainable use of marine resources. MSP should strive to maintain the resilience and integrity of ecosystems, supporting the long-term sustainability of the Blue Economy.
5. Adaptive management: Implement adaptive management principles in MSP, allowing for ongoing monitoring, evaluation, and adjustment of plans and policies. Recognize that the Blue Economy is dynamic and subject to changes in environmental, social, and economic conditions. Regularly assess the effectiveness of MSP measures and adjust management strategies accordingly.
6. Capacity building: Invest in capacity building programs to enhance the knowledge and skills of practitioners, policymakers, and stakeholders involved in MSP. Offer

training opportunities, workshops, and educational programs to build understanding of MSP concepts, methodologies, and best practices. Strengthening institutional capacity at various levels will contribute to more effective and sustainable MSP implementation.

7. International cooperation: Foster international cooperation and knowledge exchange on MSP. Collaborate with other countries and regions to share experiences, lessons learned, and best practices in MSP. Consider participation in global platforms, such as the EU/UNESCO-IOC MSPglobal, to contribute to the development of international guidelines, standards, and frameworks for MSP implementation.
8. Monitoring and evaluation: Establish robust monitoring and evaluation mechanisms to assess the effectiveness of MSP in supporting the transition to a Blue Economy. Regularly monitor key indicators and evaluate the social, economic, and environmental outcomes of MSP. This information can inform adaptive management, guide policy revisions, and contribute to evidence-based decision-making.

With the implementation of the above recommendations, the MSP has the potential to serve as a powerful instrument for the transition to a Blue Economy and facilitate the sustainable and inclusive use of marine resources and support the transition to a Blue Economy. Through a holistic and collaborative approach, MSP can contribute to the long-term well-being of our oceans, coastal communities, and economies.

Annexes

Annex 1: Questionnaire shared with G20 members and guest countries

Questionnaire for Technical Study on
"Accelerating the Transition to a Sustainable and Resilient Blue Economy"

1. Name of country:

2. Approach to Blue Economy

2.1 National Policy/ Strategy

Do you have a national policy or strategy for Blue Economy? Please choose one.

☐Yes
Please provide the name of your national policy or strategy with a brief description here. Please attach any relevant document/ report or URL.
Name:

Brief description:

☐In preparation
Please provide the name of your national policy or strategy with a brief description here. Please attach any relevant document/ report or URL.
Name:

Brief description:

☐No

2.2 Measurement of the Blue Economy

Do you have a framework to estimate the size of your Blue Economy and its contribution to the National Economy (in terms of the total monetary value and a percentage of the national GDP)?

☐Yes
Please provide a brief description of your methodology/ framework to calculate the size of your Blue Economy. Also, indicate the value and percentage of the size of the Blue Economy. Please attach any relevant document/ report or URL.
Brief description:

☐In preparation
Please provide a brief description of the methodology/ framework being developed to calculate the size of your Blue Economy. Please attach any relevant document/ report or URL.
Brief description:

☐No

Blue Economy Sectors. Which maritime sectors of your national economy are considered a part of the 'Blue Economy'?

Please list the economic sectors here:

3. Conservation and Restoration of Coastal and Marine Ecosystems and the Blue Carbon Capacity

3.1 Policies/ Strategies/ Legislation

Do you have any national-level policies or legislation for the conservation and restoration of critical coastal and marine ecosystems and/ or biodiversity? Please choose one.

☐Yes
Please provide the names of all relevant policies/ strategies/ legislation along with a brief description of each. Please attach any relevant document/ report or URL.
Name(s):
(a)
(b)
…

Brief description:
(a)
(b)
…

☐In preparation
Please provide the names of all relevant policies/ strategies/ legislation that are being developed along with a brief description of each. Please attach any relevant document/ report or URL.
Name(s):

Brief description:

☐No

On an average, how much of your annual national budget is allocated for supporting activities for the conservation and restoration of coastal and marine ecosystems?

Please provide an average number over the last 5 years

3.2 Marine Protected Areas (MPAs)

How much of your coastal and marine area is designated as MPA?

Please list the MPAs in your country, their category, and size (in sq. km.). Also indicate the percentage of the total national territory designated as MPA.

(a)

(b)

...

Please highlight one or two examples of your most effective MPAs that have accomplished their conservation goals while allowing for sustainable economic utilisation.

(a)

(b)

3.3 Blue Carbon Potential

Have you estimated the carbon capture and sequestration capacity of your coastal and marine ecosystems?

☐Yes

Please provide the estimated carbon capture capacity and a brief description of the methodology/ framework used. Please attach any relevant document/ report or URL.

Brief description:

☐In preparation
Please provide a brief description of the methodology/ framework being developed. Please attach any relevant document/ report or URL.
Brief description:

☐No

4. Marine Spatial Planning (MSP)

Do you have any national-level policies and/ or legislation for Marine Spatial Planning? Please choose one.

☐Yes
Please provide the name of the MSP policy and/ or legislation along with a brief description. Please attach any relevant document/ report or URL.
Name:

Brief description:

☐In preparation
Please provide the name of the MSP policy and/ or legislation being developed along with a brief description. Please attach any relevant document/ report or URL.
Name:

Brief description:

☐No

Please highlight one or two examples of Blue Economy initiative(s) (national or sub-national level) in your country where MSP was successfully utilised as a tool to meet the economic, social, and environmental objectives.

(a)

(b)

Annex 2: G20 Members - Blue Economy strategic interventions

COUNTRY	TYPE OF INTERVENTION				
	BE STRATEGY	BE POLICY	BE PLAN	SECTORAL BE	OTHER
Argentina					
Australia	• Sustainable Ocean Plan (in preparation) • Roadmap for the development of Australia's blue economy until 2025 • Sustainable Oceans and Coasts National Strategy 2021-2030		• Australian Marine Park Management Plans	• National Marine Science Plan 2015-2025 • National Fisheries Plan 2022-30 • National Aquaculture Strategy 2017-27 • Blue Economy Cooperation Research Centre	• Guidelines for the ecologically sustainable management of fisheries • The Reef 2050 Plan • Nature Positive Plan 2022 • Strategy for Nature 2019-2030 • Threatened Species Action Plan 2022-2032 • National Waste Policy Action Plan 2019
Brazil		• National Policy for the Resources of the Sea (PNRM)		• National Maritime Policy (PMN) • 10th Sectorial Plan for Marine Resources (PSRM) (2020-2023),	• Interministerial Commission for Marine Resources (CIRM)
Canada	• Blue Economy Strategy (in preparation) • Blue Economy Regulatory Review				• Oceans Act
China		• Outline of the National Ocean Economic Development Plan • 12th , 13th and 14th Five-Year Plan for Ocean Economic Development			
European Union	• Blue Growth Strategy • Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on a new approach for a sustainable blue economy in the EU -				• Sustainable Blue Economy Partnership (SBEP)

COUNTRY	TYPE OF INTERVENTION				
	BE STRATEGY	BE POLICY	BE PLAN	SECTORAL BE	OTHER
	Transforming the EU's Blue Economy for a Sustainable Future • European Green Deal • Recovery Plan for Europe				
France	• Produce a document to bring the National Sea and Coastal Strategy 2 into line with the European "blue economy" roadmap • National Ocean Strategy				• Develop the observation capacities of the blue economy - reflection on the creation of a national observatory
Germany	• Marine Campaign (in preparation)			• National Master Plan for Maritime Technologies (planned) • National Port Concept for Sea and Inland Ports	
India		• Draft Blue Economy Policy Framework		• Project *Sagarmala* • Maritime India Vision 2030 (Ports and Shipping) • *Pradhan Mantri Matsya Sampada Yojna* (Fisheries Sector) • Deep Ocean Mission • Mission MISHTI	• National Accounting Framework for Blue Economy and Ocean Governance
Indonesia	• Blue Economy Development Framework for Indonesia's Economic Transformation • Indonesia's Blue Economy Roadmap	Blue Finance Policy Note			• Blue Finance Instruments Development Guideline • National Blue Agenda Actions Partnership • Law Number 32 of 2014
Italy	• National Strategy for the Circular Economy		• National Recovery and Resilience Plan (NRRP)		
Japan		Basic Plan on Ocean Policy		Programme at developing zero-emission ships by 2028	Japan Blue Economy Association
Mexico	• Implementation Strategy for a Sustainable Ocean Economy				

COUNTRY	TYPE OF INTERVENTION				
	BE STRATEGY	BE POLICY	BE PLAN	SECTORAL BE	OTHER
Russia	• Strategy for the development of maritime activities of the Russian Federation up to 2030 • Maritime Doctrine of the Russian Federation to the period up to 2030			• An integrated project "Marine biotechnologies" within our Strategy for the fisheries complex development of the Russian Federation up to 2030 • Concept Note for the development of hydrogen energy in the Russian Federation	Decree of the President of the Russian Federation on the fundamentals of the state policy of the Russian Federation in the Arctic up to 2035
Saudi Arabia					
South Africa	• Operation Phakisa - Oceans Economy Targets and strategy		The Oceans Economy Master Plan Framework and Strategy (commissioned)		
Republic of Korea					
Türkiye	Work on the preparation of a national strategy document for the blue economy has started. The name of the strategy is Blue Plan 2053				
United Kingdom	• Ocean Strategy through "Maritime 2050 – Navigating the Future • Delivering Scotland's Blue Economy Approach				
United States of America		• National Ocean Policy of 2018	• NOAA Blue Economy Strategic Plan 2021-2025		

Annex 3: Value of Blue Economy per member

Country	Latest value				Projected value		Employment	
	Year	Currency	Amount (GVA or GDP)	% of GDP	Year	Amount	Year	Number of employed
Argentina	2018	ARS	371 billion (GDP)				2018	205,000
Australia	2023	AUD	118.6 billion (GDP)[71]	3.8	2025	100 billion[72]	2023	462,000
Brasil	2018	R$	230,219 billion (GVA) 342,415 billion (GDP)[73]				2018	1,934,692
Canada	2020	CAD	34.2 billion (GDP)[74]	1.6			2020	293,513
China	2021	RMB	9 trillion (GDP)[75] 3.6 trillion (GVA)	9.0			2010	9,000,000[76]
European Union	2020	Euro	523 billion (Turnover)[77] 129.1 billion (GVA)	3.9			2020	3,340,000
France	2019	Euro	22.5 billion (GVA)[78]	1.5 (GVA)			2019	375,000
Germany	2019	Euro	32.2 billion (GVA)[79]	1.0 (GVA)			2019	527,300
India	2017	INR	5.5 trillion (GVA)[80]	4.0[81]				
Indonesia		IDR	132 trillion (marine					

[71] Australian Institute of Marine Science. 2023. *AIMS Index of Marine Industry 2023*. AIMS: Townsville
[72] https://www.marinescience.net.au/blueeconomybenefits/
[73] Andrade, I.O., Hillebrand, G.R.L., Santos, T., Mont'alverne, T.C.F, and A. B. Carvalho. 2022. Brazilian Maritime GDP, Social, Economic and Environmental Motivations for its Measurement and Monitoring. IPEA
[74] Canada response to questionnaire
[75] Li Zheng, Hongyang Zou, Xiaofeng Duan, Zhongguo Lin, Huibin Du. 2023. "Potential determinants affecting the growth of China's ocean economy: An input-output structural decomposition analysis". *Marine Policy*, Vol. 150
[76] Yin Kedong, Zhe Liu, Caixia Zhang and Shan Huang. 2022. "Analysis and forecast of marine economy development in China". Marine Economics and Management. Vol. 5 No. 1
[77] European Commission. 2023. The EU Blue Economy Report 2023. Publications Office of the European Union. Luxembourg
[78] European Commission. 2022. The EU Blue Economy Report 2022. Publications Office of the European Union. Luxembourg
[79] European Commission. 2022. *Idem.*
[80] Estimates produced by the Working Group on National Accounting Framework and Ocean Governance of the Economic Advisory Council to the Prime Minister, Coordinated by Ministry of Earth Sciences.
[81] https://www.ibef.org/blogs/importance-of-india-s-blue-economy

Country	Latest value				Projected value		Employment	
	Year	Currency	Amount (GVA or GDP)	% of GDP	Year	Amount	Year	Number of employed
			fisheries only)					
Italy	2019	Euro	24.4 billion (GVA)[82]	1.5 (GVA)			2019	531,700
Japan		JPY	48.8 trillion	4.0				
Mexico		MXN	254 billion	1.6				
Russia		RUB	1.7 trillion	2.5				
Saudi Arabia		SAR	140 billion	4.0				
South Africa	2019	ZAR	32 billion	4.4	2033	129-177 billion		316,000 (2033 – 1 million jobs)
Republic of Korea		KRW	103.8 trillion	4.6				
Türkiye			USD 38 billion	5.0				300,000
United Kingdom	2018	GBP	47 billion	1.4 (2.0 % of GVA)				
United States of America	2018	USD	373 billion	1.7				
Guest countries								
Denmark	2020	DKK	350 billion (direct) 57.2 billion (indirect)	10.0 (GDP) 5.0(GVA)[83]				
Mauritius				10.0 (excluding tourism)[84]		20.0% share in medium term		
Netherlands	2020	Euro	18.8 billion (direct) 4.7 (indirect)	2.9[85]				266,250
Spain	2020	Euro	32.8 billion (GVA)[86]	2.9 (GVA-				905,650

[82] European Commission. 2022. *Idem.*
[83] Denmark response to questionnaire
[84] Mauritius response to questionnaire
[85] Netherlands response to questionnaire
[86] Spain response to questionnaire

Country	Latest value				Projected value		Employment	
	Year	Currency	Amount (GVA or GDP)	% of GDP	Year	Amount	Year	Number of employed
				2019)				

Annex 4: National/ Regional Actions for Protection, Conservation, and Restoration of Coastal and Marine Ecosystems

Note: Data derived from voluntary responses to Technical Study questionnaire. 15 G20 members and 7 invited countries submitted responses to the questionnaire.

Country	Key Statistics on Coastal and Marine Ecosystems (Include percentage/ area of MPA coverage)	National Policies/ Laws governing ecosystem conservation acts	Participation in Regional/ Global Frameworks on Ecosystem Conservation
G20 Members			
Australia	45 percent of Australian waters are designated MPAs; 18 per cent within highly protected 'no take' areas; Note: "A comprehensive overview of the Australian Government's network of MPAs is provided here: Australian Marine Parks (parksaustralia.gov.au). Information about the size and category of Australia's marine protected areas in published in the Collaborative Australian Protected Area Database" Blue carbon accounting models have been developed, more advanced model are also being developed	Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act); Blue Carbon Conservation, Restoration and Accounting Program (2021-25); Ghost Nets Initiative; Method to secure carbon credits for restoring blue carbon ecosystems (in preparation);	International Coral Reef Initiative; Convention on Migratory Species; Ramsar Convention; Convention on Biological Diversity (ratified); International Partnership for Blue Carbon;
Canada	14.66 percent (or 842,821 sq km) of coastal and marine areas are designated MPAs or 'marine refuges'; Note: For a full list of Canada's protected and conserved areas contributing to marine conservation	Oceans Act; 2023 MPA Protection Standard; Federal Marine Protected Area Strategy; National Framework for Canada's Network of Marine Protected Areas; Canada's Ocean Strategy;	International Coral Reef Initiative; Ramsar Convention; Convention on Biological Diversity (ratified);

	targets (including size and percent contribution to the target), please see: Canada's marine protected and conserved areas (dfo-mpo.gc.ca) A new Natural Sciences and Engineering Research Council (NSERC) funded project called "Blue Carbon Canada" is aiming to produce a first national assessment of the potential for Canada's oceans to serve as blue carbon		
China		Law of Marine Environmental Protection; National Biodiversity Conservation Strategy and Action Plan (2011-2030); Master Plan on Major Projects for the Conservation and Restoration of National Key Ecosystems (2021-2035);	
EU	Over 6000 MPAs in the EU; 12 percent (or 604104 sq km) of EU marine areas are MPAs; Note: Blue carbon potential methods under development under European Research Framework Programmes;	EU Marine Strategy Framework Directive; 2030 Biodiversity Strategy; EU Mission – Restore Our Ocean and Waters; EU Water Framework Directive;	International Coral Reef Initiative; Convention on Migratory Species; Convention on Biological Diversity (approved); UNEP/MAP Barcelona Convention;
France	566 MPAs covering 33.4 percent (or 3,401,267.09 sq km) total national marine territory; No response to question on blue carbon capacity;	Law for the Recovery of Biodiversity, Nature and Landscapes (2016); Protection of Endangered Fish Species; National Biodiversity Strategy 2030; National Strategy for Protected Areas 2030;	International Coral Reef Initiative; Convention on Migratory Species; Ramsar Convention; Convention on Biological Diversity (ratified); International Partnership for Blue Carbon; UNEP/MAP Barcelona Convention;
Germany	With the German coastal waters and EEZ combined, a total of about 45 percent (10392+ sq km)of the German marine area is designated as a protected area; No blue carbon capacity measurement	National Strategy on Biological Diversity; Nature Conservation and Landscape Management Act; Protected area regulations and management plans for national marine protected areas; Blue Action Fund (by the Federal Ministry for Economic Cooperation and Development (BMZ)); Federal Action Plan on	International Coral Reef Initiative; Convention on Migratory Species; Ramsar Convention; Convention on Biological Diversity (ratified); Trilateral Wadden Sea Cooperation (TWSC);

	yet;	Nature-based Solutions for Climate and Biodiversity (In Preparation); National marine strategy (in preparation);	
India	MPA area- 8717 sq km; Blue carbon estimates for mangroves and seagrass exist;	Indian Fisheries Act, 1897; Indian Forest Act, 1927; Wildlife Protection Act, 1972; Forests Conservation Act, 1980; Environmental Protection Act, 1986; National Forest Policy, 1988; Coastal Regulation Zone (CRZ) Notification, 1991, 2011 and 2019; Biological Diversity Act, 2002; Coastal Aquaculture Authority Act, 2005; National Environment Policy, 2006; Environment Impact Assessment Notification (EIA), 2006; Island Coastal Regulation Zone (ICRZ) Notification, 2019 (Erstwhile-Island Protection Zone Notification, 2011); The National Green Tribunal Act, 2010; National Policy on Marine Fisheries, 2017; Wetland (Conservation and Management) Rules 2017; National Biodiversity Strategy and Action Plan (NBSAP); Mission MISHTI (Mangrove Initiative for Shoreline Habitats & Tangible Incomes);	International Coral Reef Initiative; Convention on Migratory Species; Ramsar Convention; Convention on Biological Diversity (ratified);
Indonesia	MPA area 235,622 sq km (approx. 15 percent of the marine territory) [https://doi.org/10.1080/08920753.2021.1967560]	Restoration of Coral Reef Ecosystem; Law No. 1 of 2014 about Management of Coastal Area and Isles, amending Law No.27 of 2007; Law No.32 of 2014 about the Sea; Law No.45 of 2009 about fisheries, amending Law No.31 of 2004, and Law No.11 of 2020 about Job Creation; Law No. 23 of 2014 about Local Government; Law No. 5 of 1990 about Conservation of the living natural resources and its ecosystem; Government Regulation No. 60 of 2007 about Fisheries Resources Conservation; Presidential Regulation No. 34 of 2022 about Indonesia Ocean Policy Action Plan; Ministry of Marine Affairs and Fisheries Regulation No. 31 of 2020 about Conservation Area Management; Ministry of Marine Affairs and Fisheries Regulation No.	International Coral Reef Initiative; Ramsar Convention; Convention on Biological Diversity (ratified); International Partnership for Blue Carbon; Coral Triangle Initiative;

		47 of 2016 about Marine Protected Areas Utilization; Ministry of Marine Affairs and Fisheries Regulation No. 2 of 2009 about Procedures for Stipulating Marine Protected Areas; Directorate General of Marine Spatial Management Decree No. 28 of 2020 Technical Guidelines for Evaluation of Conservation Area Management Effectiveness; Presidential Decree No.83/2018 on Marine Debris Management (Plan of Action on Marine Plastic Debris 2017–2025); Regulation of the President of the Republic of Indonesia Number 121 of 2012, Rehabilitation of Coastal Areas and Small Islands; Act No. 31/2004 jo. Act. No. 45/2009 about Fisheries; Act No. 27/2007 jo. Act No. 1/2014 about Management of Coastal and Small Island; Minister Role No. 35/2013 about Species Conservation	
Italy	17.86 percent (or 2288.58 sq km) of national territory is designated as MPAs;	Italian Legislative Decree n.190 of October 13th 2010 – implementing the EU Directive Framework on Marine Strategy 2008/56/CE; National Biodiversity Strategy 2030 (In preparation);	Convention on Migratory Species; Ramsar Convention; Convention on Biological Diversity (ratified); UNEP/MAP Barcelona Convention;
Japan	594,000 sq km designated as MPA; Some blue carbon estimates exist, advanced assessments are in preparation;	Basic Act on Biodiversity; The National Biodiversity Strategy of Japan 2012-2020; Nature Conservation Act; Natural Parks Act; Wildlife Protection, Control, and Hunting Management Act; Law concerning Special Measures for Conservation of the Environment of the Seto Inland Sea; Marine Biodiversity Conservation Strategy of Japan; The Action Plan to Conserve Coral Reef Ecosystems in Japan 2022-2030	International Coral Reef Initiative; Ramsar Convention; Convention on Biological Diversity (accepted);
Mexico	Overall, 182 Protected Natural Areas - out of which 37 for coastal and marine areas covering 649,587 sq km.; Methodologies for blue carbon estimation are being developed	Port Development Master Plans – Port Management Systems and Projects on Mangrove reforestation and preservation of species;	International Coral Reef Initiative; Ramsar Convention; Convention on Biological Diversity (ratified);

ROK	9.2 % of territorial waters are designated as 'marine reserves'; Blue carbon estimates for salt marshes and mudflats exist, see response;	Conservation and Management of Marine Ecosystems Act; Act of the Sustainable Management and Restoration of Tidal Flats(gaetbeol) and Adjacent Area Thereof;	Ramsar Convention; Convention on Biological Diversity (ratified); International Partnership for Blue Carbon;
Russia		**No response in questionnaire	Ramsar Convention; Convention on Biological Diversity (ratified);
South Africa	5.4 percent (or 58,825.5 sq km) is designated MPA (41 in number); Blue Carbon calculations not clear in response to questionnaire;	National Environmental Management: Biodiversity Act (NEMBA), 2004 (Act 10 of 2004); National Environmental Management: Protected Areas Act, 2003 (Act 57 of 2003); National Environmental Management: Integrated Coastal Management Act, 2008 (Act 24 of 2008);	International Coral Reef Initiative; Convention on Migratory Species; Ramsar Convention; Convention on Biological Diversity (ratified);
Türkiye	11,718.47 sq km is MPA (percentage not provided in questionnaire);	Environment Law numbered 2872; Aquaculture Law numbered 1380 and related regulation; Decree Law numbered 383 for the establishment of the Environment Protection Agency for Special Areas; Law On The Protection Of Cultural And Natural Assets numbered 2863; Strategical Plan of Ministry of Agriculture and Forestry for 2019-2023; Coastal law numbered 3621; Strategic plan of Ministry of Environment, Urbanization and Climate Change; Spatial Plans Construction Regulation published on official gazette dated 14 June 2014 and numbered 29030; Regulation for Conservation of Wetlands published on the official gazette dated 04 April 2014 and numbered 28962;	Ramsar Convention; Convention on Biological Diversity (ratified); UNEP/MAP Barcelona Convention;
UK	38.2 % of UK waters are designated MPA; Preliminary blue carbon calculations have been done, more research is happening;	Environment Act 2021; UK Marine Strategy Parts 1, 2, 3; Restoring Meadows, March, and Reef Initiative;	International Coral Reef Initiative; Convention on Migratory Species; Ramsar Convention; Convention on Biological Diversity (ratified); International Partnership for Blue Carbon;
Guest Countries			
Bangladesh	6.2 percent (7362 sq km) of total EEZ area is designated MPA;	Environment Conservation Act 1995; Ecologically Critical Area Management Rule (2016);	Convention on Migratory Species; Ramsar Convention; Convention on Biological Diversity (ratified);

Denmark	26.5 percent (or 27700 sq km) of marine area designated as MPAs (almost 100 in number);	Statutory Order on Determination and Administration of International Conservation Areas and Certain Protected Species; Danish Marine Strategy Act; Danish Marine Strategy; Water Management Plan;	Convention on Migratory Species; Ramsar Convention; Convention on Biological Diversity (ratified); Trilateral Wadden Sea Cooperation (TWSC);
Mauritius	28 percent (or 650,140 sq km) of marine area designated as MPA; blue carbon calculations in progress;	Fisheries and Marine Resources Act 2007; Environment Protection Act 2002; Maritime Zones Act 2005; Merchant and Shipping Act 2007; National Coast Guard 1988; Petroleum Act 1970 Amended 2021;	Convention on Migratory Species; Ramsar Convention; Convention on Biological Diversity (ratified);
Netherlands	25 percent of coastal and marine waters designated MPAs;	National implementation of EU Marine Strategy Framework and EU Natura2000;	International Coral Reef Initiative; Convention on Migratory Species; Ramsar Convention; Convention on Biological Diversity (accepted); Trilateral Wadden Sea Cooperation (TWSC);
Singapore	40-ha marine park (Sisters' Islands Marine Park); Note: Blue carbon potential methods under development;	Integrated Urban Coastal Management Framework;	Convention on Biological Diversity (ratified);
Spain	MPA area 132,063.84 sq km or 12.31 % of total 'marine surface'; Blue carbon potential not estimated;	Law 42/2007, on Natural Heritage and Biodiversity; Law 41/2010, on the Protection of the Marine Environment; Law 22/1988, on Coasts; Royal Decree 876/2014 on Coasts; Royal Decree 1057/2022, on the Strategic Plan for Natural Heritage and Biodiversity; Royal Decree 139/2011, on the development of the List of Wild Species subject to Special Protection and the Spanish List of Endangered Species; Royal Decree 1727/2007, for the implementation of measures for the protection of cetaceans; Royal Decree 150/2023, approving the Marine Spatial Plans for the five Spanish Marine regions; Royal Decree 1056/2022, approving the General Plan for the Network of Marine Protected Areas in Spain and the minimum common criteria for a	Convention on Migratory Species; Ramsar Convention; Convention on Biological Diversity (ratified); UNEP/MAP Barcelona Convention;

		coordinated and coherent management of the Network; Royal Decree 79/2019, regulating the compatibility report and compatibility criteria of the Regional Marine Strategies; Royal Decree 1365/2018, approving the Regional Marine Strategies; Royal Decree 363/2017, establishing a framework for Marine Spatial Planning; Royal Decree 1599/2011, establishing the criteria for the integration of marine protected areas in the Spanish Network of Marine Protected Areas; Law 5/2023, on sustainable fisheries and fisheries' research; Law 3/2001, on State Maritime Fisheries; Royal Decree 239/2019, establishing provisions for touristic fishing activities; Royal Decree 46/2019, regulating the Atlantic bluefin tuna fisheries on the Eastern Atlantic and Western Mediterranean fishing grounds; Royal Decree 182/2015, approving the regulations for the penalizing regime for maritime fisheries; Royal Decree 347/2011, regulating recreational maritime fishing;	
UAE	12 percent (6946.5 sq.km) of total marine area designated under MPAs; National Blue Carbon Project (phase I and II), the UAE Oceanic Blue Carbon, and the Mangrove Soil Carbon Sequestration of the United Arab Emirates project;	Federal Law (No 23/ 1999) – on living aquatic resources; Federal Law (No 24/ 1999) – Protection and Development of the Environment;	Convention on Migratory Species; Ramsar Convention; Convention on Biological Diversity (ratified); International Partnership for Blue Carbon;

Annex 5: Marine Spatial Planning in G20 countries

COUNTRY	LEGAL FRAMEWORK	PRACTICES	TECHNICAL RESOURCES	NOTE
Argentina	• Federal Integrated Coastal Management Strategy • National Marine Policy (2018)	• Pampa Azul • National Plan for Adaptation to Climate Change • National MSP Framework: Launched by Ministry of Agriculture , Livestock and Fisheries with UNDP (2018),	• State of integrated coastal management • MSP training	• Still in early stages
Australia	• Ocean's Policy (1998) • National MSP Framework (2012) • Commonwealth ASct (2012): Commonwealth Marine Reserve System • Environment Protection and Biodiversity Conservation Act (1999) • Coastal Policy (2013) • State and territory legislation • National Representative System of Marine Protected Areas (NRSMPAs)	• Regional Marine Plans in Western Australia, New South Wales, South Australia, Northern Territory • Great Barrier Reef (GBRMP) • Coastal Shipping Management Plan	• AMSIS: Australian Maritime Spatial Information System • Project: MSP for Blue Economy (2022-25)	• Pioneer in MSP: Great Barrier Reef • Strong legal basis for MSP • Jurisdictional fragmentation
Brazil	• National Marine Biodiversity Policy	• Several states and municipalities developed their own MSP plans (Rio de Janeiro, Paraty)		• Still in early stages • Clear legal framework missing
Canada	• Ocean's Strategy • National Framework for Canada's Network of MPAs	• Pacific North Coast Integrated Management Area Plan • Regional Oceans Plan for the Scotian Shelf, Atlantic Coast and the Bay of Fundy • Gulf of Saint Lawrence Integrated Management Plan • Placentia Bay/Grand Banks Large Ocean Management Area Integrated Management Plan	• National Guidelines • Open Maps and Open data	• First country to adopt a comprehensive foundation for integrated coastal and oceans management (ICOM), including MSP initiatives, with the promulgation of the *Oceans Act* (1996) • Since then, efforts towards integrated management have waxed and waned with changing priorities as the development and implementation of plans are not considered to be statutory • MSP is implemented at the regional level and includes coastal and ocean waters out to the 200 M EEZ

China	• Law of the People's Republic of China on the Administration of the Use of Sea Areas • Marine Environmental Protection Law of the P.R.C • Sea Island Protection Law of the P.R.C	• National Marine Functional Zoning (2011-2020) • Provincial Marine Functional Zoning, including • Liaoning Province Marine Functional Zoning (2011-2020) • Hebei Province Marine Functional Zoning (2011-2020) • Tianjin Marine Functional Zoning (2011-2020) • Shandong Province Marine Functional Zoning (2011-2020) • Jiangsu Province Marine Functional Zoning (2011-2020) • Shanghai Marine Functional Zoning (2011-2020) • Zhejiang Province Marine Functional Zoning (2011-2020) • Fujian Province Marine Functional Zoning (2011-2020) • Guangdong Province Marine Functional Zoning (2011-2020) • Guangxi Zhuang Autonomous Region Marine Functional Zoning (2011-2020) • Hainan Province Marine Functional Zoning (2011-2020) • About 60 city (county) level Marine Functional Zonings	• Marine Functional Zoning Management Regulations • Sea Area Use Rights Management Regulations	• MSP work started in China with the advent of MFZ in 1989
European Union	• Directive 2014/89/EU of the European Parliament and of the Council of 23 July 2014 establishing a framework for maritime spatial planning • A Green Recovery for the Blue Economy – Transforming the EU's Blue Economy for a Sustainable Future •			
France	• MSP Directive was transposed into French legislation through the entry into force of article 123 of Law # 2016-1087	• Four sea-basin strategies (East Channel – North Sea, North Atlantic-West Channel, South Atlantic, Mediterranean) • SIMCelt • SIMNORAT • SIMWESTMED	• Ministry of the Sea coordinates MSP	• Initially, the French authorities rejected an overly spatial form of planning, preferring a more strategic one, although this mentality is beginning to change • Significant progress in MSP implementation

		• SEANSE • SIMAtlantic • MSP-MED		
Germany	• Ordinance on Spatial Planning in the German EEZ in the North Sea, 2009 • Ordinance on Spatial Planning in the German EEZ in the Baltic Sea, 2009 • Legislation for MSP for the EEZ is the Federal Spatial Planning Act; amended in 2017 to include MSP	• Federal Maritime Spatial Plan (2021	• GeoSea Portal	
India		• ICZMP Gujarat, Odisha and West Bengal • Puducherry MSP • Blue Flag Beach Program India	• Draft National Coastal and Marine Spatial Plan (CMSP): A framework and action plan	
Indonesia	• Government Regulation n° 32/2019 on National Marine Spatial Planning • Law of The Republic of Indonesia No. 32 year 2014 on Marine Affairs • Law of The Republic Indonesia No. 1 year 2014 on Management of Coastal Zone and Small Islands • Law of The Republic Indonesia No.34 year 2022 on Action Plan for Indonesian Ocean Policy for 2021 – 2025 • Regulation of Government No. 21 year 2021 on Management of Spatial Planning	• Regulation of Government No. 32 Year 2019 on National Marine Spatial Planning • Regulation of President No. 83 Year 2020 on Interregional Zoning Plan of Makassar Strait • Regulation of President No. 3 Year 2022 on Interregional Zoning Plan of Java Sea • Regulation of President No. 64 Year 2022 on Spatial Plan for the National Strategic Area of the Capital of Nusantara for 2022-2024 • Regulation of Local Government in Sulawesi Selatan No. 3 Year 2022 on Sulawesi Selatan Province Spatial Plan for 2022-2041	• One Map MMAF	• Strong connection to coastal management program to improve the function of marine and fisheries development centers in coastal areas, including marine facilities and infrastructure network systems • MPAs are planned under a separate process, but the areas of national MPAs (i.e. under national authority) are allocated and regulated within the Marine Spatial Plan
Italy		• MSP Plans are to be prepared for three maritime areas (Adriatic, Ionian-Central Mediterranean, Thyrrenian) by March 2021	• Guidelines on how to prepare the Plans (DPCM 01/12/2017) were approved by an Interministerial Committee chaired by the Presidency of the Council of Ministers •	•
Japan	• Basic Act on Ocean Policy (2007) • Port and Harbour Act • Environmental Protection Act • Act of Promoting Utilization of Ocean Areas in Development of Power Generation Facilities Using	• Second Basic Plan on Ocean Policy		• MSP substantially started only recently

	Maritime Renewable Energy Resources			
Mexico	• National Policy on Seas and Coasts • National Strategy for the Ecological Management of the Territory of Seas and Coasts	• Marine Ecological Planning of the Gulf of California • Marine and Regional Ecological Planning of the Gulf of Mexico and the Caribbean Sea • Marine and Regional Ecological Planning of the North Pacific • Marine and Regional Ecological Management of the South Central Pacific		
Russia				
Saudi Arabia				
South Africa	• National Environmental Management of the Oceans (NEMO) white paper in 2014 • Operation Phakisa • National MSP Framework and the draft MSP Act	• Algoa Bay Project		
Republic of Korea				
Türkiye				
United Kingdom	• *Marine and Coastal Access Act,* 2009 • Owing to the system of devolution within the UK, MSP for the inshore regions of Scotland and Northern Ireland was established through two further statutes: the *Marine (Scotland) Act*, 2010, and *Marine (Northern Ireland) Act*, 2013, with the Scottish government also making provision for a National Marine Plan (SNMP) within their Act	• Scottish National Marine Plan (SNMP)	•	• MSP in the UK can be traced back to 2002, with a commitment to legislation coming in
United States of America	No formal overarching Marine Spatial Planning (MSP) process, legal framework or founding legislation in the United States • National Ocean Policy (NOP) • Coastal Zone Management Act • Interagency Ocean Policy Task Force for MSP (2009)	• Northeast Ocean Plan • Mid-Atlantic Regional Ocean Action Plan • Hawaii Ocean Resources Management Plan • Massachusetts Ocean Management Plan • Oregon Territorial Sea Plan • Rhode Island Ocean Special Area Management Plan	• Mapping the coast of Alaska- A 10-Year Strategy in support of the United States Economy, Security, and Environment •	• MSP in the United States has progressed since the first comprehensive ocean plan was created in 1969 • Fragmented governance and stakeholder conflict, as well as changing priorities for future planning