Advancing China's Sustainable Blue Economy - Building Strong Policy Foundations for Ocean Accounting and Blue Finance

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Contributing authors

BAI Yunwen, Vice President, Institute of Finance and Sustainability (IFS)

Karina Barquet, Team Leader of Water, Coasts and Ocean, Senior Research Fellow, Stockholm Environment Institute

CHEN Shang, Senior Scientist, First Institute of Oceanography, Ministry of Natural Resources

Alfredo Giron, Head of Ocean Action Agenda and Friends of Ocean Action,World Economic Forum

HAN Baolong, Associate Professor at the Research Center for Eco-Environmental Sciences (RCEES), Chinese Academy of Sciences

HAN Guoyi, Senior Research Fellow, Stockholm Environment Institute

Louise Heaps, Lead, Sustainable Blue Economy (Global), WWF-UK

LIU Dahai, Professor, School of Public Administration, Renmin University of China; Academic Leader, Key Laboratory of Coastal Science and Integrated Management, Ministry of Natural Resources, China

Philip A. S. James, Director, UNSW Centre for Sustainable Development Reform and Global Ocean Accounts Partnership

REN Yujie, Director of Green Finance, International Institute of Green Finance, Central University of Finance and Economics, China

John Virdin, Assistant Professor of the Practice, Marine Science and Conservation Division, Nicholas School of the Environment; Director, Ocean Policy Program, Nicholas Institute for Energy, Environment and Sustainability, Duke University, Durham, NC, USA

WEN Mengyao, Researcher, Institute of Finance and Sustainability (IFS)

XIE Xi, Partnership and Industry Transitions Lead, Center for Nature and Climate, World Economic Forum

XING Wenxiu, Professor, First Institute of Oceanography, Ministry of Natural Resources

ZHANG Xiaoquan, Chief Science Officer of China Program, The Nature Conservancy

Patrick Yeung, Assistant Director, Climate Action, AVPN

ZHANG Yimo, Priority Project Coordinator, Sustainable Blue Economy, World Wide Fund for Nature Beijing Office.

ZHOU Zhou, Green Finance Researcher, International Institute of Green Finance, Central University of Finance and Economics, China

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Minhan Dai
Chair Professor,
Xiamen University &
Council Member,
CCICED

Jan-Gunnar Winther
Specialist Director,
The Norwegian Polar Institute &
Council Member,
CCICED

We congratulate the publication of this report contributing to the Special Policy Study (SPS) for The China Council for International Cooperation on Environment and Development (CCICED). The CCICED has long served as a vital platform for advancing sustainable development in China through high-level policy dialogue and international cooperation. Since its establishment in 1992, the CCICED has brought together Chinese and global experts to address pressing environmental challenges, fostering innovative solutions for green growth, climate resilience, and ecological conservation. As China accelerates its transition toward a sustainable future, the ocean has emerged as a critical frontier for balancing economic development with environmental stewardship.

Under CCICED's Phase VII strategic focus on A Sustainable Blue Economy Towards Carbon Neutrality, the SPS on ocean governance has evolved from earlier themes—such as ecosystem-based management and marine pollution—to a comprehensive exploration of the sustainable blue economy (SBE)'s role in achieving climate and sustainability goals. Central to this effort is this study which discussed SBE principles, and examined how ocean accounting and blue finance can serve as foundational drivers for China's sustainable blue transition. This report, set for release at the 2025 UN Ocean Conference, provides important insights for aligning China's ocean-based economic development with its carbon neutrality ambitions while ensuring marine ecosystem health.

Key to this transformation is the development of robust ocean accounting frameworks and innovative blue finance mechanisms. The report highlights need to refine China's ocean accounting systems by integrating environmental-economic indicators, enabling better measurement of ocean wealth and sustainability performance. Simultaneously, it explores how blue finance tools and standards—spanning bonds, credits, and investment taxonomies—can mobilize capital toward sustainable blue economic activities while preventing "blue-washing." By bridging policy, science, and finance, these tools can unlock the ocean economy's full potential as an engine for green growth.

As China advances its "Ecological Civilization" vision, this report offers high-level recommendations to strengthen SBE narrative and strategic planning, further develop the ocean accounting system, incentivize responsible investment, and foster international collaboration. We hope these insights will guide policymakers, financial institutions, and stakeholders in building an inclusive, climate-resilient economy—one that safeguards marine ecosystems while driving sustainable prosperity for generations to come.

Foreword

Alfredo Giron
Head of Ocean Action Agenda and Friends of Ocean Action
World Economic Forum

Patrick Yeung
Assistant Director, Climate Action
AVPN

The global ocean economy is currently undergoing profound transformation. In face of multiple challenges — including climate change, biodiversity loss, pollution, and the overexploitation of resources — the issue of sustainable ocean development has become a central concern for the international community. As a major maritime nation and a key player in the global ocean economy, China has actively responded to the call for sustainable development and accelerating its transition toward a more sustainable blue economy. The 14th Five-Year Plan (FYP) have explicitly set forth the goals of building a maritime power and a Beautiful China, elevating the development of a high-quality, green, and inclusive blue economy to the level of national strategy; while the Belt and Road Blue Cooperation Initiative highlights China's willingness to cooperate internationally for developing an SBE and improving the health and resilience of marine ecosystems.

Meanwhile, the international community has been continuously refining SBE concepts and policy frameworks while promoting reforms in global ocean governance through multilateral cooperation. How to absorb and adapt international experience based on China's national circumstances, strengthen the foundations of an SBE, and achieve coordinated progress in economic, social, and environmental dimensions is a key focus of this report.

Through a comprehensive review of the policy evolution towards SBE, the development of ocean accounting systems, and the advancement of blue finance, this report explores the development path and policy recommendations for an SBE in China. We hope that our analysis will provide valuable references and insights for the Chinese government, businesses, and society at large, and contribute to China's joint efforts with the international community in achieving the goals of an SBE.

Executive summary

Sustainable development is a global issue that directly impacts social progress and human well-being. In the context of intensifying climate change, exacerbated by pollution and other development activities, both biodiversity and livelihoods are exposed to increasing risks. The transformation of marine economic sectors towards an SBE is imperative, as these sectors can pose threats to the ocean if their practices are not properly regulated or sustainably managed. Conversely, they can be part of the solution to address climate change and biodiversity loss if strategic policies are implemented.

As a major maritime nation, China's ocean economy holds a significant position in the national economy; however, the traditional development model can no longer meet the demands of the new era. It is now imperative to promote necessary policy reforms and accelerate sustainable ocean management. Accelerating the establishment of an SBE system is crucial for promoting high-quality economic development, safeguarding national maritime interests, and achieving harmonious coexistence between humanity and nature.

This report focuses on establishing of the foundation for China's SBE. It reviews the global and domestic context of SBE development, analyzes the key opportunities and challenges, and provides a systematic analysis of policy frameworks, ocean accounting, and blue finance tools. The main findings are as follows:

1. The importance of the SBE is increasingly prominent. The ocean not only supports 80% of global trade and provides critical blue food security, but also fosters emerging industries such as offshore wind power and blue biotechnology. China's gross ocean product has continued to grow, accounting for approximately 8% of the national GDP in 2024. The ocean economy is playing an increasingly vital role in promoting employment, ensuring food security, and supporting the sustainable development of coastal regions.
2. The development of an SBE faces complex challenges. Although China has made progress in optimizing the structure of its ocean economy, ecological protection, and technological innovation, it still faces issues such as declining environmental carrying capacity of marine resources, fragmented management systems, insufficient social inclusiveness, and a lack of relevant standards and policy tools. Additionally, climate change–induced sea level rise and the increasing frequency of extreme weather events have further exacerbated the vulnerability of coastal economies.
3. The ocean accounting system needs improvement to support SBE development. To achieve sound governance and informed policy-making, it is essential to establish a ocean accounting system that incorporate ecosystem services and non-market values, and promote data sharing and standardized statistics. These measures will enhance the scientific basis and transparency of ocean governance and performance monitoring.
4. Blue finance still needs to be further activated. While blue financial instruments and standards have begun to show results, there remain significant gaps compared to the existing green finance in terms of dedicated financing, financial standards, incentive mechanisms, and information disclosure. Local pilot innovations have provided valuable experience for national implementation, making it urgent to improve national standards for blue finance.
5. Based on the above findings, this report proposes development pathways and policy recommendations for advancing the SBE in China, To achieve a more ambitious transformation, the concept of an SBE should be integrated into the top-level policy frameworks with clear definitions and guiding principles, as well as incorporated into the 15th FYP and the subsequent policies to drive the necessary changes. It is also essential to establish inter-ministerial coordination mechanisms; encourage local pilot initiatives; improve comprehensive ocean accounting systems and blue finance incentive standards; strengthen social inclusion and gender equality; and support international cooperation and knowledge exchange.

Through systematic policy advancement and institutional innovation, China can play a leading role in the international SBE and ocean governance agenda, achieving synergies among business development, ecological protection, and social well-being, and contributing to the building of a strong maritime nation and a Beautiful China.

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1. Context

1.1 Status of the ocean's economic sectors

The ocean plays an important role in the global economy. Blue foods contribute to global food security, while maritime shipping mobilizes over 80% of global trade, and ocean-based tourism continues to grow. UN Trade and Development has classified ocean-based economic activities into 14 categories[1] and estimated the value of the global ocean economy in 2018 to be $2.5 trillion, 3.3% of global GDP. The global ocean economy has grown 2.5 times since 1995[2]. Over the past decade, ocean economic sectors have undergone substantial transformations globally, particularly as "non-traditional" industries such as offshore wind energy, offshore aquaculture and marine biotechnology have rapidly expanded[3]. This growth represents a significant shift away from traditionally dominant sectors, like fisheries, shipping, tourism, oil and gas, and coastal aquaculture.

Global agendas aimed at addressing climate change, economic development and food security are inadvertently driving increased utilization of ocean resources. While these initiatives often have positive intentions, they may also lead to unsustainable exploitation of marine environments. In Box 1, we list five emerging key drivers of change in the ocean economy. This is not an exhaustive list, but a summary of common patterns found in global reports.

Opportunities and challenges are inherently intertwined and coexist. For example, investing in research and innovation to address these challenges can lead to the development of safer, more efficient technologies that minimize environmental impacts.

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[1] UN Trade and Development's (UNCTAD) international ocean economy classification included: A. Marine fisheries; B. Aquaculture and hatcheries; C. Seafood processing; D. Sea minerals; E. Ships, port equipment and parts thereof; F. High-technology and other manufactures not elsewhere classified; G. Marine and coastal tourism; H. Trade in fisheries services; I. Maritime transport and related services; J. Port services, related infrastructure services and logistical services; K. Coastal and marine environmental services; L. Marine research and development and related services; M. Ocean energy & renewable energy. From UNCTAD, 2021, "Towards a harmonized international trade classification for the development of sustainable ocean-based economies", https://unctad.org/publication/towards-harmonized-international-tradeclassification-development-sustainable-ocean.

[2] "The ocean economy is booming. But for how long?", UNCTAD, 2025, https://unctad.org/news/ocean-economy-booming-how-long.

[3] "Fast-growing trillion-dollar ocean economy goes beyond fishing and shipping", UNCTAD, 2025, https://unctad.org/news/fast-growing-trillion-dollar-ocean-economy-goes-beyond-fishing-and-shipping.

BOX 1: Five emerging key drivers of change in the ocean economy

1. **The quest for renewables:** The transition to renewable energy sources, such as wind and solar power, is essential for mitigating climate change. However, the production of renewable energy technologies requires rare minerals and metals. These resources, including cobalt, nickel and rare earth elements, are increasingly sought after in the deep sea due to the depletion of terrestrial sources. The extraction of minerals from the ocean floor poses substantial risks to marine ecosystems. The process can cause habitat destruction, sediment plumes and the release of toxic substances, adversely affecting deep-sea species and ecosystems. The long-term environmental impacts of deep sea-bed mining are not fully understood, and there is therefore a need to close key scientific gaps before any exploitation is considered[4]. A circular economy approach should be prioritized and implemented.

2. **The shift to sea-based energy production:** Land-based wind power projects have faced increasing opposition due to land use conflicts, noise and visual impacts. As a result, there has been a shift toward offshore wind energy, which is seen as a more viable alternative. Offshore wind farms are being developed at an unprecedented rate, placing additional impacts on marine environments[5]. Beyond offshore wind, other forms of ocean-based energy generation are also being developed to harness the vast energy potential of the ocean. The shift toward offshore sources of energy can conflict with other ocean uses, such as fisheries, shipping, and tourism. Moreover, the construction and operation of offshore wind farms can have significant impacts on marine biodiversity. For instance, the noise from turbine construction and operation can disrupt marine mammals, particularly whales, which rely on sound for communication and navigation. Additionally, the physical presence of turbines can alter habitats and pose collision risks to birds and bats[6]. Effective ecosystem-based marine spatial planning (MSP) is crucial to balance the competing uses of ocean space. However, MSP faces challenges in reconciling the interests of different stakeholders and ensuring the protection of marine ecosystems. There is a need for multi-stakeholder integrated approaches that fully consider ecological, economic and social dimensions, ensuring that planetary boundaries are not exceeded.

3. **A growing demand for seafood:** The global demand for seafood is rising due to population growth and changing dietary preferences. This has led to the expansion of offshore aquaculture, which is seen as a solution to overfishing and declining wild fish stocks. Offshore aquaculture involves the farming of fish, shellfish and seaweed in open ocean environments, often far from the coast. While offshore aquaculture can reduce pressure on wild fish populations, it also poses environmental risks. These include the potential for disease transmission to wild populations, nutrient pollution and habitat degradation. The use of chemicals and antibiotics in aquaculture can also impact marine ecosystems[7]. Ensuring that offshore aquaculture is sustainable requires robust regulatory frameworks and best practices. These include monitoring and managing environmental impacts, promoting the use of sustainable feed and protecting marine habitats. It is also crucial to acknowledge that wild-caught fisheries remain a significant source of seafood, and that persistent overfishing in these areas has substantial implications for food security, particularly in regions where aquaculture development may be limited. There is a need, therefore, for a balance between increasing production and maintaining ecological integrity[8].

4. **Continued growth in trade and coastal urbanization:** Over 80% of world trade volume is carried by sea[9]. The continued growth of international trade has driven unprecedented expansion in coastal infrastructure. Global seaborne trade volumes have more than tripled between 1970 and 2022, necessitating continuous port development and the expansion of shipping lanes (ibid.). In parallel, coastal tourism remains a powerful economic force, contributing nearly $11 trillion — or 10% of GDP — to the global economy in 2024[10] and fueling extensive urbanization along coastlines. In Asia, coastal expansion has led to major land reclamation projects that have altered natural habitats and increased exposure to sea level rise[11]. China exemplifies this trend. The country's share of artificial coastlines resulting from reclamation projects has increased from 24% to 70.9% over the past four decades, largely driven by the development of aquaculture ponds ports and agricultural land[12]. Globally, 78% of major coastal cities have resorted to land reclamation, collectively adding over 25,000 hectares of new land — equivalent to the size of Luxembourg — since the start of the 21st century[13].

5. **Melting poles and geopolitical conflicts:** The melting of sea ice due to climate change is opening new navigational routes, particularly in the Arctic region. This development is leading to increased interest in previously inaccessible areas for shipping, resource extraction and fishing[14]. The Northern Sea Route and the Northwest Passage are becoming viable options for shorter shipping routes between Europe and Asia, potentially reducing transit times and fuel consumption[15]. However, the opening of these routes is also sparking new geopolitical conflicts, as nations vie for control over these strategic waterways and the resources they harbor. Issues of territorial claims, environmental protection and the rights of indigenous peoples are becoming increasingly prominent[16]. Increased human activity in these fragile environments poses significant risks to local ecosystems and biodiversity[17]. Effective international governance and cooperation are essential to manage these new challenges and ensure that the exploitation of polar regions is conducted sustainably[18].

[4] Amon, D.J., Gollner, S., Morato, T., et al., 2022, "Assessment of scientific gaps related to the effective environmental management of deep-seabed mining", Marine Policy 138.
[5] Galparsoro, I., Menchaca, I., Garmendia, J.M., et al., 2022, "Reviewing the ecological impacts of offshore wind farms", npj Ocean Sustainability, 1(1), 1.
[6] American Wind Wildlife Institute (AWWI), Wind Turbine Interactions with Wildlife and Their Habitats: A Summary of Research Results and Priority Questions, 2021, https://rewi.org/wp-content/uploads/2020/07/AWWI-Wind-Power-Wildlife-Interactions-Summary-2021.pdf.
[7] Naylor, R.L., Hardy, R.W., Buschmann, A.H. et al., 2021, "A 20-year retrospective review of global aquaculture", Nature 591, 551–563.
[8] FAO, Position paper on "Ecosystem Restoration" of production ecosystems, in the context of the UN Decade of Ecosystem Restoration 2021-2030, 2020, COFI/2020/Inf.15.2
[9] UNCTAD, Review of Maritime Transport - Navigating maritime chokepoints, 2024, https://unctad.org/publication/review-maritime-transport-2024
[10] World Travel and Tourism Council, Travel & Tourism Economic Impact 2024: Global Trends, 2024, https://researchhub.wttc.org/product/economic-impact-report-global-trends
[11] Sengupta, D., Choi, Y.R., Tian, B., et al., 2023, "Mapping 21st century global coastal land reclamation". Earth's Future, 11(2), e2022EF002927.
[12] Yan, F., Wang, X., Huang, C., et al., 2023. "Sea reclamation in mainland China: process, pattern, and management", Land Use Policy, 127, 106555.
[13] Sengupta, D., Choi, Y. R., Tian, B., 2023, "Mapping 21st century global coastal land reclamation". Earth's Future, 11(2), e2022EF002927.
[14] Lynch, A. H., Norchi, C. H., Li, X., 2022, "The interaction of ice and law in Arctic marine accessibility", Proceedings of the National Academy of Sciences, 119(26), e2202720119.
[15] Aksenov, Y., Popova, E.E., Yool, A., et al, 2017, "On the future navigability of Arctic sea routes: High-resolution projections of the Arctic Ocean and sea ice", Marine Policy, 75, 300-317.
[16] Weber, J., Handbook on Geopolitics and Security in the Arctic, 2020, Springer International Publishing.
[17] Dodds, K., Nuttall, M., The scramble for the poles: The geopolitics of the Arctic and Antarctic, 2015, John Wiley & Sons.
[18] Prip, C., 2022, "Arctic Ocean governance in light of an of an international legally binding instrument on the conservation and sustainable use of marine biodiversity of areas beyond national jurisdiction", Marine Policy, 142, 103768.

1.2 China's need for a sustainable blue economy and ambitions to develop one

China's gross ocean product has grown significantly, from RMB 5 trillion (~$794 billion) in 2012 to RMB 10 trillion (~$1.39 trillion)[19] or 8% of national GDP in 2024, reflecting the integration of marine economic activities into the broader socio-economic development of the country. According to the World Wide Fund for Nature (WWF)'s analysis in the "Reviving China's Ocean Economy 2022: Empower Sustainable Development" report, the asset value of China's ocean economy is estimated at around RMB 54 trillion (~$7.34 trillion)[20]. The country's marine economic sectors, such as coastal tourism, marine transportation, marine fisheries and seafood processing, marine chemical industry, offshore oil and gas industry, and marine engineering construction industry, are pivotal to the national economy, accounting for approximately 37.4% of gross ocean product and 2.9% of China's GDP.

Yet the country's coastal communities and economies are increasingly threatened by climate change, with coastal waters warming at a rate of 0.25°C per decade from 1980-2019 and sea levels rising by 3.4mm annually, both surpassing global averages[21]. These changes heighten the vulnerability of coastal regions to ecological disasters, such as exacerbating red tides and marine dead zones, as well as intense typhoons and storm surges.

The diminished resilience of coastal communities and the natural environment pose substantial risks to China's most economically active and rapidly urbanizing coastal regions[22]. For example, Typhoon Fitow in 2013 resulted in an economic loss of RMB 44.9 billion (~$7.3 billion, by CCICED estimate) and impacted approximately 6.66 million people[23]. Marine heatwaves and ocean acidification present substantial threats to marine biodiversity and fisheries, potentially leading to severe consequences for China's large-scale shellfish farming industry, which is critical for ensuring food security and livelihood for low-income households.

Despite significant progress in marine ecological civilization and technological innovation, China's ocean economy faces numerous challenges, including declining coastal resource capacity, environmental degradation, pollution, frequent ecological disasters, increased food and livelihood demands and a lack of innovation in the marine industry. As China addresses the challenges of sustainably managing ocean spaces and resources, its leaders have prioritized the development and conservation of marine resources. They see sustainable development as essential to building a strong maritime nation and achieving a "beautiful China[24]."

Chinese President Xi Jinping has underscored the importance of developing a robust marine economy to support China's establishment as a strong maritime nation, and has advocated for the development of world-class ports, a modern marine industrial system and a sustainable marine ecosystem. Emphasizing marine conservation, Xi has called for caring for the ocean as much as for life itself[25]. At the National Conference on Ecological Environmental Protection in July 2023, Xi highlighted the need for "a bigger picture of ecological protection from the mountaintop to the ocean[26]."

These priorities are transitioning China toward "high-quality development," which scholars define as an efficient, fair and sustainable development that stimulates society's creativity and vitality as a whole[27]. China's 14th FYP for Economic and Social Development, which outlines policy objectives from 2021-2025, dedicates a chapter to the "development of the marine economy"[28]. This reflects the country's commitment to sustainable ocean development and ambition of establishing itself as a maritime power in the new era.

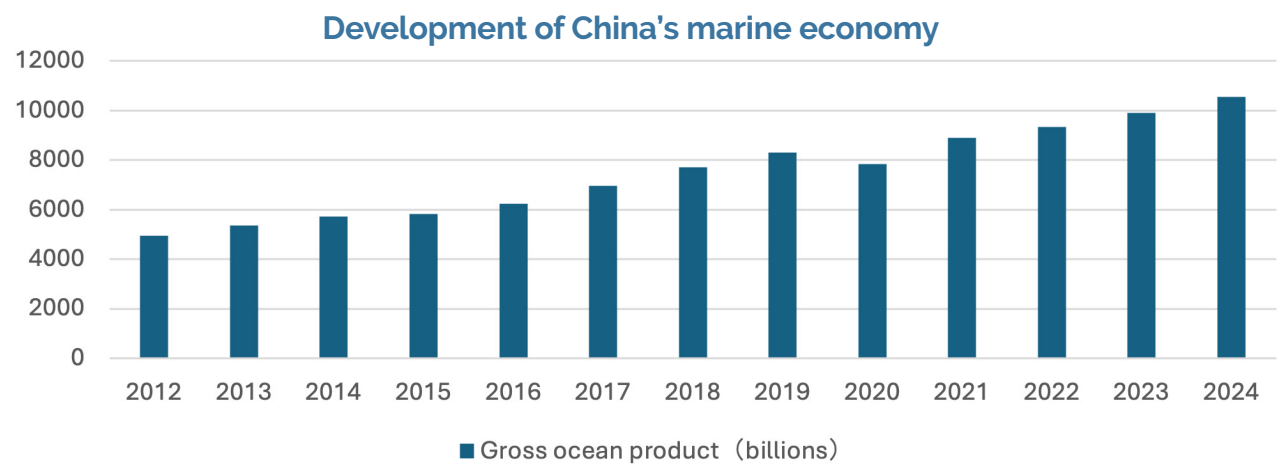

Figure 1. China's marine economic growth demonstrated by the increasing trend of gross ocean product from 2012 to 2024. Source of data: China Marine Economic Statistics Bulletins in 2012 - 2024

[19] CCICED's conversions for this report were calculated using the average U.S. Treasury Reporting Rates for each year cited.
[20] World Wide Fund For Nature Beijing Representative Office, Reviving China's Ocean Economy 2022: *Empower Sustainable Development*, 2022, https://webadmin.wwfchina.org/storage/files/Reviving_China's_Ocean_Economy_2022_EN.pdf.
[21] 中华人民共和国自然资源部海洋预警监测司, *2019年中国海平面公报*, 2020, https://m.mnr.gov.cn/sj/sjfw/hy/gbgg/zghpmgb/202004/t20200430_2510978.html.
[22] 中华人民共和国自然资源部海洋预警监测司, 2019年中国海洋灾害公报, 2020, http://gi.mnr.gov.cn/202004/t20200430_2510979.html.
[23] 中华人民共和国国家海洋局, 2013年中国海平面公报, 2014, http://gc.mnr.gov.cn/201806/t20180619_1798294.html.
[24] It is an initiative aimed at creating a sustainable and environmentally friendly nation, first announced in 2012. "Embracing Sustainability: How Businesses Can Contribute to the 'Beautiful China' Initiative", China Briefing, 2024, https://www.china-briefing.com/news/embracing-sustainability-how-businesses-can-contribute-to-the-beautiful-china-initiative/.
[25] 习近平, 2020, "推动构建海洋命运共同体（2019年4月23日）", *《习近平谈治国理政》（第三卷）*, 第463-464页.
[26] "Xi stresses building Beautiful China, advancing modernization featuring harmony between humanity and nature", Xinhua, 2023, https://english.news.cn/20230718/7e5550fd24aa4d5993dccca2bb9f9810/c.html.
[27] Pan, W., Wang, J., Lu, Z., 2021, "High-quality development in China: Measurement system, spatial pattern, and improvement paths", Habitat International, 118, 102458.
[28] National Development and Reform Commission (NDRC), The Outline of the 14th Five-Year Plan for Economic and Social Development and Long-range Objectives through the Year 2035 of the People's Republic of China, 2021, https://en.ndrc.gov.cn/policies/202203/P020220315511326748336.pdf.


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2. The evolution of the sustainable blue economy narrative in China

A number of concepts are used to define and characterize economies related to the ocean. They include the concept of an ocean economy, blue economy, SBE, regenerative blue economy, and others. *See appendix 1.1-1.3 for the different definitions.*

SBE is a concept applied across multiple fields, such as marine industry, blue finance, marine ecosystems, marine management and governance, and marine value accounting. Various organizations have proposed guidelines and principles for SBE development. They include the WWF's Principles for a Sustainable Blue Economy (2015) and the Sustainable Blue Economy Finance Principles (2018), which were co-developed by the European Commission, WWF and the Prince of Wales' International Sustainability Unit, and have been hosted by United Nations Environment Programme Finance Initiative (UNEP FI) since 2019. In 2023, the G20 also released High-Level Principles on a Sustainable and Climate-Resilient Blue Economy[29].

The term "sustainable blue economy" is more comprehensible to Chinese society than the ambiguous term "blue economy", which is often used as a synonym for "ocean/marine economy" and only sometimes implies a connection to sustainability. "Sustainable blue economy", on the other hand, facilitates the communication of priority actions necessary for promoting sustainability. It is therefore strongly recommended to adopt this term for standardization in China, particularly in the context of policy development and industry engagement.

2.1 SBE concept in Chinese policy and planning

Since the 1960s, China has experienced five "blue industrial technology revolutions", which have significantly shaped the country's marine economic development. In the 1980s, China introduced the concept of the "blue revolution", aiming to leverage modern science and technology to enhance the quality and quantity of aquatic products from both marine and inland waters. This period saw the frequent use of terms like "blue industry" and "blue economy" in the literature on China's marine economy, where the blue economy was initially synonymous with the marine economy and industry. A pivotal moment came in April 2009 when then-Chairman Jintao Hu emphasized the importance of developing the marine economy and creating a blue economic zone on the Shandong Peninsula. This initiative was formally approved by the State Council in January 2011, making it part of the national strategy and leading to a clearer distinction between the blue economy and the ocean economy. The blue economy began to be seen as a broader concept, focusing on sustainable development, coordination between ecological and socio-economic systems, and the integrated development of land and sea.

The concept of the blue economy continued to evolve, and the State Oceanic Administration highlighted its essence as sustainable development under the green growth paradigm. The 13th FYP (2016-2020) further reinforced this by advocating for the integration of land and sea strategies, scientific exploration of marine resources, marine ecosystem protection and the development of a strong maritime nation. The international recognition of the blue economy led China to adopt terms like "blue" and "sustainable" more frequently in foreign cooperation, culminating in the proposal of blue partnership diplomacy in 2017. This Blue Partnership initiative aimed at fostering global cooperation to protect marine ecosystem, respond to climate change, tackle marine pollution and promote sustainable resource use. By 2023, the Belt and Road Blue Cooperation Initiative was launched to foster a resilient and inclusive blue economy based on cleaner production, green technology and the circular economy[30]. Key actions in the initiative include Reports like WWF's "Reviving China's Ocean Economy 2022" and the 2023 Special Policy Study by the CCICED[31] underscored the broad scope of the SBE, which encompasses traditional and emerging marine-related industries, advocates for carbon neutrality and sustainable practices, and emphasizes circularity, collaboration and resilience.

China actively participates in numerous international organizations and conventions related to the ocean and has initiated Blue Partnerships with various countries to foster innovation, integrated management and capacity-building. At the 2022 UN Ocean Conference, China launched 16 Blue Partnership Principles[32], emphasizing cooperation in marine ecological conservation, climate change mitigation, pollution reduction and sustainable resource utilization. The establishment of the Sustainable Blue Partnership Cooperation Network further enhances stakeholder collaboration. China's ratification of the World Trade Organization (WTO) Agreement on Fisheries Subsidies in 2022 demonstrates its commitment to combating illegal fishing and alleviating overfishing pressures.

2.1.1 The administrative framework

China's Ministry of Natural Resources (MNR) serves as the core authority responsible for the blue economy and marine economy, overseeing marine resource development, economic planning and international cooperation. Meanwhile, the Ministry of Ecology and Environment (MEE) focuses on ecological protection, pollution prevention and climate change response. Through policy coordination and inter-ministerial collaboration, these two ministries work together with other authorities managing the respective

[29] G20 Environment and Climate Ministers' Meeting Annex - Chennai High Level Principles for a Sustainable and Resilient Blue/Ocean-Based Economy https://g7g20-documents.org/database/document/2023-g20-india-sherpa-track-environment-ministers-ministers-annex-g20-environment-and-climate-ministers-meeting-annex.
[30] "Belt and Road Blue Cooperation Initiative", Ministry of Foreign Affair of China, 2023, https://www.mfa.gov.cn/eng/zy/gb/202405/P020231020384764771189.pdf.
[31] CCICED, 2023, "Pathways and Policies of Blue Economy in Supporting Carbon-Neutrality Target" http://en.cciced.net/POLICY/rr/prr/2023/202308/P020230821385172207758.pdf.
[32] The Blue Partnership Principles announced by the Chinese delegation at 2022 UN Ocean Conference provides the concept, common collaborative areas and vision of the blue partnership which aims to contribute to the realization of the United Nations 2030 Agenda for Sustainable Development. https://www.weforum.org/friends-of-ocean-action/sustainable-blue-partnership-cooperation-network/.

marine economic sectors to jointly promote the high-quality development of the marine economy and the construction of ecological civilization.

In its policy discourse, the MNR primarily uses the term "blue economy" rather than "sustainable blue economy." This choice results from a combination of factors, including policy continuity, departmental functional focus, adaptation to the international discourse system, and the needs of local practices. This choice does not imply a neglect of sustainability but rather reflects an approach of "conceptual integration" and "action embedding," where ecological goals are translated into specific policy tools. The following provides a multi-dimensional analysis of this phenomenon:

1) Policy terminology continuity and inclusiveness of top-level design

At the 2012 Rio+20 Summit, the concept of the blue economy was introduced, linking the marine environment with economic development, and its connotation already included the goal of "sustainability." In China's 13th FYP, the blue economy was officially proposed under the framework of "expanding blue economic space," defined as an integrated framework encompassing high-quality development of the marine economy, technological innovation and ecological protection. The long-term adoption and consistent application of this term have tied it closely to China's strategic goal of becoming a "maritime power," giving it significant continuity. Moreover, the blue economy reflects the inclusiveness of top-level design. In the context of Chinese policy, the term "blue economy" is endowed with broad connotations, encompassing both the upgrading of traditional industries (such as fisheries and shipping) and the development of emerging sectors (such as marine renewable energy and biopharmaceuticals), while also emphasizing ecological protection and the sustainable use of resources.

2) Practice-oriented approach and departmental functional focus

As the core authority responsible for marine resource development and management, the MNR places greater emphasis on economic planning and industrial layout. For instance, policies led by the ministry, such as the construction of "blue economic corridors" and the development of a "new marine industry system," are directly aimed at economic growth, while ecological protection is often achieved through inter-ministerial collaboration (e.g. jointly advancing the "returning aquaculture to the sea" project with the MEE). The use of the term "blue economy" allows for a sharper focus on the functional scope of the MNR, avoiding the policy fragmentation that could result from overly broad concepts. Although China's policy documents do not explicitly include the "sustainable" prefix, the concept of sustainability is integrated into practice through specific measures. Examples include promoting "high-quality development of the marine economy," "blue finance," "blue carbon sinks," and the "realization of ecological product value."

3) Adaptation to the international cooperation discourse system

Under the United Nations framework, the term "sustainable blue economy" is often tied to the environmental standards, which may impose institutional pressures on developing countries like China, causing reluctance in adopting this

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narrative. Domestically, the concept of the blue economy might be overly generalized, resulting in unfocused policy objectives and difficulties formulating concrete action plans. Internationally, if China lacks a clear blue economy strategy, it may struggle to take a leading role in shaping the global development of the SBE — one which underpins innovation, efficiency and long-term environmental, social and economic resilience. Although "blue economy" remains the dominant term at present, the deepening of sustainability concepts and the development of emerging technologies, such as marine carbon sinks and blue hydrogen, may drive an upgrade of the concept. Furthermore, if global narratives for an SBE become highly binding, China may need to adjust its terminology to better integrate into the international system.

2.1.2 Implications of the policy development

Over the past 12 years, China's approach to ocean-related development has shifted from conventional exploitation to a more balanced and sustainability-focused paradigm, aligning with global sustainability agendas. This evolution is reflected in directives from the Communist Party of China and national policies detailed in the 13th and 14th FYPs. The congresses of the Communist Party progressively emphasized developing the ocean economy while protecting ocean ecology, with the 20th congress highlighting "ecological civilization". The FYPs set green and smart technologies as principles for ocean development, prioritizing industries such as distant water fishery, desalination, pharmaceutics, ocean equipment and ocean services, and expanding to include ocean tourism, near-shore green aquaculture and sea ranches in the 14th FYP.

Both FYPs incorporated ecosystem-based comprehensive management of the ocean, including functional zoning, development intensity control, reclamation control, coastal area conservation and restoration, fishing intensity control, fishery moratorium implementation and pollutant quota systems. Maintaining 35% of the coastline in its natural condition has been a consistent target that China has pursued through actions like the "mangrove for south, tamarisk for north" restoration and strict pollution control enforcement. "Ocean governance" was also emphasized in both FYPs, alongside international and Belt and Road Initiative (BRI) agendas, aiming to project China's positive SBE impacts globally. These efforts demonstrate China's ambition to become a powerful maritime country through balanced and sustainable ocean development.

2.1.3 Integrating MSP with SBE agenda

As the scale of marine development and utilization continued to grow, China began implementing marine functional zoning in the 1980s to balance marine ecological conservation with the development and use of marine spaces. This effort has been continuously refined and improved in practice. Before the 2018 State Council institutional reform, China's MSP system was based on the Law on the Administration of the Use of Sea Areas and the Marine Environmental Protection Law, forming a framework characterized by multi-department collaboration, but with fragmented responsibilities. The core of this system consisted of marine functional zoning and the marine principal functional zoning plan. Additionally, there were a range of specialized plans, such as the island protection plan and the coastal protection and utilization plan. During this period, China's marine spatial development gradually shifted toward higher quality and efficiency, with significant improvements in marine ecological environment quality.

However, this system faced several issues, including a disconnect between terrestrial and marine planning, overlapping departmental responsibilities, and inefficiencies in governance. Recognizing the importance of natural capital and ecosystem services in coastal and marine spaces, as well as the necessity of integrating land and marine planning for ecological conservation, China entered the "multi-plan integration" stage of territorial spatial planning following the establishment of the MNR in 2018.

Under this new framework, territorial spatial planning and China's "national-provincial" two-tier coastal zone planning have become the core of MSP, replacing the traditional marine functional zoning system and fully inheriting the responsibilities related to MSP. This new system divides marine space into "marine ecological space" and "marine development and utilization space," with strict "marine ecological protection redlines" established within ecological spaces. These redlines aim to ensure the protection of critical ecosystems while restricting unregulated development. China has also joined the High Ambition Coalition for Nature and People in 2023, demonstrating China's dedication in meeting the global biodiversity target to protect at least 30 percent of the planet's land and ocean by 2030.[33]

In order to strengthen the coordination with the SBE and ocean governance agendas to achieve the area-based marine protection targets, it is necessary to evaluate the MSP system based on SBE development principles and goals, and strengthen the application of scientific data on marine biodiversity and resources, as well as incorporating the socio-economic parameters for sustainable local livelihood and industry developments. Further information on improving Ocean Accounting that can provide foundation to support MSP and policymaking will be elaborated in Chapter 3.

[33] "30×30 Leads Nature Day As The Most Prominent Biodiversity Goal to Combat Climate Change", High Ambition Coalition for Nature & People, 2023, https://hacfornatureandpeople.org/30x30-leads-nature-day-as-the-most-prominent-biodiversity-goal-to-combat-climate-change/.

2.2 Policy gaps and areas of improvements

2.2.1 Gaps in Chinese frameworks and policy directions

Currently, SBE has not been introduced as the key theme in China's FYP, and there lacks explicit favorable policy signals for advancing the SBE. In 2017, China introduced its "Implementation Opinions on Building a Strong Maritime Country," which outlines the objectives and measures for the ocean economy's development. However, this document is not a traditional FYP but a long-term strategic plan. This plan falls short in providing a detailed roadmap for promoting the practical development of the SBE and has not yielded sufficiently clear signals indicative of favorable policies to develop maritime sectors in a way that also results in nature and community benefits.

Despite the increasing global consensus on the value and strategic significance of the SBE, **China has not yet formulated a national or provincial-wide systematic strategic plan for the SBE**. While some provinces like Shandong and Zhejiang have piloted blue or marine economic zone development plans, these efforts lack the overarching framing of SBE development to synthesize them. China's major policies related to the blue economy highlight modernizing marine economic development and include some elements of marine ecological protection, but they overlook the inclusion and improvement of social wellbeing and livelihoods, including those of women and other marginalized groups. Additionally, these policies lack alignment with the global conversation on the blue economy, Kunming-Montreal Global Biodiversity Framework (GBF) and the climate goals set in the Paris Agreement.

There is no consensus on the definition of the term "blue economy" in China, and many perceptions and views on the blue economy come mainly from the international level. Official documents or reports use the notion of "ocean economy," while the term blue economy or SBE mostly appears in provincial events or occasions held by institutes attached to ministries. This lack of a clear definition complicates the balance between marine economic development and ecological protection, impeding sustainable development efforts. The terms "blue economy", "green economy", and "ocean economy" are often confused, leading to misunderstandings about the environmental sustainability, equity, inclusiveness and climate resilience that the blue economy emphasizes. SBE, on the other hand, clearly implies that the ocean economy should be sustainable. This clarity supports the development of more coherent strategies and action plans.

The incentive level for local governments or entities to develop an SBE is still low. Currently, several provinces and cities are building their ocean pilot zones, each taking a specific sector to incubate their industrial expertise. In January 2024, Weihai City formulated and issued China's first catalogue of sustainable investment and financing support for blue industries. This initiative is an innovative example of Weihai's development of the blue economy, which will promote the effective integration of industrial elements and financial capital and guide financial resources to focus on the blue economy. However, more resources should be mobilized to match these policies.

Promoting a sustainable economy related to the ocean can adapt actions taken to address climate change. Policies to help develop the SBE include incentives for small and medium-sized enterprises and individuals, such as subsidies designed to encourage SBE innovations and efficiencies, the organization of industrial clusters, like sustainable industry parks, and the provision of appropriate capacity building innovative solutions for mobilizing finance and capacity should also be further sought. These incentives should be built on the progress of the points mentioned above.

2.2.2 Governance system on ocean economic sectors and conservation matters

The SBE in China is currently more of a development concept focused on green growth approaches rather than a concrete policy. This absence of a clear definition, shared goal, accountability and operational framework for the SBE hinders the integration of sustainable practices and resource allocation.

Successful environmental mainstreaming in China has been achieved through clear leadership by specific ministries, as seen in areas like wetland conservation and climate change. The SBE requires similar coordination, but currently, various ministries handle different aspects, leading to potential policy conflicts. For instance, the MNR oversees overall ocean economy development, the MEE manages ocean protection and pollution control, and the Ministry of Agriculture and Rural Affairs handles aquaculture and fisheries. This fragmented governance system lacks a unified approach, which can undermine SBE progress. Establishing a leading ministry, akin to the MEE's role in climate change, could streamline efforts and ensure cohesive policy implementation. Additionally, China's fragmented marine legislation poses challenges, lacking integration and coordination. The development of an environmental code[34], expected by 2026, presents an opportunity to incorporate SBE principles and support policy coherence for sustainable marine development. A comprehensive governance system that integrates ocean economic sectors and conservation matters is crucial for advancing an SBE and addressing the complex, cross-cutting nature of marine issues.

[34] "Resolution of the Central Committee of the Communist Party of China on Further Deepening Reform Comprehensively to Advance Chinese Modernization". Adopted at the third plenary session of the 20th Central Committee of the Communist Party of China on July 18, 2024.

2.2.3 Inclusiveness and livelihood of communities during the SBE transition process

The expansion of ocean-based industries can lead to the displacement of local communities and exacerbate social inequities. Coastal communities often rely on traditional livelihoods, such as fishing and tourism, which may be impacted by industrial activities[35]. Involving local communities and ensuring both their visibility in decision-making processes and that they benefit from ocean-based developments can address social challenges, assure support and engagement and encourage innovation. Inclusive governance models and benefit-sharing mechanisms can help distribute the economic gains of the SBE more equitably[36].

Even with the high growth of industrial activity in the ocean economy in the 21st century (dubbed "the blue acceleration")[37], small-scale (in some cases artisanal) fisheries are still the ocean's largest employer[38]. The most recent estimates show that these fisheries include significant numbers of people worldwide who participate in them for subsistence only, suggesting that the ocean and its small-scale fisheries can provide important safety nets to help prevent poverty and food insecurity[39]. Hence any policy or collective action to shift ocean use must include the voices of these users[40] and their wider coastal communities to ensure that their rights and traditional uses are protected as part of an equitable SBE [41,42,43] . Indeed, international policy goals (SDG14.b)[44] and instruments[45] have been agreed on in order to secure a safe space in the increasingly crowded ocean for small-scale fisheries. Some scholars have suggested that governments could zone coastal areas for small-scale fisheries, a tool some countries are already using[46]. Regardless of the specific policy instruments, placing coastal communities at the center of decisions for future ocean use will require a multi-pronged approach[47], and will also likely determine whether a future SBE is, by definition, sustainable.

Throughout the entire fishing industry supply chain, women's contributions are significant in both pre-harvest tasks such as net repair and bait preparation as well as harvesting in coastal shallow waters. Their catches are essential for family nutrition and income support. Globally, women constitute more than 85% of the workforce, significant in both small-scale and industrial processing sectors[48]. Despite their significant role in ocean economy sectors like fisheries, women often hold low-ranking, underpaid or informal positions, instead of managerial roles, and they struggle to access resources like capital, credit or training. Social norms and domestic responsibilities further limit their opportunities[49]. Thus, SBE-related policies should be inclusive to value women's contributions and recognize their distinct roles to assure their equitable livelihood opportunities.

The successful implementation and sustainability of an SBE greatly depends on public participation and acceptance. Failing to engage community in the process can undermine the recognition and effectiveness of SBE development. The Department of Marine Ecology and Environment under the MEE launched an online platform and app to encourage public involvement in marine environmental protection and to gather coastal residents' views on coastal development and conservation. More efforts are needed to promote the importance of coastal and marine conservation among local communities, including women who often have more limited access to information and barriers to their participation in public forums. These platforms can serve as educational tools and can leverage collective community wisdom to inform policy making for developing an SBE at both the national and local levels.

To understand the gender issues of different marine economic sectors and regions, as well as the potential disproportionate impact of climate change on gender, data need to be gathered and analysed from various primary and secondary sources. By mapping key demographic and economic indicators and assessing high-impact sectors in marine economy, this will provide insights to set the foundation for policymaking to ensure gender inclusion in the SBE development processes.

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[35] Bennett, N J., Blythe, J., White, C.S., et al., 2021, "Blue growth and blue justice: Ten risks and solutions for the ocean economy", *Marine Policy* 125, 104387.
[36] Bennett, N.J., Cisneros-Montemayor, A.M., Blythe, J., et al., 2019, "Towards a sustainable and equitable blue economy", *Nature Sustainability* 2(11), 991-993.
[37] Jouffray, J.B., Blasiak, R., Norström, A.V., et al., 2020, "The blue acceleration: the trajectory of human expansion into the ocean", *One earth* 2(1), 43-54.
[38] FAO, Duke University, and WorldFish, Illuminating Hidden Harvests: The Contributions of Small-Scale Fisheries to Sustainable Development, 2023, https://openknowledge.fao.org/items/34646086-8b46-4040-b3b9-c569058bceb9.
[39] Virdin, J., Basurto, X., Nico, G., et al., 2023, "Fishing for subsistence constitutes a livelihood safety net for populations dependent upon aquatic foods around the world", *Nature Food* 4 (10), 874-885.
[40] Cohen P. J., Allison E.H., Andrew N.L., et al., 2019, "Securing a just space for small-scale fisheries in the blue economy", *Frontiers in Marine Science* 6(171), 1–8.
[41] Bennett, N.J., Cisneros-Montemayor, A.M., Blythe, J., et al., 2019, "Towards a sustainable and equitable blue economy", *Nature Sustainability*, 2(11), 991-993.
[42] Österblom, H., Wabnitz, C.C.C., Tladi D., et al., *Towards Ocean Equity*, 2020, www.oceanpanel.org/how-distribute-benefits-ocean-equitably.
[43] Gill, D. A., Blythe, J., Bennett, N., et al., 2023, "Triple exposure: reducing negative impacts of climate change, blue growth, and conservation on coastal communities", *One Earth*, 6(2), 118-130.
[44] "Goal 14 | Department of Economic and Social Affairs", United Nations, n.d., https://sdgs.un.org/goals/goal14#targets_and_indicators.
[45] "Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries", FAO, n.d., https://www.fao.org/voluntary-guidelines-small-scale-fisheries/en.
[46] Basurto, X., Vidin, J., Franz, N., et al., 2024, "Securing ocean space for the sustainable development of small-scale fisheries", *Research Square*.
[47] Claudet, J., Blythe, J., Gill, D.A., et al., 2024, "Advancing ocean equity at the nexus of development, climate and conservation policy" *Nature Ecology & Evolution*, 8(7), 1205-1208.
[48] FAO Globefish Research Programme, The role of women in the seafood industry, 2015, Page 3, http://www.globefish.org/upl/Publications/Final%20EXECUTIVE_SUMMARY_GL.pdf.
[49] International Institute for Environment and Development (IIED), Steering Gender to the Centre of the Blue Economy, 2019, https://www.iied.org/steering-gender-centre-blue-economy.

3. Improving ocean accounting to support sustainable development

3.1 Overview of global ocean accounting

Ocean accounts are a comprehensive set of structured tables that compile and integrate data concerning ocean's natural assets, use of those assets to support economic activities and social well-being, impacts of economic activities on the ocean environment and ecosystems, and governance conditions. These accounts apply the same accounting concepts and principles found in established frameworks like the System of National Accounts (SNA) and the System of Environmental-Economic Accounting (SEEA). By incorporating macroeconomic accounts, environmental-economic accounts, ecosystem accounts and structured data on ocean beneficiaries, technology, governance and management, ocean accounts provide a holistic view of the relationship between ocean wealth, ocean health, ocean economy and ocean governance. This integration allows for the accounting of legal, illegal, unreported and unregulated activities, as well as the assessment of natural assets (condition and extent), flows, wastes, expenditures, taxes and subsidies related to the ocean.

Ocean accounts enable countries to move beyond traditional GDP measures to better manage and monitor progress toward SBE development. By integrating multiple data sets from various sources, these accounts help track changes in ocean wealth, ocean-related income and welfare, and ocean-based economic production. They create a common information infrastructure that supports evidence-based decision making on ocean governance, policy development and the effectiveness of policy outcomes, including strategically planning SBE development. Additionally, ocean accounts can facilitate private sector financing in the ocean economy and ecosystem restoration projects by providing investors with regularly updated and comparable data, enabling them to track the success of their portfolios. They also support the derivation of Beyond GDP indicators, enabling international comparisons and reporting on commitments like the Sustainable Development Goals (SDGs), Kunming-Montreal GBF and the Paris Agreement. By organizing and presenting information in accessible formats such as dashboards, scenarios, spatial plans and indicators, ocean accounts ensure that decision makers can easily understand and utilize the data for informed governance and sustainable development.

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The development of ocean accounting frameworks represents a critical and burgeoning approach to measuring and managing SBE development. More than 50 countries have reported undertaking some form of pilot ocean account, although the majority are sectorally narrow (only four have done a full Ocean Economy Satellite Account). Globally, progress has been made in establishing basic frameworks, providing SNA/SEEA compliant technical guidance and piloting approaches, particularly related to ocean and coastal ecosystems and ocean economy accounts.

3.1.1 The limitations of current global ocean accounting

Despite significant progress, current implementation practices of ocean accounting remain focused on pilot studies and is experimental. These practices are yet to be established as official statistics. Comprehensive accounts need to be developed to be effective tools for holistic ocean management and sustainable development planning. The existing state of ocean accounting reflects both the complexity of measuring ocean-related economic activity and the historical focus on conventional economic metrics. Several limitations characterize current approaches, including the ability to understand and apply local knowledge for decision making (a significant area of research for the global community). These limitations must be addressed to ensure that ocean accounts are effective tools for comprehensive ocean management and sustainable development planning. Key considerations in implementing the ocean accounting framework are:

1) Variations in definitions of ocean-related activities and boundaries

The Global Ocean Accounts Partnership (GOAP) Technical Guidance on Ocean Accounting clearly defines the scope of ocean-related activities, however the measurement approaches of blue, coastal activities and indirect ocean-related services vary significantly across jurisdictions. While ocean activities are defined by the Organisation for Economic Co-operation and Development (OECD) and others, countries still implement their own definitions, which leads to variations in what is included. For example, many have terrestrial components, while some also include freshwater lakes. The proportion (or "partial" in technical

terms) of each economic activity related to the ocean needs to be determined by individual implementing bodies when developing an account. These partials naturally differ between jurisdictions based on national circumstances. This necessary inconsistency can make comparative analysis between countries challenging, though coherent ocean accounting within jurisdictions and over time offers powerful insights for policy development within countries.

The transboundary nature of the ocean remains a particular challenge and is one of the key reasons why the GOAP was established and why the global, multi-institutional partnership developed its Technical Guidance for Ocean Accounting, which specifically addresses ocean-related challenges in existing accounting frameworks. This guidance continues to evolve as we learn more about the interconnected nature of our ocean. However, this should not be a barrier to implementation, if acknowledged.

2) Data collection, integration and quality issues

Very often data exists for ocean accounting purposes, however, discoverability, access and transparency are challenging. Though implementation across accounting exercises commonly relies on fragmented data collected for other purposes; the lack of standardized data collection protocols, insufficiently strong metadata and limited coordination between agencies can lead to data gaps and quality concerns. Global experience demonstrates, however, that the implementation of any accounting exercise is vital to illuminate where data gaps exist and what priority data to collect.

Countries may also struggle to maintain consistent time series data in environmental data, making trend analysis and policy evaluation difficult. The increasing quality and use of remote sensing and similar techniques is beginning to change this at least for nearshore waters. Again, as with the definition challenge and consistent with SNA and SEEA country-level implementation, data should not be a barrier to implementation, if acknowledged in the accounts.

3) Incomplete coverage of ecosystem elements

Although a comprehensive ocean accounting framework should organize social, economic and environmental information, to date, many countries are taking an approach that predominantly emphasizes the economic aspect on market-based activities. This results in a significant oversight of several critical aspects of ocean resources and their broader impacts. The integration of environmental and economic data remains particularly challenging, with few countries successfully implementing comprehensive approaches that capture both dimensions concurrently. They often fail to adequately capture non-market ecosystem services, such as the regulatory functions of marine ecosystems that contribute to climate stability and biodiversity. Social and cultural values associated with ocean resources, including recreational, spiritual and heritage benefits, are frequently neglected, despite their importance to many communities.

Furthermore, the distributional impacts across different stakeholder groups are not sufficiently addressed, leading to inequities in how benefits and burdens are shared among various populations. Lastly, the interconnections between ocean health and economic outcomes are often ignored, missing the critical link between a thriving marine environment and a prosperous economy. To support SBE development, it is imperative to expand accounting activities to encompass these non-market values and interconnections, ensuring a more comprehensive and equitable approach to ocean resource management. Ocean accounts, which link economic, environment and social dimensions, attempt to address these shortcomings.

3.1.2 Benefits of ocean accounting for sustainable development

Following the existing ocean accounting activities and frameworks and improving implementation can meaningfully contribute to SBE planning in several key areas:

- **Strategic planning and policy development:** Even incomplete ocean accounts provide valuable baseline information for policy development. They help identify key economic sectors, track growth patterns and highlight potential sustainability concerns. This information supports more informed strategic planning processes and helps align development objectives with environmental constraints.
- **Sector-specific management:** Current frameworks often provide detailed information about traditional maritime sectors (fishing, shipping, offshore energy), enabling more effective sector-specific management approaches. This granular data can inform licensing decisions, capacity planning and regulatory frameworks.
- **Monitoring and evaluation:** Existing accounts, despite their limitations, establish important baseline metrics for monitoring progress toward SDGs. They provide quantitative frameworks for evaluating policy effectiveness and tracking sectoral changes over time.
- **Integration with broader economic planning:** Ocean accounts help integrate marine sector considerations into broader economic planning processes. They provide structured ways to consider ocean-related activities within national development strategies and economic policies.
- **Effective MSP:** Integrating ocean accounting that captures economic, environmental, and social datasets enables policymakers to track critical metrics—such as ecosystem health, human activity patterns, resource conflicts, and cross-sectoral impacts—ensuring that MSP processes are grounded in data-driven decision-making. This helps develop balanced spatial plans that harmonize marine conservation with SBE.

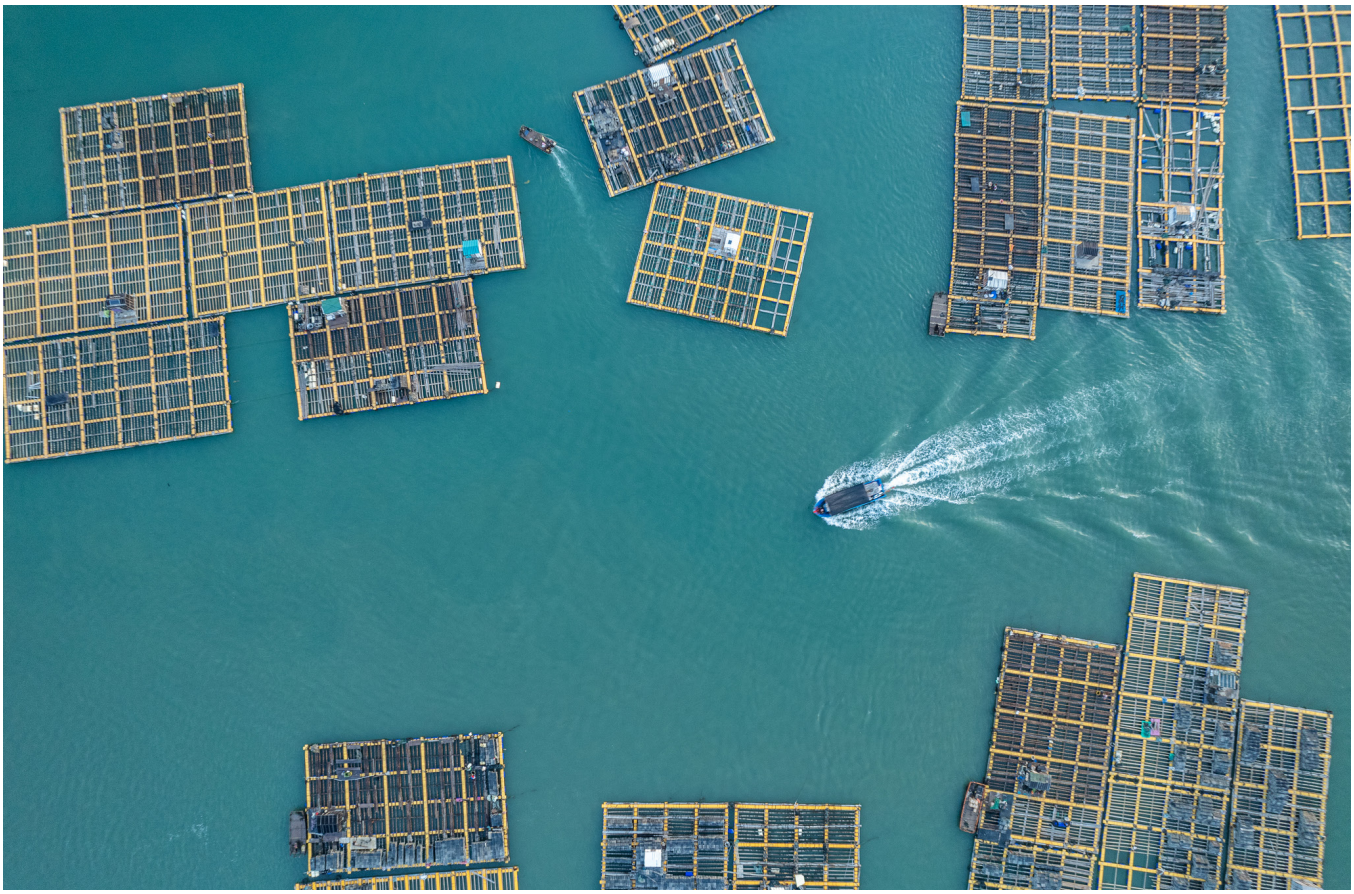
3.2 China's ocean accounting progress

The global valuation of the ocean economy is predominantly estimated based on ocean industries, while the specific methodologies and parameters for evaluating the values of marine ecosystem services are still under development. The aggregation of ocean-specific data with terrestrial data, such as the merging of marine and freshwater fisheries, makes it more challenging to understand the health and economic contribution of the ocean. Despite China's progress in creating a sophisticated system for analyzing and accounting for its ocean-based industries, there are still areas in the accounting of marine ecosystems that require further improvement and enhancement.

China is a major maritime country that attaches great importance to the construction of an ocean economic system, while also promotes ocean governance and conservation. Its development of blue finance has gone through three stages: The first stage occurred during the 12th FYP period and pertained to guidance and regulation of the marine economy. During this time, China supported the restructuring of the marine economy mainly through fiscal and financial instruments. During the 13th FYP period, China entered the second stage, characterized by financial institutions supporting the development of the marine economy, and specific subsets of the marine economy, such as marine fisheries, marine transportation, marine tourism, marine renewable energy industries. The third stage, during the 14th FYP period, was marked by strong financial support for the development of the blue economy. During this stage, the relevant agencies and departments began labelling blue bonds, and financial institutions began issuing blue bonds to support marine conservation and the sustainable use of resources.

3.2.1 Improving the ocean economic accounting

There are four essential accounts that connect ocean assets and governance with sustainable economic practices. These accounts include ocean asset accounts, which assess the health of ocean resources; ocean economy accounts that track economic activities and revenues; ocean residue accounts for waste and emissions entering the ocean; and ocean governance accounts that identify management responsibilities and monitor management effectiveness. These four accounts interact dynamically to shape SBE development. For example, expanding ocean-based economic activities may boost GDP (increasing the economy account) but deplete assets and increase residues, further degrading assets if governance is weak. Conversely, sustainability requires maintaining or improving asset conditions, reducing residues, and strengthening governance to ensure responsible management. By balancing these accounts, stakeholders can promote economic growth while preserving marine ecosystems and ensuring long-term sustainability.



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In China, the component of the account being mainstreamed for strategic planning and policymaking is the economic account, while the rest are either only partially piloted at the local level or studied in research. There is a need for developing a comprehensive ocean accounting approach to advise policies and ensure economic growth does not compromise ocean health. Improving ocean accounting is crucial for informed decision-making in the SBE. Non-market ecosystem services should complement ocean economy satellite accounts but should not be integrated into one macroeconomic aggregate. Incorporating metrics related to ocean health, ecosystem services and the link between natural capital and economic productivity into national accounts is a key strategy for implementing an SBE. For China, besides the sustainable transformation of the ocean industries, a vital next step toward an SBE is the integration of more environmental and natural capital-related information into its existing accounts, which should fully reflect the health of the marine environment and the development and societal contributions of the SBE. China could benefit from engaging with GOAP, which aims to incorporate marine sectoral and environmental data into national decision-making, and participate in the co-development of international standards.

Due to the varying data foundations and accounting methods among countries, comparing the development of the ocean economy on an international scale is still challenging, highlighting the need for enhanced dialogue and collaboration. There needs a stronger alignment between China and the other countries on the scope of ocean-related activities and define them and their respective ratios (i.e., direct effects); then analyze input-output reliance (i.e., indirect effects). The scope should capture a wide range of indicators of the induced effects like labor input, and scientific and technological innovation. Moreover, it is important to research into sex-disaggregated data concerning people, such as labor, so that the differential impact of and contributions to the ocean industry on women and men can be more fully understood. Regular revisions of the ocean industry statistics accounting system and the digitization of the industry data collection and processing are also necessary.

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3.2.2 Advancing the valuation of marine ecosystem services in China

The ocean's value extends beyond providing essential resources; it also offers crucial ecosystem services such as climate regulation, coastal protection, water conservation, food supply, livelihoods and cultural value. Recognizing these values is vital for sustainable ocean development. Although valuing marine ecosystem services is complex, initiatives like the shared wealth fund by WWF and the attempts of marine ecological capital assessment by the First Institute of Oceanography[50] provide a starting point.. China should develop a national approach to valuing marine ecosystem services and integrate these values into policy and economic development decisions. Comprehensive marine data is essential for formulating sustainable blue economic development plans and improving the marine industry's efficiency. However, China currently lacks comprehensive laws and regulations on marine information sharing. Addressing these challenges requires adjusted policies to enhance data collection and analysis, incentivizing public-private partnerships and leveraging technological innovation.

Scientific and comprehensive marine data can provide a solid foundation for the formulation of marine economic development planning and policies, as well as assessing the carrying capacity of the marine environment. This data is crucial for improving the efficiency and competitiveness of the marine industry, which is essential for the development of the SBE. China's ocean observation and data network construction faces two major problems: insufficient ocean observation facilities and incomplete laws and regulations on marine information sharing and service policies. The coverage of China's marine observation facilities is not wide enough, with certain blind spots and gaps affecting comprehensive monitoring and data acquisition. Additionally, China's current marine legal system lacks a relevant legal framework for marine information management, including the ownership, collection rights, attribution and transfer of marine information. This has led to monopolization of marine information and wasted national resources, directly constraining the development of the SBE.

[50] McCook, L.J., Cai, L., Yeung, C.W., et al., 2025, "Marine ecosystem services and natural capital in China: Opportunities for improved understanding, valuing, and policy", *PNAS Nexus* 2025 May 20;4(5):pgaf110.

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4. Unlocking blue finance to facilitate the blue transformation

4.1 The global blue finance ecosystem

In order to direct capital and development policies toward SBE pathways, there is a need for commonly agreed ocean-based principles, accountability frameworks, guidance, criteria and metrics. These must be supported by robust regulation, including the use of incentives and disincentives. While the ocean is not well incorporated within the global finance system, some blue finance frameworks and guidance have been or are being developed and are considered to be significant contributions to the emerging blue finance ecosystem.

4.1.1 Principles, frameworks, criteria and metrics

The Sustainable Blue Economy Finance Principles provide the first global ocean framework to guide finance decisions and development policy toward the most sustainable development pathways. The Principles are hosted by UNEP FI's Sustainable Blue Economy Finance Initiative[51], a knowledge management platform that has 88 members, representing over $11 trillion AUM. The Principles have also been adopted by 44 signatories, including both public and private sector partners, such as the World Bank, European Investment Bank (EIB) and Asian Development Bank (ADB), Bank of Qingdao, Rockefeller Capital Management, Axa XL, and have been endorsed by the Government of Portugal and the EU High-Level Expert Group on Sustainable Finance.

By aligning with the Ocean Sustainable Development Goal (SDG14) and complementing existing frameworks governing responsible investment (the Equator Principles and UN Principles for Responsible Investment (UN PRI), the Principles are designed to provide a broad vision, guardrails and guidelines for future sustainable financing of the ocean, and ensuring that ocean-related finance delivers long-term value, without causing negative impacts on marine ecosystems or on efforts to reduce carbon emissions. As such, the Principles are relevant to all ocean users that are financing, being financed by, or regulating the ocean economy.

SBE guidance[52,53] has also been developed to compliment the Principles and guide sustainable development decisions within the ocean economy. This publicly available guidance covers eight maritime sectors (aquaculture, commercial fisheries, coastal tourism, shipping, ports, marine renewable energy, solid waste disposal and natural infrastructure) and provides clear, actionable, and granular science-based criteria categorizing activities that should be avoided, those that would need to be transitioned, through policy and targeted finance interventions, and those that should be proactively sought out, financed and implemented.

BOX 2: Overview of Sustainable Blue Economy Finance Principles

Protective: Support investments, activities and projects that take all possible measures to restore, protect or maintain marine ecosystems.

Compliant: Support activities compliant with international, regional, national legal and other relevant frameworks. Risk-aware: Base investment decisions on holistic and long-term assessments that account for economic, social and environmental values, quantified risks and systemic impacts and adapt decision-making processes and activities to reflect new knowledge of the potential risks.

Systemic: Identify the systemic and cumulative impacts across value chains. Inclusive: Support investments, activities and projects that include, support and enhance local livelihoods, and engage effectively with relevant stakeholders, identifying, responding to, and mitigating any issues arising from affected parties.

Cooperative: Promote cooperation between financial institutions and relevant stakeholders.

Transparent: Report on investments' positive and negative impacts and report on progress in terms of implementation of these Principles.

Purposeful: Endeavor to direct investment / banking / insurance to projects and activities that contribute directly to the achievement of SDG 14 and other SDGs.

Impactful: Support investments, projects and activities that go beyond the avoidance of harm to provide social, environmental and economic benefits from our ocean for both current and future generations.

Precautionary: Assess the environmental and social risks and impacts of ocean investment, activities and projects based on sound scientific evidence and take precautionary principles when scientific data is insufficient.

Diversified: Recognize the importance of small to medium enterprises in the ocean economy and develop diversified instruments to reach a wider range of small and large-scale sustainable development projects.

Solution-driven: Support commercial innovations and encourage the spread of best practice thus developed.

Partnering: Partner with public, private and non-government sector entities.

Science-led: Develop knowledge and data on the potential risks and impacts associated with investment in the ocean economy; endeavor to share scientific information and data on the marine environment.

[51] "Sustainable Blue Finance", UNEP FI, n.d., https://www.unepfi.org/blue-finance/.
[52] UNEP FI, Turning the Tide: How to Finance a Sustainable Ocean Recovery—A practical guide for financial institutions, 2021, https://www.unepfi.org/publications/turning-the-tide/.
[53] UNEP FI. Diving Deep: Finance, Ocean Pollution and Coastal Resilience, 2022, https://www.unepfi.org/publications/diving-deep/.

The Principles offer an overarching chapeau for the emerging blue finance ecosystem. It is therefore important to seek linkages and alignment between the Principles and other functional parts of the blue finance ecosystem. Most notably, the Task Force on Nature-related Financial Disclosures (TNFD) is a corporate disclosure framework for finance institutions to report and act on evolving nature-related risks[54]. By providing criteria and metrics on nature-related impacts and dependencies, it aims to increase transparency across the sector and encourages consistent reporting. The TNFD's focus is broad in terms of biodiversity, but the task force is currently developing criteria that is strongly aligned with UNEP FI guidance for a number of ocean sectors.

4.1.2 Insights from the international experience

While these emerging initiatives and voluntary frameworks have a significant role to play in shaping ocean-related guidance and in driving the transition toward an SBE, it is important that SBE sectors are included in national "sustainable" finance taxonomies — classification systems that provide regulators and financiers clarity on the activities, assets and project categories that deliver on key climate, green and blue, social and sustainable objectives[55]. By providing environmental performance criteria to define what constitutes sustainable activities across different sectors[56], they deliver integrity within the sustainable financial market and allow governments to track capital flows to "sustainable" sectors. This enables them to assess whether sufficient capital is flowing to targeted sectors to meet national biodiversity and climate commitments[57].

By way of example, within the EU green taxonomy, introduced in 2020, economic activities must respect three criteria, namely (i) substantially contribute to one or more environmental objectives of the taxonomy; (ii) do no significant harm (DNSH) to any other environmental objectives of the taxonomy; and (iii) respect social safeguards. To guide the second category, UNEP FI's guidance includes a recommended exclusion list for activities that cause significant harm to nature and people[58].

Given the significant contribution of the ocean to national economies[59] and the risks associated with unsustainable business-as-usual practices[60], the development of blue taxonomies and their integration with national policies and development plans should be prioritized. Current sustainable finance taxonomies (47 as of April 2024 [61]) are primarily based on terrestrial sectors, however, so targeted action is needed to scale the blue dimension.

As a minimum, sustainable blue finance taxonomies need to be forward-looking and grounded in robust ocean science to incentivize and guide corporate transition to operate within planetary boundaries. Successful implementation of sustainable blue finance taxonomies should address regulatory integration, harmonization and improvements in data availability[7]. Alignment through a common set of principles, such as the Sustainable Blue Economy Finance Principles, definitions and sustainability objectives, would ensure ocean-related technical screening criteria and performance metrics are aligned to climate and biodiversity commitments and are interoperable across markets. They should also be reviewed regularly, to integrate the latest environmental science and technology innovation, and should be consistent with international guidance, such as the UNEP FI guidance, and corporate disclosure standards, such as the Task Force on Climate-related Financial Disclosures (TCFD) and TNFD. It is also key to have mandatory reporting requirements, as is the case for the EU and China[62], where the Green Industry Guiding Catalogue is mandatory for sustainable financing activities.

Uptake, alignment and adoption of standardized SBE frameworks, principles, guidance, tools, criteria and metrics will require regulators and the finance sector to view ocean risks as material and to fully recognize the strong opportunities offered by a "sustainable" blue economy.

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[54] TNFD, Recommendations of the Taskforce on Nature-related Financial Disclosures, 2023, https://tnfd.global/wp-content/uploads/2023/08/Recommendations_of_the_Taskforce_on_Nature-related_Financial_Disclosures_September_2023.pdf.
[55] Nicholas Pfaff, Özgür Altun, and Yanqing Jia, Overview and Recommendations for Sustainable Finance Taxonomies, 2021, https://www.icmagroup.org/assets/documents/Sustainable-finance/ICMA-Overview-and-Recommendations-for-Sustainable-Finance-Taxonomies-May-2021-180521.pdf.
[56] WWF, When Finance Talks Nature, 2022, https://wwfint.awsassets.panda.org/downloads/when_finance_talks_nature.pdf.
[57] Jena, L.P., Tandon, G., Creating Effective Sustainable Finance Taxonomies, 2025, https://www.orfonline.org/public/uploads/posts/pdf/20250211110942.pdf.
[58] UNEP FI, "Recommended Exclusions for Sustainable Blue Economy Financing, 2021, https://www.unepfi.org/publications/turning-the-tide-recommended-exclusions.
[59] WWF, Reviving the Ocean Economy, 2015, https://wwf.panda.org/discover/our_focus/oceans_practice/reviving_the_ocean_economy/.
[60] "Navigating Ocean Risk: Value at risk in the global blue economy", WWF & Metabolic, 2021, https://value-at-risk.panda.org/#recommendations.
[61] Sustainable Banking and Finance Network (SBFN), 2024, SBFN Toolkit: Sustainable Finance Taxonomies, https://www.sbfnetwork.org/sbfn-toolkit-sustainable-finance-taxonomies/.
[62] OECD, 2020, Developing Sustainable Finance Definitions and Taxonomies, Green Finance and Investment, 2020, https://doi.org/10.1787/134a2dbe-en.

4.2 Major types of blue finance instruments

Financial support for the green development of the marine economy exhibits three key characteristics. First, the marine economy is an important focus for financial support, yet due to varying risk preferences associated with different financial instruments, different types of capital are allocated across sectors such as offshore wind power, marine equipment manufacturing, seawater aquaculture, and marine ecological protection, with slight variations in priority areas. Second, in terms of overall scale, financial support still has room for expansion relative to the marine economy's share of total GDP. However, this may also indicate that financial leverage has been effectively utilized. Third, based on index performance and bond yield levels, the asset quality of financial support for the marine economy generally aligns with the average level across all asset types.

4.2.1 Credit

Internationally, credit support for the marine economy has evolved into a dual-driven model of government guidance and market operations. Developed countries like Singapore, Japan and Norway use policy banks and maritime funds to provide long-term, low-interest loans, reducing financing risks and supporting marine economic development. Commercial banks complement these efforts by offering market-based loans for sectors such as shipbuilding and fisheries, and integrating marine ecological risks into their credit approval processes, aligning with the SDGs. Multilateral financial institutions like the World Bank and ADB further promote the SBE by financing environmental targets and marine risk insurance. In China, banks have innovated credit products for the marine economy, using sea-use rights, biological assets and carbon sink rights as collateral, and expanding financing to cover the entire marine industry chain. Technological advancements like the Internet of Things (IoT) and blockchain are enhancing asset supervision and mitigating credit risks. The Agricultural Development Bank of China has pioneered the "marine+" credit model, focusing on green development, industrial parks, ports, and tourism, with well-defined repayment sources and strong growth potential.

Table 1: Types and cases of innovative pledges for marine economy credit

Type of pledge	Content	Application cases
Right to use uninhabited islands	Supporting island development and ecological restoration by pledging the right to use islands as collateral	In 2013, China Minseng Bank Fuzhou Branch[61] handled the registration of an RMB 80 million (~$13 million) mortgage on the right to use the uninhabited Yangyu Island and its surrounding sea area in Fujian for fishery resource restoration and tourism development, creating a precedent for these types of mortgages in the country.
Pledge of marine carbon sinks	Converting ecological value into financing capacity by pledging the expected yield rights of aquaculture carbon sinks such as algae and shellfish	China Industrial Bank Qingdao Branch[62] launched the nation's first marine carbon sink pledge loan with Jiaozhou Bay wetland carbon sinks as a pledge. Weihai Commercial Bank[63], in 2022, issued an RMB 8 million (~$1.18 million) loan with the pledge of the expected marine carbon sink revenue rights from the enterprise's seafood farming as a credit enhancement tool.
IoT dynamic supervision of pledges	Monitoring marine ranch assets through IoT technology to solve the challenges of valuing and regulating live assets	In 2022, Changdao Rural Commercial Bank[64] issued a issued a RMB 5 million (~$739,000) working capital "Ocean Ranch IoT Loan" to a seafood production enterprise. The enterprise used the right of use to the sea area it owns as collateral to obtain the loan, and addresses the common issue of lack of asset on the shore as collateral that seafood enterprises face.

4.2.2 Bonds

The bond market significantly promotes the sustainable development of the global marine economy, with blue bonds emerging as a new asset class. Since the Seychelles issued the first sovereign blue bond in 2018, the volume and scale of blue bond issuances have grown, supporting sustainable marine value chains, ecosystem management, conservation and coastal infrastructure. Green and sustainability bonds also fund marine-related projects, driving investments in blue carbon reserves, offshore wind power and coastal zone management. The International Capital Market Association (ICMA) has developed guidelines for blue finance to enhance transparency and investor confidence. In China, blue bonds primarily finance offshore wind power and seawater desalination projects, though their issuance remains low compared to the marine economy's GDP contribution. As of 2024, 30 blue bonds worth 30.99 billion (~$4.3 bllion) have been issued, with funds mainly allocated to coastal provinces. Innovations include the diversification of bond types, such as the blue asset-backed security, and projects that combine sustainable marine resource utilization with clean energy development, supporting carbon neutrality and the transition to a clean energy system.

[63] "福建无人岛开发市场化破冰 个人可申请做岛主", China News, 2013, https://www.chinanews.com.cn/sh/2013/08-19/5178871.shtml.
[64] "兴业银行落地全国首单湿地碳汇贷", China Industrial Bank, 2021, https://www.cib.com.cn/cn/aboutCIB/about/news/2021/20210820.html.
[65] "威海市商业银行股份有限公司2022年度环境信息披露报告", Weihai City Commercial Bank, 2023, https://www.whccb.com/publish/whccb/20446/37253/37261/2023/11/15/20231115121200774127466/1700021551113.pdf.
[66] "海洋牧场物联网贷", Shandong Government, 2022, http://gzw.shandong.gov.cn/articles/ch04565/202211/36c77e4b-10da-4b22-abc2-14a841b94a3a.shtml.

Table 2: Types and cases of innovative green insurance for marine economy

Marine industry	Green insurance product	Product details	Insurance function
Traditional marine industry (fishery, shipping, ports, tourism, etc.)	Hainan Tilapia Farming Income Insurance[65]	The insurance liability covers income loss resulting from the death of tilapia due to natural disasters such as typhoons, heavy rains and floods, as well as losses incurred when the market purchase price falls below the target guarantee price specified in the contract. To qualify for coverage, farmers must trace the source of the seed, maintain appropriate breeding densities, ensure adequate breeding facilities, and adhere to standardized management practices. Claims will be denied if the use of illegal drugs or antibiotics exceeds regulatory limits.	Loss compensation, industry sustainable transformation
Ecosystems services	Mexico Quintana Roo Coral Reef Insurance[66]	The insurance covers 160 kilometers of coral reefs, with payout funds activated in the event of a storm with wind speeds surpassing specified thresholds. These funds are used to finance reef restoration efforts conducted by pro-fessional protection teams.	Risk management, loss compensation, capital financing
	Mangrove CCER Project Insurance[67]	The insurance covers the loss of State Certified Emission Reduction (CCER) carbon sinkss in the Fujian Mangrove Provincial Nature Reserve. It aims to mitigate the financial uncertainty of CCER revenue resulting from natural disasters and accidents.	Loss compensation, capital financing

4.2.3 Insurance

The insurance industry plays a crucial role in marine risk management, loss compensation, capital financing, and the sustainable transformation of the sector, facilitating a shift from resource consumption to ecological value. It has developed a multi-tiered risk mechanism covering traditional industries like fishing and shipping, emerging sectors such as offshore wind power, and marine ecosystems. Products like aquaculture income insurance and green ship insurance support the green transition of traditional industries, while full-process coverage is offered for emerging fields. Initiatives like mangrove insurance in the Philippines fund conservation efforts through premiums, reducing risk via proactive management. The industry has moved from economic payouts to ecological restoration, exemplified by Mexico's hurricane-triggered coral reef insurance and Belize's Marine Index Policy, which aid disaster recovery and economic resilience. In capital financing, the insurance sector mobilizes social capital for sustainable marine projects and uses credit enhancement tools like fishery carbon sink index insurance to support enterprise financing. Additionally, insurance drives innovation in green technologies, with products such as Skuld's carbon emission pricing model incentivizing emission reductions and China United Property Insurance promoting eco-friendly farming through shellfish carbon sink insurance.

4.2.4 Others

1) Funds

Green funds support maritime sustainability through diverse funding sources and investment strategies. They balance environmental protection with economic development, focusing on ecosystems such as coral reefs and mangroves, and sectors such as fisheries and energy. Funding comes from government and public contributions, private capital, or a mix of both. Investment approaches vary geographically, with developed countries focusing on market-based funds and developing countries relying on international and policy funds. Finally, international funds focus more on global governance, sovereign funds on regional needs, and market-based funds on sustainable returns and innovation.

2) Financial leasing

The financial leasing industry plays an important role in promoting technological innovation and environmental sustainability across the marine sector, particularly in the areas of marine engineering equipment, marine transport and marine fisheries. In maritime transport, green lease financing has enabled major projects such as the "Boqiang 3060" wind turbine installation vessel, highlighting the role of leasing in promoting sustainable maritime technologies. In marine fisheries, leasing promotes marine ranching activities, such as Suyin Financial Leasing supporting the construction of environmentally friendly multifunctional marine ranching platforms.

[67] "今年翻塘了，但我还有钱过年"，The Paper, 2022, https://www.thepaper.cn/newsDetail_forward_16658802.
[68] "Biodiversity and Ecosystems Services Index: measuring the value of nature", Swiss Re, 2020, https://www.swissre.com/institute/research/topics-and-risk-dialogues/climate-and-natural-catastrophe-risk/expertise-publication-biodiversity-and-ecosystems-services.html#/.
[69] "助力零碳进博 中国太保首创红树林CCER项目保险保障模式"，China Pacific Insurance Company , 2024, https://www.cpic.com.cn/c/2024-11-19/1868053.shtml.

4.3 China's blue finance taxonomy development and future applications

In China, domestic financial institutions have followed international developments, intensified financial innovation, introduced policy guidelines and expanded blue finance practices. However, China's current green finance standards for identifying blue activities reveal several issues, including fragmented standards and regional disparities; fragmented industry coverage; lack of technical details and data support; uneven alignment with international standards; and lack of monitoring, evaluation and incentive mechanisms.

China has not issued a nationwide guideline for blue finance, relying instead on green finance standards that inadequately define sustainable marine economic activities. Regional and institutional differences in classification standards hinder the large-scale development of blue finance. Policies vary in their definitions of the "blue economy," with emerging sectors like marine carbon sink trading and blue carbon finance facing financing constraints. Some policies lack quantitative indicators and actionable guidelines, increasing the risk of "blue-washing." While some standards reference international guidelines, most local policies focus on domestic needs and lack integration with international carbon markets, limiting cross-border cooperation. Additionally, most policies lack dynamic tracking mechanisms and regular evaluations, reducing market confidence in the effectiveness of blue finance initiatives.

Over the past two years, local governments in China have carried out a number of explorations and practices of blue finance standards. In 2024 the Yantai government and the Institute of Finance and Sustainability (IFS) jointly compiled and released a blue investment and financing industry support catalogue[70], which for the first time compiled a qualitative and quantitative system for financial institutions to identify and invest in blue economic activities. The Yantai catalogue contains five main elements:

1) Establishment of four objectives. The key to defining SBE activities is the establishment of environmental and social objectives for economic activities. Aligned with SDG14 and China's 14th FYP for Marine Ecological and Environmental Protection, the blue finance standard encompasses four objectives: sustainable use and protection of marine resources, prevention and control of marine pollution, protection and restoration of biodiversity and ecosystems, and climate change mitigation and adaptation.

2) Principles. The definition of SBE activities should follow principles that guide industry activities and indicator selection.

- Substantial contribution: SBE activities should significantly contribute to one or more of the four environmental objectives.
- DNSH: These activities should not negatively impact the oceans or the sustainable use of resources.
- Adaptation to latest developments: Activities should be continuously updated and improved to align with the evolving ocean economy, policy environment and development priorities, ensuring compliance with national and international sustainable development standards.
- Inclusiveness: From a just transition and social perspective, SBE activities should support the livelihoods of local residents and effectively communicate with local communities.

3) Blue finance industry classification. The Yantai government and IFS screened ocean-related economic activities based on industrial classification for ocean industries and their related activities. They omitted industrial activities that have significant negative impacts on the marine ecosystem, such as the marine oil and gas industry, the marine mining industry, and the marine engineering and construction industry. They then defined SBE activities based on blue finance standards, including the Chinese and international standards, to facilitate the identification of SBE activities by financial institutions. This culminated in the shortlisting of 12 primary, 41 secondary and 84 tertiary industries.

4) Indicator system. Blue finance, a subset of green finance, focuses specifically on the sustainable development of the marine economy and ecological protection, areas not fully covered by green finance standards. In constructing its indicator system, the Yantai government and IFS first defined 15 primary ocean industries. They then identified SBE activities based on both national and international blue finance standards. These activities address internationally significant issues like near-shore pollution control, plastic pollution reduction, and plastic replacement, as well as key concerns for China, such as the development of the aquaculture industry.

5) Application. Local governments and regulatory agencies can combine the development priorities of the blue industry in their regions, compile a blue finance project database and formulate targeted support policies. Financial institutions can formulate regional blue industry investment and financing programs to quickly screen and financially support their clients' SBE activities. Enterprises can formulate plans for the sustainable development of relevant marine industries and carry out environmental information disclosure.

In marine fisheries, relevant certification activities have been included to ensure the sustainability of fishing operations, facilities and supply chains, thereby supporting the sustainable development of aquaculture fishing enterprises. In shipbuilding and maritime transport, support has been provided for green alternative fuels for ships and the application of new energy technologies, such as liquefied natural gas, to promote the green manufacturing of ships and their supporting equipment. In port construction, efforts have been made to promote the development of zero-carbon and near-zero-carbon ports, facilitate zero-carbon energy supply, optimize the energy consumption structure, and reduce the carbon footprint of the logistics chain. Additionally, local blue finance standards have been developed by the governments of Weihai and Xiamen. China is currently promoting the development of a national blue finance standard, with IFS involved in the process.

[70] "蓝色金融标准和产品创新", Institute of Finance and Sustainability, 2024, https://www.ifs.net.cn/news/1769.

4.4 Challenges and policy gaps

Financing sustainable ocean initiatives presents several challenges, including high upfront costs, uncertain returns, lack of precedent deals, poor data and a high-risk governance environment. Market dynamics, such as fluctuating commodity prices, further affect the viability of ocean-based industries (OECD, 2016)[71]. Additionally, insufficient technical capabilities and data, misalignment between costs and benefits, lack of unified standards and lagging policies hinder financial support for the marine economy, complicating risk identification, capital allocation and product innovation.

narvik/iStock.com

From a financial market perspective, substantial investment needs for the marine sector's sustainable transition remain unmet due to funding gaps, an imbalanced financing structure, and a lack of innovative financial tools. The high uncertainty and costs of emerging green technologies, such as carbon capture, green shipping and tidal energy, lead financial institutions to be conservative, impeding large-scale investments and international cooperation. Policy frameworks often remain fragmented, lacking clear incentives and standardized guidelines for financial institutions to engage in blue financing. The absence of a unified classification system for blue assets and insufficient risk assessment mechanisms further hinder the scaling up of financial support. Creating financial instruments and incentives, such as blue bonds, public-private partnerships, and redirecting subsidies toward sustainable practices, can attract investment and drive the SBE.

At the financing policy level, it is essential to create technical standards or a blue finance taxonomy at the national level to define and identify blue industries and activities. China's lack of national guidelines on blue finance leads to assessment bias and restricts large-scale development. Comprehensive and standardized blue information disclosure, referencing international standards like TNFD, is needed to assess and rank the environmental benefits of enterprises, incentivizing financial institutions to invest in blue projects. De-risking mechanisms for blue financing and investment need to be designed to attract the private sector. Lack of understanding of the marine economy leads to underestimating risks of marine ecological degradation, loss of marine biodiversity, and other marine crises on their own finances and overestimating investment risks in blue projects. Standardizing the technical application of methods for accounting for the value of marine ecological products and developing a blue carbon market can incentivize early investments. Issuing blue bonds, like the Bank of China's 2020 issuance, can boost SBE investments.

China currently lacks incentive policies for financial institutions to support SBE activities. Integrating sustainability considerations into marine protected area assessments and creating local government incentive mechanisms for sustainable projects are necessary. Accelerating an SBE can advance other agendas, such as addressing the 1.5°C climate target gap, and unlocking climate finance that contributes to the SBE. Financing new technologies in research and academic institutions is also key to addressing ocean challenges. Financial policy should provide incentives for adopting ocean-positive technologies and support research institutions in developing technologies that limit environmental harm or generate positive contributions to the marine environment.

[71] OECD, The Ocean Economy in 2030, 2016, https://www.oecd.org/content/dam/oecd/en/publications/reports/2016/04/the-ocean-economy-in-2030_g1g6439e/9789264251724-en.pdf.

5. Recommendations

5.1 SBE definitions and principles

It is recommended that under the current policy framework, the Chinese government adopt a path that maintains policy continuity while promoting strategic upgrades by gradually introducing the concept of a "sustainable blue economy" in its policy framework. The following actions can be prioritized:

1) Integration into strategic policy planning

Investigate and adopt SBE definitions and principles in China in the 15th FYP and develop policy drivers around it, including integrated governance across all levels, SBE transition planning and MSP. The agenda should be complementary to protecting, restoring and sustainably managing marine and coastal ecosystems as the bedrock of an SBE and therefore benefiting long-term social, economic and environmental resilience.

2) Establish a cross-ministerial task force

Form an SBE task force comprising the MNR, the MEE, the Ministry of Science and Technology, and the National Development and Reform Commission (NDRC). This task force would design collaboration pathways, internally formulate the "Action Plan for Sustainable Blue Economy Development" and coordinate preliminary policy work.

3) Develop and promote local pilot models

Pioneer cities such as Xiamen and Shenzhen can be leveraged to establish "SBE Demonstration Zones." These zones can facilitate pilot cooperation with developed countries on standards and management models related to the SBE, such as adopting SBE principles in strategic policy planning, MSP, ocean accounting and blue finance. These trials of strengthening sustainable economic development in the pilot cities that protects and enhances natural capital, leverages clean technologies and circular economy, and provides social and economic benefits for generations, can form a basis for future scaling to other coastal regions.

4) International collaboration for SBE development

China should lead global efforts in managing ocean resources and advocate for the worldwide adoption of the SBE. International collaboration is crucial for funding the transition to more sustainable ocean use, and particular public goods for this transition (e.g. development and implementation of conservation rules, cleanups, etc.). Integrating the agendas of SBE, climate actions and biodiversity conservation in partnership with the global community is vital to meet the targets outlined in the Paris Agreement, the Convention on Biological Diversity (CBD) and Agenda 2030. In the ongoing debate on deep seabed mining, China should consider a precautionary approach to protect fragile marine ecosystems.

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5.2 Ocean accounting

Developing robust ocean accounting frameworks is essential for advancing SBE objectives. As these systems become more mature, they will enhance evidence-based ocean management and sustainable development planning.

1) Methodological development

The foundation of effective ocean accounting lies in the standardization of core definitions and measurement approaches. This ensures consistency and comparability across different regions and time periods. Developing improved methods that align with concepts and principles of the SNA, the SEEA and guidelines already provided in the technical guidance on ocean accounting for valuing ecosystem services is crucial, as it allows for a more accurate representation of the benefits provided by marine environments. Integrating environmental and economic indicators helps to create a holistic view of the ocean's contributions to the economy and the impacts of economic activities on marine ecosystems. Enhanced approaches for measuring non-market values, such as cultural and recreational benefits, are essential for capturing the full range of ocean-related benefits. Additionally, better tools for handling uncertainty and data gaps are needed to ensure that ocean accounting systems can provide reliable information even when data is incomplete or uncertain.

2) Strengthening institutional capacity

This involves improved coordination between statistical and environmental agencies, enhanced data collection and management, and better technical capacity for integrated environmental-economic analysis. Developing standardized reporting frameworks and mechanisms for international coordination and data sharing is essential. Key actions include establishing dedicated ocean accounting units, creating integrated data management systems, implementing standardized measurement protocols, fostering cross-agency coordination, investing in capacity building for technical staff and engaging in international standardization efforts. These steps will build robust ocean accounting systems, providing valuable insights for the sustainable development of the SBE and effective marine resource management.

3) Policy integration

To maximize the impact of ocean accounting, it is essential to align accounting frameworks closely with policy needs. This involves enhancing the use of accounting information in decision-making processes, ensuring that policymakers have access to relevant and timely data. Developing more sophisticated planning tools based on accounting data allows for more effective and informed policy development. Better integration with sustainable development planning processes ensures that ocean accounting contributes to broader sustainability goals. Improved mechanisms for stakeholder engagement and participation are crucial for ensuring that the perspectives and needs of various stakeholders, including coastal communities and women representation, are considered in ocean accounting efforts.

5.3 Blue finance

1) Development of national and global standards for blue finance

Clarifying the definition of blue finance and building it off established frameworks including the Sustainable Blue Economy Finance Principles is essential for its development, particularly in relation to green and transformational finance. Blue finance supports the sustainable marine economy by focusing on the sustainable use of marine resources, protection of biodiversity and improvement of sustainable livelihoods. National blue standards should follow principles of DNSH and "adaptation to latest developments," considering resource endowment, ecological capacity and biodiversity vulnerability. Transparency through information disclosure by financial institutions and enterprises is crucial to promote good performance and reduce the risk of blue washing.

2) Strengthen cross-regional and cross-sector coordination mechanisms

Establish a "Blue Finance Coordination Committee" to oversee policy formulation across coastal provinces and promote mutual recognition of standards. For example, create joint certification platforms for regions such as the Yangtze River Delta and the Guangdong-Hong Kong-Macao Greater Bay Area, and share green project databases in areas like fisheries and ports.

3) Improve technical support and information disclosure systems

Develop a Blue Finance Project Environmental Benefit Accounting Guide to standardize methods for calculating indicators such as carbon sinks and pollutant reduction. Mandate issuers of blue bonds to disclose the use of funds, environmental impacts of projects, and third-party evaluation reports. Leverage blockchain technology to establish a blue asset traceability platform, ensuring data transparency and reliability.

4) Promote greater international cooperation and collaboration in blue finance

International collaboration on blue finance can stimulate SBE opportunities both domestically and globally. Establishing an international marine development bank in Shenzhen could promote the sustainable expansion of the global ocean economy. Cooperative financing methods with global partners should be explored, including merging various forms of capital for conservation, addressing high seas financing obstacles, and collaborating with the OECD Development Assistance Committee (DAC) nations for concessional financing of SBE initiatives. Through the BRI's International Green Development Coalition, China can foster international agreements to advance sustainable development and achieve SDGs. Identifying and mitigating biodiversity risks in blue infrastructure financing, optimizing ecological, economic and social benefits, and utilizing strategies like strategic environmental assessments and natural capital accounting in sensitive areas are crucial.

Appendix 1

Appendix 1.1 Definitions of blue economy

Organization	Time	Understanding of blue economy	Source
Economic Commission for Africa	2016	Blue economy consists of all economic activities from the oceans, seas/seabeds, lakes, and rivers. Blue economy activities include: fisheries, sea and lake transportation and shipping, seabed mining, marine tourism, tidal energy generation, etc.	Africa's Blue Economy a Policy Handbook
The World Bank	2017	Blue economy is sustainable use of ocean resources for economic growth, improved livelihoods and jobs, while preserving the health of ocean ecosystem.	The Potential of the Blue Economy
European Commission	2022	Blue economy encompasses all economic activities based on and related to oceans, seas and coastal zones in and across sectors. It is divided into the following two categories: 1) marine activities: activities carried out in the oceans, seas and coastal zones, such as marine living resources, marine minerals, marine renewable energy, desalination, maritime transportation, and coastal tourism. 2) marine-related activities: activities that use marine products or produce marine products and services, or marine-based activities, such as seafood processing, shipbuilding and repairing, and ports.	The Blue Economy Report 2024
Association of Southeast Asian Nations (ASEAN)	2023	The blue economy is defined as an integrated, holistic, cross-sectoral and cross-stakeholder approach that creates value addition and value chains in marine and freshwater resources in an inclusive and sustainable manner, making the blue economy a new engine for future economic growth in ASEAN. The ASEAN blue economy encompasses upstream and downstream sectors and serves as an accelerator for traditional marine sectors such as fisheries, aquaculture, fish processing and tourism, and as a catalyst for emerging sectors such as renewable energy, biotechnology, marine and freshwater research and education, as well as other emerging sectors of marine resources.	ASEAN Blue Economy Framework
G20	2024	Blue economy refers to economic activities that sustainably utilize marine and coastal resources for economic growth without compromising the health of marine ecosystems.	Ocean20 Conference
US National Oceanographic and Atmospheric Administration	2023	A sustainable and equitable ocean and coastal economy that optimizes advances in science and technology to create value-added, data-drive economic opportunities and solutions to pressing societal needs.	New Blue Economy

Appendix 1.2 Definition of SBE and regenerative blue economy

Organization	Time	Understanding of SBE	Source
WWF	2015	WWF proposed the concept of an SBE based on the ocean economy. An SBE creates social and economic benefits for current and future generations by promoting food security, eliminating poverty, improving people's livelihood, increasing income, improving employment, as well as health, safety, justice and political stability; it restores, protects and maintains the diversity, productivity, resilience, core functions and intrinsic value of marine ecosystems, that is, the natural capital on which sustainable, equitable and inclusive marine economies thrive; it uses clean technology, renewable energy and recyclable materials as the basis to ensure long-term social and economic stability within the Earth's carrying capacity.	Principles for a Sustainable Blue Economy
United Nations Environment Program (UNEP)	2018	An SBE "provides social and economic benefits for current and future generations; restores, protects and maintains diverse, productive and resilient ecosystems; and is based on clean technologies, renewable energy and recycled material flows."	Sustainable Blue Economy Finance Initiative
United Nations Environment Program (UNEP)	2021	Building on the WWF definition, it is proposed that an SBE is an economy based on the oceans and seas that provides equitably distributed social and economic benefits to present and future generations, while restoring and protecting the intrinsic values and functions of coastal and marine ecosystems, which also relies on clean technologies and circular flows of materials.	Governing Coastal Resources - Implications for a Sustainable Blue Economy
International Union for Conservation of Nature	2024	A regenerative Blue Economy is an economic model that combines rigorous and effective regeneration and protection of the ocean and marine and coastal ecosystems with sustainable, low or no-carbon economic activities, and fair prosperity for people and the planet, now and in the future.	Towards a regenerative Blue Economy

Appendix 1.3 Definition of ocean economy

Organization	Time	Understanding of ocean economy	Source
The United Nations	2014	The concept of the ocean economy, also referred to as the blue economy, is one that simultaneously promotes economic growth, environmental sustainability, social inclusion and the strengthening of oceans ecosystems.	The Oceans Economy : Opportunities and Challenges for Small Island Developing States
Organization for Economic Co-operation and Development	2016	The ocean economy is the sum of the economic activities of marine industries and the assets, goods and services of marine ecosystems.	Ocean economy 2030
China	2006	Marine economy refers to the sum of the various types of industrial activities that develop, utilize and protect oceans and seas, as well as the activities associated with them.	Classification of Marine and Related Industries (National Standard)
US	2014	Marine economy is defined as products/services that come from the ocean (or Great Lakes) and whose resources are directly or indirectly used in economic activities.	State of the U.S. Ocean and coastal Economies (NOEP)
UK	2010	Marine economic activities include seabed activities and economic activities that supply goods and services to marine activities.	Socio-economic indicators of marine-related activities in the UK economy
Stats New Zealand	2010	Marine economy includes activities that take place in or use the marine environment or produce goods and services necessary for those activities.	New Zealand's Marine Economy: 1997–2002

Appendix 2

Overview of China's Blue Finance Standards Practices

Policy Title	Year	Key Participation Organization	Effect/ significance	Support for the Sustainable Blue Economy sector
Catalog of Green and Low-Carbon Transition Industries (2024 Edition)	2024	National Development and Reform Commission (NDRC), Ministry of Industry and Information Technology (MIIT), Ministry of Natural Resources (MNR), etc.	Refines the specific connotations and requirements of related industries to strengthen the direction of green industrial development	Includes green ship manufacturing (excluding shipyard construction), advanced port loading and unloading equipment manufacturing, green ship low-carbon upgrading, major river and sea water environment management, ship and port pollution prevention, marine energy development and utilization equipment manufacturing, marine oil and gas equipment manufacturing, marine energy utilization facility construction and operation, green fisheries, marine ranch construction and operation, marine ecology, coastal area and island ecological restoration, green ports and waterways, investigation and regulation of sewage outlets into rivers and seas and their standardized construction, carbon trading, etc.
Catalog of Supported Projects for Green Bonds (2021 Edition)	2021	People's Bank of China (PBOC), NDRC and China Securities Regulatory Commission (CSRC)	As provided a stable framework and flexible space for the development of green bonds in China, which will enable China's green bonds to focus more on the green and low-carbon development strategy.	Key areas include water environment management in major river basins and sea areas, pollution prevention and control for ships and ports, desalination of seawater and brackish water, green ship manufacturing, development and manufacturing of marine energy utilization equipment, construction and operation of wind power generation facilities, construction and operation of marine energy utilization facilities, stock enhancement and marine ranching construction and operation, green fisheries, comprehensive management of sea areas, coastal zones, and islands, as well as the construction of shore power facilities at ports and docks.
China Green Bond Principles	2022	Green Bond Standards Committee	Marks the official establishment of a unified domestic and internationally aligned standard for green bonds in China, which explicitly defines blue bonds.	The scope of recognition is based on the Green Bond Endorsed Projects Catalogue (2021 Edition). Blue Bond: In line with the requirements of the China Green Bond Principles, the proceeds are invested specially to finance projects related to marine protection and sustainable use of marine resources to support sustainable marine economic activities and promote the sustainable use of marine resources.

Policy Title	Year	Key Participation Organization	Effect/ significance	Support for the Sustainable Blue Economy sector
Xiamen Green Financing Enterprises and Green Financing Projects Recognition and Evaluation Measures (Trial)	2021	The Municipal Local Financial Regulatory Bureau and six other departments.	Explore green finance recognition methods with characteristics such as Xiamen's ocean economy.	1. Marine ecological protection 1.1. Comprehensive management of sea areas, coastal zones, and islands 1.2. Marine stock enhancement and release 1.3. Marine monitoring and testing 1.4. Investigation, rectification and standardized construction and operation of river (sea) sewage outlets 2. Green development of marine resources 2.1. Manufacturing of marine resource development and utilization equipment 2.2. Seawater desalination and comprehensive utilization 2.3. Construction and operation of marine ranches 2.4. Green fisheries 2.5. Certification and promotion of marine technology products 3. Green development of marine energy 3.1. Construction and operation of marine energy power generation facilities 3.2. Construction and operation of offshore wind power facilities 3.3. Construction and operation of offshore photovoltaic facilities 3.4. Construction and operation of seawater source heat pumps 4. Green ports 4.1. Manufacturing and operation of green ships 4.2. Green ports 4.3. Construction of shore power supply facilities at ports and docks 4.4. Construction and operation of container multimodal transport systems
Guidelines for Promoting Blue Finance Development in Shenzhen's Banking and Insurance Industries	2022	The Shenzhen Banking and Insurance Regulatory Bureau, the Shenzhen Local Financial Regulatory Bureau, and two other departments.	Promote the formation of a diversified blue finance service system and facilitate the deep integration of the marine economy and finance.	Focus on key areas: 1. Promote the transformation and upgrading of marine industries and technological innovation 1.1. Support the optimization and upgrading of traditional marine industries such as deep-sea aquaculture, distant-water fisheries, and port shipping. 1.2. Support the cultivation and growth of emerging strategic marine industries, including marine electronic information technology, marine renewable energy development and utilization, and marine biopharmaceutical industries. 1.3. Increase support for marine infrastructure construction. 2. Support marine ecological and environmental development. 2.1. Encourage banking and insurance institutions to enhance financial support for marine ecosystem protection and restoration, land-sea pollution control, and the efficient utilization of marine natural resources. 2.2. Implement the "One-Vote Veto System" for environmental protection. 3. Promote the clustered development of Blue Finance.

Policy Title	Year	Key Participation Organization	Effect/ significance	Support for the Sustainable Blue Economy sector
Guidelines for Green Finance Support for Sustainable Marine Fisheries	2025	Fujian Strait Bank, Fujian Provincial Financial Society, and others.	The first domestic marine-related green finance group standard, aimed at promoting the transformation of marine fisheries and ecological protection.	Primarily targeting the marine fisheries sector, it covers the recognition of green activities across seven key scenarios: offshore aquaculture, tidal flat aquaculture, other seawater aquaculture, marine fishing, construction of marine fish hatcheries and breeding farms, renovation and ecological restoration of fishing ports, and processing and comprehensive utilization of marine aquatic products and by-products. Specific indicators for different scenarios are clearly defined (e.g. stocking density, pollutant emission limits, energy utilization efficiency, etc.).
Qingdao Bank Blue Asset Classification Standards" (renamed as the "Blue Finance Guidance Framework" after global consultation and revisions).	2021	Qingdao Bank and the International Finance Corporation (IFC)	The first blue finance classification standard combining international consensus and China's practices.	1. Water supply 2. Water sanitation 3. Ocean-friendly and water-friendly products 4. Ocean-friendly chemicals and plastics-related industries 5. Sustainable shipping and port logistics industries 6. Fisheries, aquaculture, and seafood value chain 7. Marine ecosystem restoration 8. Sustainable tourism services 9. Offshore renewable energy facilities
Blue Finance Comprehensive Service Plan for the Marine Economy (Version 3.0)	2021	Qingdao Branch of Industrial Bank	Defines blue finance business standards and establishes a guiding directory for 10 industries	1. Green marine vessel manufacturing 2. Marine ecological and environmental management 3. Marine-related green services 4. Green fisheries 5. Development of marine clean energy (e.g. offshore wind power) 6. Seawater desalination and comprehensive utilization 7. Construction of marine ranches 8. Marine technology research and development and results commercialization 9. Development and protection of marine carbon sinks 10. Coastal wetland restoration and protection
Yantai Blue Industry Investment and Financing Support Catalogue	2024	Yantai Financial Supervision Bureau	The first local blue finance standard in China, it establishes a qualitative and quantitative indicator system for the first time, specifically targeting marine-related sub-industries to define relevant blue economic activities.	1. Marine fisheries 2. Marine aquatic product processing 3. Marine pharmaceuticals and bioproducts industry 4. Marine chemicals 5. Marine power 6. Seawater desalination and comprehensive utilization 7. Marine transportation 8. Marine shipbuilding industry 9. Marine tourism 10. Marine engineering equipment manufacturing 11. Marine information services 12. Marine ecological environment protection and restoration

Abbreviations

ADB	Asian Development Bank
BRI	Belt and Road Initiative
CBD	Convention on Biological Diversity
CCICED	China Council for International Cooperation on Environment and Development
CCER	China Certified Emission Reduction
CSRC	China Securities Regulatory Commission
DNSH	Do no significant harm
EIB	European Investment Bank
FAO	Food and Agriculture Organization of the United Nations
FYP	Five-Year Plan
GBF	Global Biodiversity Framework
GOAP	Global Ocean Accounts Partnership
IFC	International Finance Corporation
IFS	Institute of Finance and Sustainability
IoT	Internet of Things
ICMA	International Capital Market Association
MEE	Ministry of Ecology and Environment
MIIT	Ministry of Industry and Information Technology
MNR	Ministry of Natural Resources
MSP	Marine spatial planning
NDRC	National Development and Reform Commission
OECD	Organisation for Economic Co-operation and Development
PBOC	People's Bank of China
SBE	Sustainable blue economy
SDG	Sustainable Development Goal
SEEA	System of Environmental-Economic Accounting
SNA	System of National Accounts
SPS	Special Policy Study
TCFD	Task Force on Climate-related Financial Disclosures
TNFD	Task Force on Nature-related Financial Disclosures
UNCTAD	United Nations Trade and Development
UNEP FI	United Nations Environment Programme Finance Initiative
UN PRI	UN Principles for Responsible Investment
WTO	World Trade Organization
WWF	World Wide Fund for Nature


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