

Ocean accounting: International experiences and policy implications for Vietnam

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Abstract: *The term “marine economy” is increasingly common in research literature and government documents. However, these documents have not unified their connotation and measurement methods. For a country that sets the goal by 2045 to “become a strong, sustainable, prosperous, secure, and safe maritime country; where the marine economy makes an important contribution to the national economy” in the Marine Economy Strategy, the accounting of marine economic activities into the system of national accounts of Vietnam is very crucial to understand better the role of the seas and oceans in security and development. This article provides a literature review of concepts and definitions of the marine economy and its application in practice, and then proposes some policy implications.*

Keywords: *Ocean accounting; marine economy; blue economy; ocean economy.*

1. Introduction

In the history of mankind, a solid maritime nation has undoubtedly been a global power, even a world leader. That tells us that the seas and oceans have a fundamental significance for the destiny of nations, especially in the 21st century, which is considered the “Century of the ocean” (Party Central Committee, 2007). For Vietnam, the East Sea is closely linked to the origins of the Vietnamese nation and the process of nation-building and defending the country.

Recognizing the importance of the sea, the Party and State soon issued many vital guidelines and policies to affirm national sovereignty and take advantage of the advantages of marine

resources for economic development. Protect the environment and maintain national defense and security. Resolution 36-NQ/TW (2018) sets the objective of Vietnam becoming a robust maritime nation with sustainable development, prosperity, security, and safety by 2045 while emphasizing the significant contribution of the marine economy to the national economy. To gauge and assess progress towards this goal, Resolution 26/NQ-CP (2020) has proposed establishing a comprehensive set of national statistical criteria and indicators for measuring sustainable development in the marine economy by 2025. This task is still pending, and this article aims to

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provide additional rationale for incorporating marine economic activities into the system of national accounts.

2. Definition and connotation of the marine economy

2.1. Definition of the marine economy

Currently, there are many terms used with equivalent connotations, such as “ocean economy,” “blue economy,” “marine economy,” or “maritime economy”). According to OECD (2016), “ocean” is commonly used in Ireland and the United States, while “marine” is widely used in Australia, Canada, France, New Zealand, and the United Kingdom, and “maritime” is used by the European Union, Norway and Spain. Recently, “blue” has been used more commonly by many agencies and organizations, including the United Nations. In this article, all the above terms are used under the terminology “marine economy.”

EC (2021) reviewed 32 definitions of “marine economy,” showing a lack of consensus regarding understanding this term. There are two notable points. First, the 32 definitions are not from 32 individuals or organizations but mainly from several organizations such as UNDP, EC, FAO, OECD, UNCTAD, and WB. This shows that awareness is a process, so the definition of “marine economy” changes over time. Second, there are very detailed and straightforward definitions. For example, FAO (2017 cited in EC 2021) defines the blue economy as “a sustainable ocean-based economic model that is mainly dependent on coastal and marine ecosystems and resources but one that employs environmentally sound and innovative infrastructure, technologies, and practices, including institutional and financing arrangements, for meeting the goals of (a) sustainable and inclusive development; (b) protecting our coasts and oceans, and reducing environmental risks and ecological scarcities; (c) addressing water, energy and food security; (d) protecting the health,














livelihoods and welfare of the people in the coastal zone; and (e) fostering an ecosystem-based climate change mitigation and adaptation measures.”

Meanwhile, Smith-Godfrey (2016 cited in EC 2021) defines “marine economy” simply as “the sustainable industrialization of the oceans to the benefit of all.”

2.2. Connotation of the marine economy

With many different definitions, there are other implications for the marine economy in domestic and foreign research. According to the OECD (2016), the list of marine economic sectors in countries varies widely; for example, Japan has 33, while the United States has 6. Recently, UNCTAD (2021) identified three groups of marine economy sectors (commodities, services, and energy), with 13 detailed sectors (Table 1).

Table 1: Classification of the ocean economy by sector

GOODS		A Marine fisheries
		B Aquaculture and hatcheries ^a
		C Seafood processing
		D Sea minerals
		E Ships, port equipment and parts thereof
SERVICES		F High-technology and other manufactures not elsewhere classified (NEC)
		G Marine and coastal tourism
		H Trade in fisheries services
		I Maritime transport and related services ^b
		J Port services, related infrastructure services and logistical services
		K Coastal and marine environmental services
		L Marine research and development and related services
ENERGY		M Ocean energy and renewable energy ^c

Source: UNCTAD (2021:28)

Meanwhile, with the definition above, the OECD (2016) divides the blue economy into two components: (1) marine economic sectors and (2) assets, goods, and services of marine

ecosystems. According to the OECD (2016), component (1) can be further divided into 2 groups: established industries and emerging industries (Table 2).

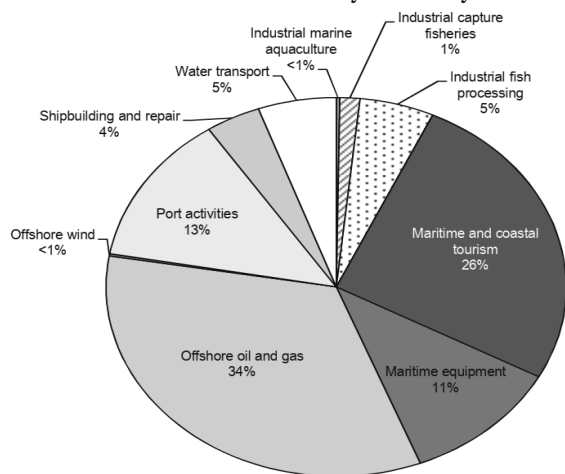
Table 2: Established and emerging ocean-based industries

Established	Emerging
Capture fisheries	Marine aquaculture
Seafood processing	Deep- and ultra-deepwater oil and gas
Maritime transport	Offshore wind energy
Ports	Ocean renewable energy
Shipbuilding and repair	Marine and seabed mining
Offshore oil and gas (shallow water)	Maritime safety and surveillance
Marine manufacturing and construction	Maritime biotechnology
Maritime and coastal tourism	High-tech maritime products and services
Marine business services	Others
Marine R&D and education	
Dredging	

Source: OECD (2016:23)

According to the OECD (2016) calculations, the marine economy generated \$1.5 trillion in 2010, contributing 2.5% of global gross value added (GVA). The structure of GVA for maritime economic sectors indicates that offshore oil and gas, maritime and coastal tourism, port activities, marine equipment, water transport, and industrial fish processing are the largest industries in order of significance.

Figure 1: Value added of ocean-based industries in 2010 by industry



Source: OECD (2016:24)

Component (2) relates to marine ecosystems (MEs), including oceans, estuaries and tidal flats, river mouths and lagoons, mangrove forests, and coral reefs, and the water column encompassing both the sea surface and the seabed (Kaiser and Roumasset, 2002 cited in OECD 2016), all of which provide intermediary services relevant to maritime economic sectors. The OECD has classified the ecosystem services of coastal and marine areas into four distinct groups: supporting, regulating, provisioning, and cultural (OECD, 2016).

Estimates suggest that marine ecosystem services have significant benefits. De Groot et al. (2012, as cited in OECD 2016) estimated the value of ecosystem services to range from \$490 to almost \$350,000 per year per hectare for open ocean or conventional reefs. Additionally, Cesar, Burke, and Pet-Soede (2003) highlighted global value of natural capital assets, such as coral, at nearly \$797.4 billion, emphasizing the substantial economic contribution of marine and coastal ecosystems. However, accurately measuring component (2) remains a challenge, prompting the OECD (2016) in the report

"Ocean Economy to 2030" to allocate more focus exclusively on component (1).

For domestic research, according to the Ministry of Planning and Investment (2006), the marine economy includes two groups of industries, with a total of 13 sectors:

(1) All economic activities taking place at sea or directly connected to the sea, mainly including: (i) Maritime Economy (Maritime Transport and Port Services); (ii) Fisheries (fishing and aquaculture); (iii) Offshore Oil and Gas Exploitation; (iv) Coastal Tourism; (v) Salt Production; (vi) Search, Rescue and Relief Services; and (vii) Island Economy.

(2) Economic activities directly related to the exploitation of the sea, though not taking place at sea, or economic activities that depend on the sea factor or directly serve the marine economic activities in the coastal zone, including (i) Shipbuilding and Repair; (ii) Oil and Gas Processing Industry; (iii) Seafood Processing Industry; (iv) Provision of Marine Services; (v) Telecommunications; (vi) Marine Science and Technology Research, Human Resource Training for Marine Economic Development, and Basic Surveys of Marine Resources and Environment.

The understanding of the marine economy, according to (1), can be considered narrow, and this is also the Ministry of Natural Resources and Environments (2020) understanding of the pure marine economy. This concept is directly applied to determine the objectives of marine economic development in Resolution 36/NQ-TW (2018). If the marine economy includes both (1) and (2), it is a broad sense, and this concept is directly applied to determine the objectives of marine economic development in Resolution 09/NQ-TW (2007). In addition, Resolution 09/NQ-TW (2007) also mentioned the coastal economy. This refers to the economic activities in the coastal strip (only counting the districts, towns, and cities bordering the sea), including agriculture, forestry, fisheries, industry, and services in this area.

Nga, (2018), based on the literature review of the marine economic classifications, proposed

that "the marine economy consists of economic activities that take place at sea or in the sea; economic activities that use marine resources in the process of producing goods and providing services; and economic activities that supply goods and services to economic activities taking place at sea or in the sea." This specific definition elaborates on component (1) of the OECD (2016) definition and represents a broader definition of the marine economy.

3. Current situation of measurement and goal setting for the marine economy in Vietnam

With the understanding of the marine economic connotation as shown by the Ministry of Planning and Investment (2006), Resolution 09-NQ/TW of the Party Central Committee in 2007 measured the blue economy and coastal areas contributing about 48% of the national GDP of which the offshore economy alone accounted for about 22% in 2005.

However, Resolution 36-NQ/TW (2018) on the Marine Economy Strategy until 2030, with a vision to 2045, has focused on purely marine economic industries. The goals for 2030 related to the marine economy in this Resolution are as follows: (1) purely marine economic industries contribute about 10% of the country's GDP, and (2) the economy of 28 coastal provinces and cities is estimated to reach 65-70% of the country's GDP. The 13th National Party Congress (2021) inherited these goals in the Socio-Economic Development Strategy 2021-2030 document. These are also the closest goals the Party and State aim for marine economic sectors and coastal localities.

The assessment of the current situation of marine economic industries at different times, as well as differences in forecasting scenarios for each period, has led to policies of the Party and State such as Resolution 09-NQ/TW (2007), Vietnam's Law of the Sea (2012) and Resolution 36-NQ/TW (2018) setting out priorities for the development of different marine economic industries (Table 3). Compared to major marine economic industries globally in Figure 1, Vietnam's prioritized industries exhibit a certain degree of similarity, showcasing the country's competitiveness in the global marine economy.

Table 3. Priority order for developing marine economic industries after 2020 or until 2030

Industries	Resolution 09- NQ/TW (2007)	Law of the Sea (2012)	Resolution 36- NQ/TW (2018)
Maritime transport and related services	1	1	2
Offshore oil and gas and sea minerals	2	2	3
Capture fisheries and seafood processing	3	3	4
Maritime and coastal tourism and island economy	4	4	1
Economic zones, concentrated industrial zones and coastal export processing zones are associated with the development of coastal urban areas	5	-	-
Development, research, application, and transfer of science and technology regarding the exploitation and development of the marine economy	-	5	-
Building and developing human resources	-	6	-
Coastal industry	-	-	5
Renewable energy and emerging marine economic industries	-	-	6

Source: Compiled from Resolution 09-NQ/TW (2007), the Law of the Sea of Vietnam (2012), Resolution 36-NQ/TW (2018).

Recently, in the blue economy scenarios for Vietnam (VASI and UNDP, 2022), the critical marine economic industries contributed nearly 17% in 2020. Meanwhile, based on data from the General Statistics Office (2021), the GRDP of coastal localities accounted for 50% of the national GDP in 2020.

Table 4: Contribution to the national GDP from key marine economic industries

Ocean-based industries	2020
Maritime Transport	0,74%
Maritime and Coastal Tourism	8%
Renewable energy	0,00001%
Capture fisheries and seafood processing	3,52%
Offshore oil and gas	5,40%
Total	17,66%

Source: VASI and UNDP (2022).

From the assessment of the marine economy and the determination of related goals in the recent period, two prominent shortcomings can be observed:

Firstly, the change in understanding or the lack of consistency in the connotation of the marine economy in the two strategic resolutions related to the marine economy has altered the objectives and priorities for the development of marine economic industries by 2030. This has somewhat caused a certain confusion for policy-making agencies, management authorities, businesses, and the people involved in marine economic activities, especially for sectors and fields that are no longer prioritized, such as coastal economic zones, or are difficult to define in scope, such as coastal industries.

Secondly, there seems to be a considerable gap between reality and the goals outlined in

Resolution 36-NQ/TW. By 2030, the target of 10% for the pure maritime economy is small and inadequate, while, the contribution target of 28 coastal provinces and cities aiming to reach 65-70% of the national GDP is considered “very high” and challenging to achieve.

Several reasons can be listed to explain

these shortcomings:

Firstly, there need to be an adequate understanding of the ocean and the marine economy. Marine economic activities have many differences from land-based economies (Box 1), thus requiring a distinguished approach when measuring them.

Box 1: Differences between the marine economy and the land-based economy

1. The sea is much larger than the land
 2. Water is less transparent than air
 3. The sea is more three-dimensional than land
 4. The sea is fluid and interconnected
 5. Marine species can potentially travel much longer distances than terrestrial ones
 6. Aggregations or clusters of animals in the water column can shift rapidly from one location to another
 7. Nutrients and pollutants can be retained for several decades until they are returned by ocean circulation
 8. Lack of ownership and responsibility in the ocean are even less favourable to sustainable development than on land
 9. Humans do not live in the ocean
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Secondly, incomplete awareness of the marine economy has led to a lack of consensus on its definition and connotation. This issue affects many countries, including developed nations, not just Vietnam. Differences in meaning and connotation inevitably lead to variations in measurement.

Thirdly, technical difficulties and resource constraints hinder measuring the value of marine economic activities, even with clear definitions and content. Marine economic activities occur in environments humans do not inhabit, making measurement challenging. Additionally, measuring the monetary value derived from ecosystem services of the marine environment poses a significant challenge for any nation or organization.

4. Policy implications

To improve the accuracy of measuring the contribution of marine economic activities to

Source: OECD (2016:19-20)

the economy and thereby move towards accounting these activities in Vietnam's system of national accounts, there is an urgent need to perform the following tasks:

Firstly, there is a need to continue raising awareness of the ocean's role and importance not only in terms of defense, security, or the environment but also economically. The economic significance of the ocean lies not only in the contribution of marine economic industries but also, more broadly, in assessing the monetary value of the entire marine ecosystem. Therefore, policies for maritime economic development need to move towards a more sustainable, “greener” approach based on the aquatic ecosystem.

Secondly, as highlighted above, Resolution 26/NQ-CP has outlined the task of “by 2025, establishing a set of criteria and national statistical indicators for sustainable

development of the marine economy." However, this task remains unfulfilled. Therefore, it is necessary to quickly deploy it to measure the contribution of marine-based economic activities, from which appropriate policy planning can relate to Vietnam's marine economic development.

Thirdly, measuring the marine economy is challenging, and Vietnam need to catch up in this work. Therefore, international cooperation is needed, especially with organizations or countries with experience. Recently, thanks to technological advancements, some international organizations have made significant progress in integrating marine economic activities into the system of national accounts, such as the UNCTAD, OECD, and Global Ocean Accounts Partnership). For instance, the EC (2018) has recently developed the annual Blue Economy Report of the European Union, while the OECD, in addition to providing technical guidelines, has also assisted some maritime countries like Indonesia in assessing the status of maritime economic development (OECD, 2021). In particular, GOAP (2021, 2022) has developed a detailed accounting table of marine economic activities. The author recommends using the definition based on component (1) of the OECD, and then further specifying it into detailed industries within the system of national accounts.

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