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Potential And Challenges of Blue Economy In Supporting Economic Growth In Indonesia: Literature Review

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ABSTRAK

Penelitian ini akan membahas tentang potensi dan tantangan Indonesia dalam mengembangkan ekonomi biru dalam meningkatkan pertumbuhan ekonomi negara. Permasalahan yang akan diangkat dalam penelitian ini antara lain: (1) seberapa besar kontribusi sektor pendukung ekonomi biru Indonesia terhadap perekonomian; 2) apa saja tantangan pengembangan ekonomi biru di Indonesia; dan 3) apa saja strategi yang sedang dijalankan pemerintah dalam mengembangkan ekonomi biru untuk ekonomi berkelanjutan di Indonesia. Penelitian tentang kontribusi sektor kelautan, perikanan, dan pariwisata pesisir terhadap pertumbuhan ekonomi Indonesia telah beberapa kali dilakukan. Akan tetapi, penelitian tersebut masih bersifat regional atau hanya berfokus pada wilayah tertentu saja. Selain itu, penelitian di atas belum sepenuhnya mengkaji sektor pendukung ekonomi biru di Indonesia. Penelitian tentang ekonomi biru di Indonesia masih sedikit. Hal ini dikarenakan konsep ini tergolong baru dan Indonesia sendiri masih dalam proses penentuan kebijakan dalam mengimplementasikannya. Penelitian di Indonesia tentang sektor industri pendukung ekonomi kelautan yang telah mengimplementasikan konsep ekonomi biru termasuk yang masih khusus mengkaji satu sektor industri saja atau bersifat mikro.

ABSTRACT

This study will discuss Indonesia's potential and challenges in developing a blue economy in increasing the country's economic growth. The issues that will be raised in this study include: (1) how much does Indonesia's blue economy support sector contribute to the economy; 2) what are the challenges of developing the blue economy in Indonesia; and 3) what strategies are being implemented by the government in developing the blue economy for a sustainable economy in Indonesia. Studies on the contribution of the marine, fisheries, and coastal tourism sectors to Indonesia's economic growth have been carried out several times. However, these studies are regional in nature or only focus on certain areas. Apart from that, the study above has not fully examined the supporting sectors for the blue economy in Indonesia. There are still few studies on the blue economy in Indonesia. This is because this concept is relatively new and Indonesia itself is still in the process of determining policies in implementing it. Studies in Indonesia on industrial sectors supporting the marine economy that have implemented the blue economy concept include those that still specifically study one industrial sector or are micro in nature.

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1. INTRODUCTION

Indonesia is a maritime country because of its vast seas. Indonesia's sea area consists of waters that stretch between two oceans, namely the Indian Ocean and the Pacific Ocean. The Indonesian Sea also has an Exclusive Economic Zone (EEZ) which covers more than 5.8 million km2 [1]. Indonesia has 17,499 islands spread from Sabang to Merauke, with a total coastline length of 99,093 kilometers [2]. Coastal areas are inhabited by no less than 140 million people or 60% of Indonesia's population who live within a 50 km radius of the coastline. These large resources certainly require good governance to improve the welfare of Indonesian society [3]. As the largest archipelagic country in the world, Indonesia's society, economy, and environment have a very important role in the opportunity to gain great benefits from the blue economy, namely the sustainable use of marine resources for economic growth and livelihoods while maintaining a healthy marine ecosystem [4].

Good governance of Indonesia's marine resources is necessary for them to be sustainable. The concept of sustainable development is a concept that is needed today. Where development is carried out to meet the needs of the present without ignoring the needs of future generations. Sustainable development is carried out to protect natural systems, reduce pollution and environmental damage, control the exploitation of natural resources, and achieve equality. The economic development paradigm movement starts from the red economy, green economy, and blue economy. The blue economy paradigm emerged as a breakthrough in realizing zero waste development, working according to natural rules in producing goods and services for the nation's prosperity. Economic development that ignores the environment (red economy) has begun to be abandoned, while the implementation of a green economy that is starting to be realized is not an easy thing because its implementation requires large amounts of capital. Meanwhile, the blue economy paradigm raises the idea of utilizing nature without waste and integrating economic, social, and environmental systems into a sustainable economic development system [3].

The Blue Economy as a principle that emphasizes a sustainable economy in the maritime sector has shaped the perception and direction of government policy in every country in the world since its inception. The blue economy is the sustainable use of marine natural resources for economic growth, employment, and livelihoods while maintaining the marine ecosystem. It can be said that the management of these resources involves three aspects simultaneously, namely humans, the natural economy, and the sea. Where apart from seeking economic benefits in exploiting the oceans, we still pay attention to aspects of natural sustainability so that what is in nature remains sustainable and can ultimately be enjoyed by humans as well [5].

The 'Blue Economy' concept is an idea to utilize marine or ocean resources in such a way as to encourage economic growth while ensuring the preservation and health of marine ecosystems and sustainability. It covers various sectors such as tourism, maritime transport, energy, fisheries, and biotechnology. The blue economy makes a significant contribution to the

global economy by creating jobs, generating wealth, and supporting livelihoods. However, it also faces challenges such as overfishing, pollution, and climate change, which threaten the sustainability of the marine environment. To overcome these challenges and ensure long-term sustainability, greater cooperation and investment in research, innovation, and technology are needed [6].

There are six sectors in the blue economy, namely renewable energy, tourism, fisheries, climate change, sea transportation, and waste management [5]. The blue economy, or marine or maritime economy, refers to the sustainable use of marine resources for economic growth, improved livelihoods, and ocean health. The blue economy covers various sectors, such as fisheries, aquaculture, shipping, energy, tourism, and marine biotechnology. It has the potential to contribute to sustainable development, and poverty alleviation has received attention from policymakers, academics, and stakeholders [7].

Sustainable development was first proposed at the Environmental Conference in Stockholm in 1972. However, sustainable development ideas and approaches faced significant delays in gaining acceptance among individuals not involved in the environmental sector. Since the start of the Declaration of Sustainable Development Goals (SDGs) in 2015, people around the world have realized the importance of implementing sustainable development [8].

BE blue growth has been considered an important driver for sustainable economic development, therefore concerted efforts − nationally and globally − have driven the development of BE including increasing research and innovation in this field. BE integrates various activities in the economy, starting from fisheries and aquaculture, maritime logistics and transportation, marine tourism, and maritime industry to energy, so BE has the potential to make a huge contribution to sustainable economic development by creating jobs, and strengthening health and food security. and energy. However, BE has the potential to give rise to fundamental conflicts of interest. On the one hand, policies and communities support growth and development, while on the other hand, policies and communities support the protection of marine resources [9].

The blue economy concept seeks to ensure the sustainability of coastal and marine resources and environments as well as encourage economic growth in the marine and fisheries industry, considering that Indonesia is a maritime country[1]. In an era of sustainability, where environmental concerns are increasingly linked to economic ambitions, the blue economy is gaining resonance, especially in countries with a significant ocean footprint such as Indonesia [10]. Implementing the blue economy is not simple because it requires a multidisciplinary approach, cross-vertical organizations, and diverse stakeholders with often different agendas and goals. Even at the global level, achieving blue growth has not been optimal, mainly due to the varying conditions of various sectors, technologies, and supporting communities which are still not well coordinated, fragmented, and less open. The level of concern of the main players in the blue economy is still not balanced, causing failure to take advantage of integration opportunities between stakeholders. Apart from that, the level of understanding of all stakeholders regarding the blue economy concept is also considered to be still low. Therefore, it is important to leverage and create alliances and coordination among various stakeholders, unite efforts, and achieve universal elements to achieve progress in BE, taking into account the concerns of each stakeholder and realizing significant progress [9].

This study will discuss Indonesia's potential and challenges in developing a blue economy in increasing the country's economic growth. The issues that will be raised in this study include: 1) how much does Indonesia's blue economy support sector contribute to the economy; 2) what are the challenges of developing the blue economy in Indonesia; and 3) what strategies are being implemented by the government in developing the blue economy for a sustainable economy in Indonesia.

Studies on the contribution of the marine, fisheries, and coastal tourism sectors to Indonesia's economic growth have been carried out several times. However, these studies are regional in nature or only focus on certain areas. Apart from that, the study above has not fully examined the supporting sectors for the blue economy in Indonesia. There are still few studies on the blue economy in Indonesia. This is because this concept is relatively new and Indonesia itself is still in the process of determining policies in implementing it. Studies in Indonesia on industrial sectors supporting the marine economy that have implemented the blue economy concept include those that still specifically study one industrial sector or are micro in nature. Macro studies include: [1], [5], [6], [8], [9], and [11] several studies that have raised the concept of the blue economy and its role in Indonesia's economic development. However, this study has not explained the challenges faced by Indonesia in implementing blue economy policies to increase Indonesia's economic growth explained the strategies that need to be implemented by the government, and has not described the economic contribution of industrial sectors in the maritime sector. It is hoped that this study can contribute to this.

2. METHOD

This study uses a quantitative and qualitative descriptive approach with library research methods. A qualitative approach is carried out by discussing descriptions or explanations of data obtained from the literature study method. Data from the library study research method is obtained by collecting information from literature in the form of books, reports/documents, research results conducted by various parties published in peer-reviewed journals or working papers, policy briefs, and other forms of publication. The data sources are reports/documents from government institutions and national and international organizations such as the Ministry of Maritime Affairs and Fisheries (KKP), the Ministry of National Development Planning (PPN)/Bappenas, the Coordinating Ministry for Maritime Affairs and Investment (Kemenko Marves), the Central Statistics Agency (BPS), the World Bank, FAO, Asian Development Bank (ADB), and other research institutions that publish reports with the blue economy as their discussion. Meanwhile, a quantitative description approach was used to describe and explain quantitative data obtained from BPS, KKP, and other institutions that publish data in the marine, fisheries, and coastal tourism sectors. The quantitative data consists of data on the contribution of the marine, fisheries, and coastal tourism sectors to Indonesia's economic growth, the contribution of each activity/business in the marine and fisheries sectors; as well as data on the potential of the blue economy to support Indonesia's economic growth. Analysis of qualitative and quantitative data is carried out by reading the data, and comparing and analyzing it according to economic theory so that appropriate conclusions can be drawn. Because some of the existing literature is too diverse, a manual systematic literature study was used to produce a meaningful summary estimate of the effect [1]. Analysis of data from the literature is

presented in the form of graphs, tables, or diagrams as visualization to facilitate understanding. The results of the analysis are in the form of a description that is recommendatory in nature.

3. RESULTS AND DISCUSSION

3.1. Overview of the Blue Economy's Contribution to the Indonesian Economy

In 2015, Indonesia produced 67 percent of the total added value from six sectors across ASEAN members. In particular, 84 percent of the added value generated from marine fish processing in ASEAN countries in 2015 came from Indonesia, as did 73 percent of the added value of marine fisheries, and 54 percent of the added value of mariculture. Indonesia also generated the largest added value from sea transportation (USD 2.6 billion) and sea passenger transportation (USD 2.2 billion) among ASEAN countries in 2015 [1]. The marine economy has diverse components and varies by country. The OECD in Bappenas (2021) defines the marine economy as a group of sectors that directly or indirectly depend on marine resources. The sector includes traditionally exploited marine resources – whether living resources (capture fisheries) or non-living resources (oil, gas, and marine manufacturing and construction) – as well as the use of the sea for tourism, education, seaports, and shipping. The set of sectors also includes ocean-based sectors that have recently emerged due to advances in science and technology, such as offshore wind, tidal and wave energy, marine aquaculture, seabed mining for metals and minerals, marine biotechnology, and bioprospecting. Environmental services such as coastal protection also make a significant contribution to economic and other human activities. However, Indonesia's economic potential stems from the sea and its resources, including:

a. Fishing Industry
   Indonesia has a diversity of fisheries commodities, both capture fisheries and aquaculture. The top five fish caught are tuna, scallops, skipjack, squid, and tuna. There are many capture fisheries production centers in the provinces of North Sumatra, Maluku, West Nusa Tenggara, East Java, and South Sulawesi. The provinces of North Sumatra, DKI Jakarta, East Java, and North Sulawesi contribute the largest added value to capture fisheries [12]. Meanwhile, sustainable aquaculture/fisheries in Indonesia can be expanded by prioritizing low trophic level species, including seaweed. The top five Indonesian aquaculture products from 2015 to 2020 are seaweed, tilapia, catfish, shrimp, and milkfish.
b. Marine Manufacturing and Construction
   Marine structures include offshore platforms, undersea cables and pipes, tourist vehicles, cargo ports, main ports, reclamation, and sand mining. One type of marine structure built offshore is an offshore oil and gas platform (AMLP), which is a structure or building built offshore to support the oil and gas exploration or exploitation process. Currently, there are more than 600 AMLPs spread across Indonesian waters such as the North Java Sea, Sumatra, Natuna, and East Java. Most of these AMLPs were built around the 1970s to early 1990s [1].
c. Oil and Gas
   The decline in oil and natural gas production by 20 percent from 2010 to 2019 made Indonesia a net importer of oil and is likely to become a net importer of natural gas in the future. Indonesia is still struggling with the development of renewable energy, with only 2 percent of the combined potential of geothermal, solar, wind, water, and biomass sources,

and only 12 percent of electricity from renewable energy. On the other hand, energy needs continue to increase along with economic and population growth. Most of Indonesia's total energy needs come from commercial energy and rely on the use of conventional energy sources such as oil and gas [1]. Total final energy consumption in 2018 was 875 million barrels of oil equivalent, where the share of consumption was still dominated by fuel oil.

d. Marine Based Food Processing Industry
The fisheries product-based processing industry has long developed in Indonesia, with industry players consisting of micro, small, and medium enterprises (MSMEs), and large industries. The majority of processing industries are in western Indonesia, while raw materials are supplied from the central and eastern regions. The main processed fish products consist of fresh tuna, frozen tuna, canned tuna, shrimp, and wooden fish with the main raw material being skipjack tuna. Another source for the food processing industry comes from seaweed and algae which can be processed and applied to food products such as frozen foods, desserts, candy, fruit juice, etc. [1].

e. Salt
Salt is used in three fields, namely food, industry, and preservatives. The salt manufacturing industry is a subsector of the chemical, pharmaceutical, and traditional medicine industries, with a GDP of IDR 296,710 billion, representing 2 percent of the National GDP. The salt manufacturing industry is included in the spice and other cooking products industry with an added value of IDR 58 trillion. In 2019, the salt processing industry employed 53,981 workers.

f. Shipbuilding Indusrty
The growth of the global shipbuilding industry is influenced by various factors such as underlying global trade expansion, energy consumption and prices, ship life profiles, vessel retirement/scraping and replacement, changes in cargo types, and trade patterns. Indonesia has 250 shipbuilding companies, with the majority located in Sumatra (26 percent), Kalimantan (25 percent), and Java (37 percent). The total capacity of the Indonesian shipping industry is 0.9 million deadweight tonnage (DWT), with utilization only reaching 35 percent. BPS (2021) reports that the shipbuilding industry involves 27,601 workers.

g. Coastal Tourism
The ocean is a major asset for the country's tourism industry. The tourism industry's contribution to Indonesia was worth around USD 65.4 billion to GDP in 2019 (marine and non-marine) and to USD 28.9 billion of GDP in 2021 (decreased due to the impact of the COVID-19 pandemic). 44 percent of foreign visitors undertake marine and coastal tourism (MAC) activities as part of their visit [1].

3.2 Blue Economy Challenges

While the Blue Economy offers many opportunities, it also presents several challenges that must be overcome to ensure sustainable development. Some of the main challenges include [7]:

a. Enviromental Degredation
Overexploitation of marine resources, pollution, climate change, and other environmental factors can cause degradation of marine ecosystems and loss of biodiversity. This can hurt economic continuity Blue in the long run

b. Lack of Regulation and Governence

Regulation and governance of marine resources can be complex and fragmented, with overlapping jurisdictions and limited enforcement mechanisms. This can create uncertainty and risk for operating businesses in the Blue Economy. Funding for Blue Economy projects may be limited, especially for small and medium-sized businesses. This matter can hinder the development of new businesses and innovative projects.

c. Infrastrusture Limitations
Infrastructure development, such as ports, harbors, and coastal facilities, is often critical to growth Blue Economy. However, lack of adequate infrastructure can be a major obstacle to development several sectors.

d. Limited Human Capasity
Blue Economy Development requires a skilled and knowledgeable workforce, especially in the fields of marine science, technology, and engineering. However, more trained professionals are needed in this field.

e. Limitid Market Access
Market access may be limited, especially for small and medium-sized businesses in developing countries. This may limit their ability to compete and grow in the global Blue Economy. It will take international cooperation, effective governance, and investment in research and development, infrastructure, and human capacity building to address these challenges. In addition, encouraging sustainable practices and developing new technologies and business models that reduce the negative impacts of economic activities on the ocean are critical to ensuring the long-term viability of the Blue Economy.

4. Conclusion

The future of the Blue Economy looks promising as interest in sustainable marine development increases, and more attention is paid to the value of the ocean as an economic asset. Some of the trends shaping the future of the Blue Economy include:

There is increasing recognition that sustainable practices are critical to the long-term viability of the Blue Economy. The adoption of sustainable practices, such as ecosystem-based management and circular economy principles, is now becoming increasingly common. New technologies such as robotics, autonomous systems, and sensors are being developed to enable sustainable ocean development. These technologies have the potential to increase efficiency and productivity while reducing the negative impact of economic activities on the sea. There is increasing interest in ocean-based renewable energy, such as offshore wind and wave energy. This sector has the potential to create new jobs and provide a significant source of renewable energy to meet the growing demand for environmentally friendly energy. The concept of a circular economy is gaining increasing attention in the Blue Economy. This involves using resources more efficiently and reducing waste by designing products to be reused, recycled, and remanufactured. Sustainable tourism is becoming increasingly popular, and there is increasing interest in developing marine tourism that supports the sustainable use of marine resources. There is increasing interest in blue finance, which involves the use of innovative financial instruments to support sustainable ocean development. This includes impact investing, green bonds, and other forms of sustainable finance.

In conclusion, the future of the Blue Economy looks bright, with increasing interest in sustainable practices, technological innovation, renewable energy, circular economy principles,

sustainable tourism, and blue finance. The development of these sectors provides a great opportunity for business, government, and civil society to work together to promote sustainable development while maintaining ocean health.

The potential contribution of the blue economy supporting sector to the Indonesian economy is very abundant. The biggest contribution can be seen from the fisheries sector, whether in the form of capture fisheries or aquaculture/aquaculture. However, of all the industrial sectors in the blue economy, Indonesia has not fully developed the renewable energy, bioeconomy, and biotechnology sectors optimally.

Meanwhile, in developing the blue economy sector, challenges are encountered, such as in the capture fisheries sector, it is known that fish resources are increasingly depleting due to overfishing. If this continues, the supply of fish from this industry will decrease further. Likewise for the oil and gas industry. The sea-based chemical industry sector has several challenges including a) the industry is dominated by MSMEs: b) the capacity of sea-based food processing units is generally still low; c) lack of skills and technical knowledge of human resources regarding production standards, as well as low quality assurance of products and raw materials; d) risk of unsustainable raw material supply; and e) dynamic changes in consumer preferences.

In facing these challenges, Indonesia has made several efforts, including implementing marine zoning or MPA to control overfishing; enacting regulations in the maritime sector and carrying out strict enforcement; and implementing strong coordination and synergy between stakeholders who have duties and functions in the maritime and fisheries sector. Apart from that, opportunities for cooperation with international parties are also continuously being explored.

It is hoped that future research will be able to examine in detail the impact of each blue economy industrial sector on the economy quantitatively. This can be done by describing regional and national conditions so that future studies can provide an accurate picture of the impact of the blue economy on the economy.

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