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Blue Economy and Economic Growth: The Sulawesi Economic Corridor Policy for Accelerated Development

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Abstract

The blue economy is a crucial national development priority aimed at reinforcing Indonesia's position as a leading maritime nation. The fisheries and marine sectors have significantly contributed to national economic growth, yet challenges such as marine environmental degradation persist. Eastern Indonesia, home to nearly 50% of the country's mining reserves, has been designated as a hub for national mining activities. However, empirical evidence suggests that mining operations negatively impact marine sustainability, necessitating an economic policy framework that balances development with environmental conservation. The blue economy approach offers a viable solution by integrating fisheries, maritime, and mining sectors to foster inclusive and resilient growth. This study explores a balanced blue economy model that aligns economic development with sustainability goals. Given the impending conclusion of the Sulawesi Economic Corridor acceleration framework in 2025, the study's findings can guide future development planning. To accelerate sustainable economic growth in Eastern Indonesia, four strategic agendas are proposed. First, develop a comprehensive database to assess economic achievements, potential opportunities, and existing challenges in the blue economy. Second, evaluate the resources, performance, and economic contribution of the mining and oil and gas sector at national and regional levels. Third, analyze intersectoral relationships within the blue economy to formulate effective growth strategies. Lastly, design a sustainable blue economy model that integrates fisheries, maritime, and mining sectors, ensuring inclusive and long-term development. Through these strategies, Eastern Indonesia can achieve sustainable economic progress while safeguarding its marine resources.

Keywords: blue economy, economic growth, development policy, maritime economy, sulawesi economic corridor

1. Introduction

Currently, the global economy is experiencing turmoil due to various crises, starting from the Covid-19 pandemic to the geopolitical conflict between Russia and Ukraine, which is currently considered a trigger for the recession. Since early 2023, several countries have begun to feel the impact, marked by slowing economic growth and increasing poverty rates. This condition is a concern for all countries, including Indonesia, because if it is not controlled, it can have a wider impact, such as social inequality and potential conflict. In the last decade, the problem of poverty in Indonesia has indeed shown a downward trend, which is around 0.6 points per year. However, the economic turmoil that has occurred since the pandemic has put new pressure on this achievement. Based on reports by Filmer et al., (2022); Jolliffe et al., (2022); Baah et al., (2022); Bhalla et al., (2022); Mahler et al., (2021); and the World Bank (2020), the global poverty rate in 2018/2019 was at 8.4%, equivalent to 648 million people, but increased to 11% in 2020 and is projected to continue to increase by around 1.2 points in the following years.

The World Bank report (2022) shows that developing countries have better fiscal resilience, around 2.4% compared to developed countries. This is an opportunity for Indonesia to take a bigger role in the global economy. One of the main factors supporting the economic resilience of developing countries is

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the availability of larger natural resource reserves, which allows them to survive amid economic uncertainty. However, the main challenge faced is the limited resources, both renewable and non-renewable. Therefore, a sustainable development approach is needed as stated in the Sustainable Development Goals (SDGs) (Hasddin et al., 2023), with one of the main strategies being the internalization of the blue economy concept. The implementation of the blue economy is considered capable of answering various agendas in the 17 SDGs (UNDESA, 2016; Ferreira et al., 2022; Hasddin et al., 2022; Kharas & Dooley, 2022), especially in encouraging sustainable economic growth while achieving other development goals.

As an archipelagic country with a rapidly growing marine and fisheries sector, Indonesia has a strategic role in the blue economy. OECD data (2021) notes that the performance of Indonesia's marine and fisheries sector is the highest in ASEAN, with a contribution of more than USD 30,000 million or around 67% in 2015, far surpassing Vietnam which only contributed USD 5,000 million. In 2021, National Development Planning Agency (2022) reported that the economic value of this sector grew to USD 27 billion. Since 2015, the Indonesian Government through Bappenas has formulated strategic policies to internalize the blue economy in the national development agenda. This policy covers the maritime sector, marine and fisheries industry, tourism, trade, transportation, and logistics, which are expected to improve people's welfare in a sustainable manner.

However, there is still a gap between the economic potential of the marine and fisheries sector and the reality of poverty in Indonesia. Although the national poverty rate has decreased from 11.13% in 2015 to 9.57% in early 2020 (BPS, 2023; Hill, 2021), this figure is still higher than other ASEAN countries, such as the Philippines (4.7%), Vietnam (1.8%), and Thailand and Malaysia, which are each only around 0.1%. To optimize the potential of the blue economy, the government through National Development Planning Agency (2022) has set a future agenda that focuses on renewable energy, biotechnology and bioeconomy, circular economy, and strengthening research and innovation. Studies conducted by Pace et al., (2023); and Keliat et al., (2022) emphasize the importance of research related to the blue economy in providing a strong database for formulating effective and evidence-based policies.

In the context of national development, since the 2014–2024 period, the President of the Republic of Indonesia has directed the focus of development to the Eastern Indonesia region in order to reduce economic inequality and maximize the potential of the blue economy. Several provinces in the Eastern Indonesia Region, such as West Sulawesi, Central Sulawesi, and Southeast Sulawesi, have an economic base dominated by three main sectors, namely agriculture, fisheries and maritime affairs, and the mining and petroleum sectors. Specifically on the island of Sulawesi, the government has established the Sulawesi economic corridor as part of the national development acceleration strategy until 2025, as stipulated in Presidential Regulation Number 48 of 2014. The mining sector in this region is the government's main concern, which is marked by the existence of various large projects and national mining industrial areas, such as in Morowali (Central Sulawesi), Pomalaa, Morosi, Routa, and North Konawe (Southeast Sulawesi), as well as Sorowako and Bantaeng (South Sulawesi).

In line with the policy of accelerating the development of the Sulawesi Economic Corridor, the concept of the blue economy is one of the main strategies to create a balance between the exploitation of natural resources with environmental sustainability and community welfare. With abundant resource potential and policies that are increasingly directed towards sustainability, this study aims to further explore the relationship between the blue economy and economic growth in the context of the Sulawesi Economic Corridor policy. This study is expected to provide effective policy recommendations to encourage the acceleration of development in the Eastern Indonesia region, while maintaining a balance between the exploitation of natural resources and environmental sustainability.

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2. Literature Review

The concept of the blue economy consists of two words, where "blue" literally refers to the sea which is identical to the color blue, while "economy" refers to the utilization of marine resources to drive sustainable economic growth. Conceptually, the blue economy aims to maintain the sustainability of marine resources and their ecosystems from over-exploitation, so that they can provide long-term economic benefits to society. Gunter Pauli first introduced this concept in 2010 in his book entitled "The Blue Economy: 10 Years, 100 Innovations, 100 Million Jobs" (Patil et al., 2016; and Chandra et al., 2021). Since then, the blue economy has become one of the main approaches in sustainable development policies in various countries, including Indonesia.

As an economic approach based on marine ecosystems, the blue economy emphasizes not only the exploitation of marine resources but also the balance between environmental sustainability and economic growth. The main objects of this concept are the sea and the economy, with the main goal of creating a balance between marine environmental health and economic income (Pace et al., 2023; Clark & Harley, 2020; and Van-Hoof, 2019). In its implementation, the blue economy focuses on the sustainable use of marine resources through various sectors such as fisheries, marine tourism, marine-based renewable energy, marine biotechnology, and coastal ecosystem conservation and protection.

In the context of Indonesia, the blue economy has enormous potential considering that the country has a coastline of more than 95,000 km and a sea area of around 3.25 million km². However, various studies in the last five years have shown that studies related to the blue economy in Indonesia are still general, mostly conducted on a regional scale, and tend to be limited to certain types of businesses being analyzed (Marwiyah & Fitria, 2022; Wahyuddin et al., 2022; Nurfauzi & Mansur, 2022; Rasyid et al., 2022; Chandra et al., 2021; Prayuda & Sary, 2019; and Zamroni & Mirwantini, 2018). Likewise in various other countries as studied by Auad & Fath (2022); Xie (2021); Zafra (2021); Kobayashi et al., (2021); Islam & Sarker (2021); and Chen et al., (2020). Most of these studies still focus on evaluating the achievements, obstacles, and development of the blue economy sector in the field of sustainable tourism (Hasddin, 2021), cross-country and cross-sector cooperation, and poverty alleviation efforts in coastal areas (Mukaddas et al., 2021; and Mukaddas et al., 2023).

However, although various studies have been conducted, to date there has been no comprehensive blue economy strategy model in the form of a general framework leading to a concrete action plan. The latest study conducted by Pace et al, (2023), supported by Novaglio et al., (2022); Cisneros-Montemayor et al., (2021); Claudet et al., (2020); Wisz et al., (2020); Hoerterer et al., (2020); Brent et al., (2020); Winther et al., (2020); Van-Hoof et al., (2019); Issa et al., (2019); Laibach et al., (2019); Voyer et al., (2018); and Wiebe et al., (2018), highlights four main agendas that need attention in future blue economy research and implementation. The four agendas include:

a. Integrated marine resource management – Realizing synergy between various interests (inter-regional and inter-sectoral) in utilizing marine resources sustainably. This is important considering the many overlapping interests in marine management that often lead to conflicts over the use of marine space.
b. Implementation of a "polyculture" system – Integrating various sectors in a more coordinated management system, such as integration between sustainable fisheries, marine cultivation, and marine ecotourism to create higher economic value without damaging the ecosystem.
c. Interdisciplinary innovation and research – Encouraging the use of technology and research-based innovation to support more efficient marine ecosystem management, including the use of marine biotechnology and marine-based renewable energy.
d. Collaborative database development – Developing an integrated information system and database to support marine ecosystem services and evidence-based policies, so that decision-making can be carried out more effectively and adaptively to environmental changes.

In an increasingly competitive global economic era, Indonesia has a great opportunity to utilize the potential of the blue economy as a main pillar in national economic development. However, the main challenge that is still faced is how to manage marine resources sustainably in order to provide economic benefits without damaging the ecosystem. Therefore, a more comprehensive strategy is needed in

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implementing the blue economy, which not only focuses on economic growth but also ensures environmental sustainability and social welfare.
By referring to various recent studies and international experiences, this study seeks to develop a more holistic blue economy strategy, especially in the context of accelerating development in the Eastern Indonesia region through the Sulawesi Economic Corridor policy. With a more integrated approach, it is hoped that this policy can become a model for implementing a more effective blue economy in Indonesia and the surrounding region.

3. Method

This study uses a literature review approach with primary sources from indexed and reputable scientific journals, which specifically discuss the topic of the blue economy. Overall, this study reviews around 45 relevant journals to gain a deeper understanding of the implementation of the blue economy, especially in the context of the Sulawesi Economic Corridor policy as a strategy to accelerate economic development in the Eastern Indonesia region.
The method used in this study is a descriptive analysis based on a literature review (systematic review analysis). The analysis process is carried out through several stages, namely (Hendarman et al., 2024; Hasddin, & Melati, 2023); and Sardan et al., 2023):

a. Data Collection. Data is collected from various sources of scientific journals that have been published in the last five years, with priority on journals that have a high impact factor and are indexed in databases such as Scopus, Web of Science, and other reputable journals.
b. Classification and Categorization. The articles obtained are then classified based on their relevance to the main issues of the blue economy, including marine resource governance, blue economy policies, and the economic and social impacts of their implementation.
c. Coding of Main Issues. Articles that have been classified are coded based on main topics, such as blue economy-based development policies, environmental impacts, marine technology innovation, and the integration of the fisheries, maritime, and mining sectors in sustainable development.
d. Data Interpretation and Synthesis. The coded data is analyzed in depth to identify research trends, key challenges, and opportunities for developing more effective blue economy policies.
e. Validation of Findings. To increase the reliability and validity of the research, the synthesis results were compared with international reports from global organizations such as OECD, UNDESA, World Bank, and UNCTAD (OECD, 2021; UNDESA, 2016; and World Bank, 2022).

This literature-based approach has several advantages over other methods. First, its broad coverage allows the identification of global patterns in the implementation of the blue economy. Second, this method strengthens the theoretical basis in formulating an applicable blue economy model. Third, the results of this study can be a reference for policy makers, both at the central and regional government levels, in formulating more integrated and sustainable blue economy policies (Hendarman et al., 2024; Sardan et al., 2023; Pace et al., 2023; Lee et al., 2020; Jurgilevich et al., 2017). In addition, this method also provides a strong foundation for academics and practitioners to develop further research models that focus on blue economy implementation strategies. Thus, this study not only provides theoretical contributions but also produces policy implications that can be adapted in local and national contexts.

4. Results and Discussion

Harmonizing Economic Growth and Marine Conservation: The Role of the Blue Economy

The concept of blue economy in various studies is interpreted as the sustainable use of marine resources to encourage economic growth, improve community welfare, create jobs, and maintain the balance of marine ecosystems (World Bank, 2013). This idea emerged in response to the increasing global attention to the development of marine resource-based economic sectors (Schutter & Hicks, 2019; Graziano et al., 2019). Phelan et al., (2020) then interpreted this concept as an approach to marine development that not only aims to generate economic benefits from marine-based activities but also emphasizes the importance of protecting and sustaining marine ecosystems. In the context of the marine industry, the blue economy is here to change the paradigm of industrial management to be more

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ecologically based, so as to reduce negative impacts on the environment, such as marine pollution due to excessive exploitation (Martínez Vázquez et al., 2021; Costa et al., 2019).
Since ancient times, the ocean has been a source of livelihood for coastal communities and the wider community through bioproduction activities, which are now better known as ecosystem services, including in the tourism sector and its role in reducing carbon emissions. The ocean has a strategic function in the supply chain of human needs, so that the United Nations (UN) includes the protection of marine resources as part of the 14th Sustainable Development Goals (SDGs) (Stuchtey et al., 2020). This agenda emphasizes that maritime-based economic growth must be carried out without increasing pressure on the ocean and its ecosystems, and must not sacrifice the sustainability of marine resources that support various other ecosystem services (UNESCO-IOC, 2022; Pace et al., 2023).
The blue economy approach to sustainable management of marine and fisheries resources changes the mindset that has tended to be extractive and exploitative to be more conservative. Indeed, meeting human needs remains a priority, but the blue economy concept is present as a framework to ensure that marine resources continue to provide benefits for current and future generations. Therefore, the blue economy is not just an economic model, but also acts as an instrument for environmental protection, sustainable production, and a fairer distribution of welfare from the results of marine resource exploitation (UNESCO-IOC, 2022). In its application, this concept considers the ecological system that provides various services and benefits for the marine economy. This system includes natural capital and ecological assets, which are very important for human survival, although some of the benefits are not directly felt. This natural capital includes tangible production results, while intangible capital comes from the social resources of the community, such as skills, expertise, and labor (Patil et al., 2016).
The concept of blue economy is not intended to reduce or eliminate the intrinsic value of the ocean, nor does it solely place economic value as the main priority. Instead, this concept emphasizes the importance of balance between marine ecosystems and economic activities. Blue economy recognizes that large-scale exploitation of marine resources, including industries such as offshore oil extraction and seabed mining, has great potential to reduce the quality and health of marine ecosystems. Therefore, this approach involves various sectors, resources, and policies to ensure that marine-based economic activities not only aim to increase economic growth but also contribute to environmental sustainability. Thus, the blue economy not only creates new economic opportunities but also supports the growth of a more inclusive and environmentally friendly economic sector.

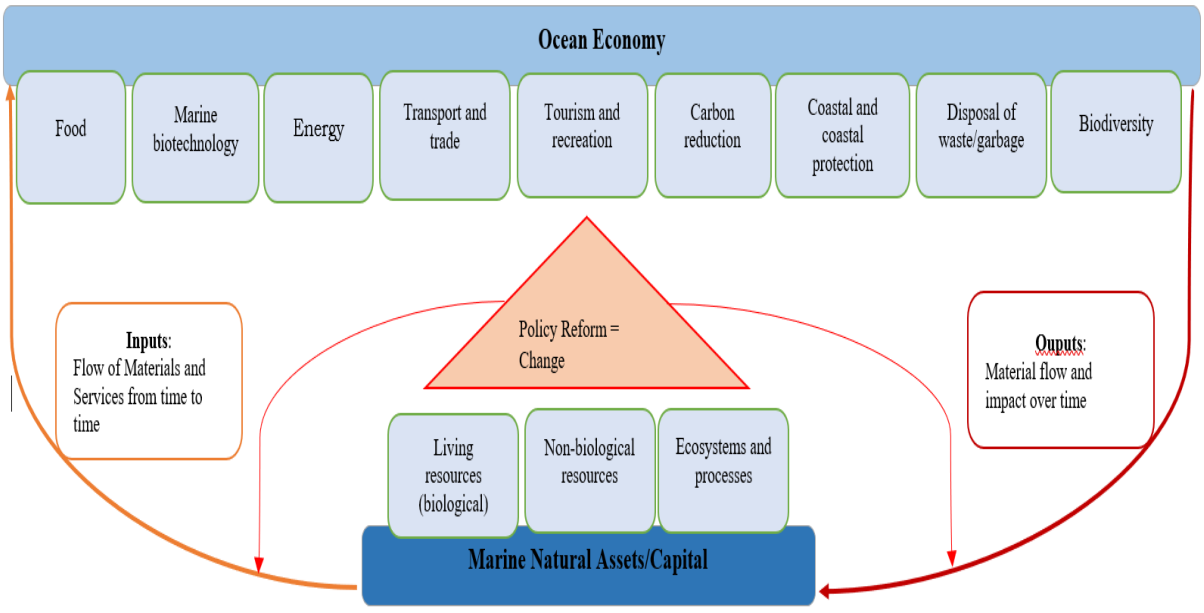

Figure 1. Blue Economy Conceptual Framework (Source: Patil et al., (2016)

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The blue economy implementation framework as a strategy to balance ocean health with economic growth was first introduced by the World Bank (2012), then further developed by the Economist Intelligence Unit (2015); and Patil et al., (2016). In this model, there are three main paths (roadmaps) each consisting of three important parts. The first path emphasizes policy instruments oriented towards three main objectives, namely green, clean, and resilient. The green objective focuses on sustainable management of renewable resources, such as ecosystem-based fisheries. Meanwhile, the clean objective emphasizes reducing the environmental impact of exploitation of non-renewable resources and pollution from activities on land, such as unmanaged plastic waste. The implementation of this policy can be done through the application of marine spatial planning and transparency of the extractive industry. Then, the resilient objective emphasizes increasing the capacity of the coastal economy to be able to adapt and recover from natural disasters and the impacts of climate change, such as through a national strategy for adaptation to climate change.

The second stage in implementing the blue economy is the creation of rules and organizations that can ensure coordination between sectors and stakeholders in the sustainable management of marine resources. Meanwhile, the third stage involves identifying marine economic sectors that have the potential to be developed sustainably, so that they can provide economic benefits while maintaining the balance of the marine ecosystem. With the implementation of a systematic strategy, the concept of the blue economy can be an effective approach in harmonizing economic growth with the sustainability of the marine environment, as well as creating policies that are more inclusive and based on long-term welfare.

Blue Growth: Integration of Economic Growth Theory and Sustainable Marine Resource Management

In economic research, the theory of economic growth put forward by Keynes or known as Keynesian understanding, explains that individual consumption in an economy will become income for other individuals in the same economic system. When someone spends their money, they indirectly contribute to increasing the income of others. Based on this theory, on a macro (national) scale, the level of economic output and employment opportunities are highly dependent on aggregate demand. The implication is that monetary and fiscal policies must be implemented effectively to reduce unemployment and control inflation (Restiasanti & Yuliana, 2023).

According to Caswell et al., (2020), the concept of blue growth emerged as part of maritime policy both at the national and international levels, with the main objective of encouraging maritime-based economic growth. In line with this, Dalton et al., (2019) defines blue growth as a strategy to create economic activity and jobs in the maritime sector, by utilizing various marine spaces more efficiently through the integration of different industries.

The blue growth approach and idea have begun to attract attention in the last two decades. However, its implementation has experienced various dynamics, especially related to the consistency of government policies and the potential for conflicts of interest between institutions. Basically, the concept of the blue economy was born as an effort to achieve economic growth that still pays attention to the sustainable exploitation of fisheries and marine resources. Therefore, this approach not only emphasizes economic growth but also avoids degradation of marine ecosystems, overexploitation, and environmental pollution. In this context, blue growth is oriented towards a more holistic management of complex and dynamic marine socio-ecological systems, covering various industries and regions (Martínez-Vázquez et al., 2021).

Martínez-Vázquez et al., (2021) in their research revealed that developing countries have a great opportunity to implement blue growth to achieve a sustainable marine economy. Despite having quite large marine resource potential, these countries still face a number of challenges. One of the main obstacles is the absence of clear blue growth goals, coupled with the lack of agreement on the policy framework and the role of each sector in its implementation. Several studies have shown efforts to maximize economic growth based on marine and aquatic resources (Boonstra et al., 2018; and Holma et al., 2019). However, other studies also highlight the concept of inclusive economic growth based on marine and aquatic resources (Eikeset et al., 2018; Hay et al., 2019; Pudzis et al., 2018; and Soma et

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al., 2018), although various challenges such as marine pollution, ecosystem degradation, climate change, and coastal energy exploration remain crucial issues.
The conceptual framework of the proposed blue economy policy framework to align ocean health and economic growth can be seen simply in Figure 2 below,

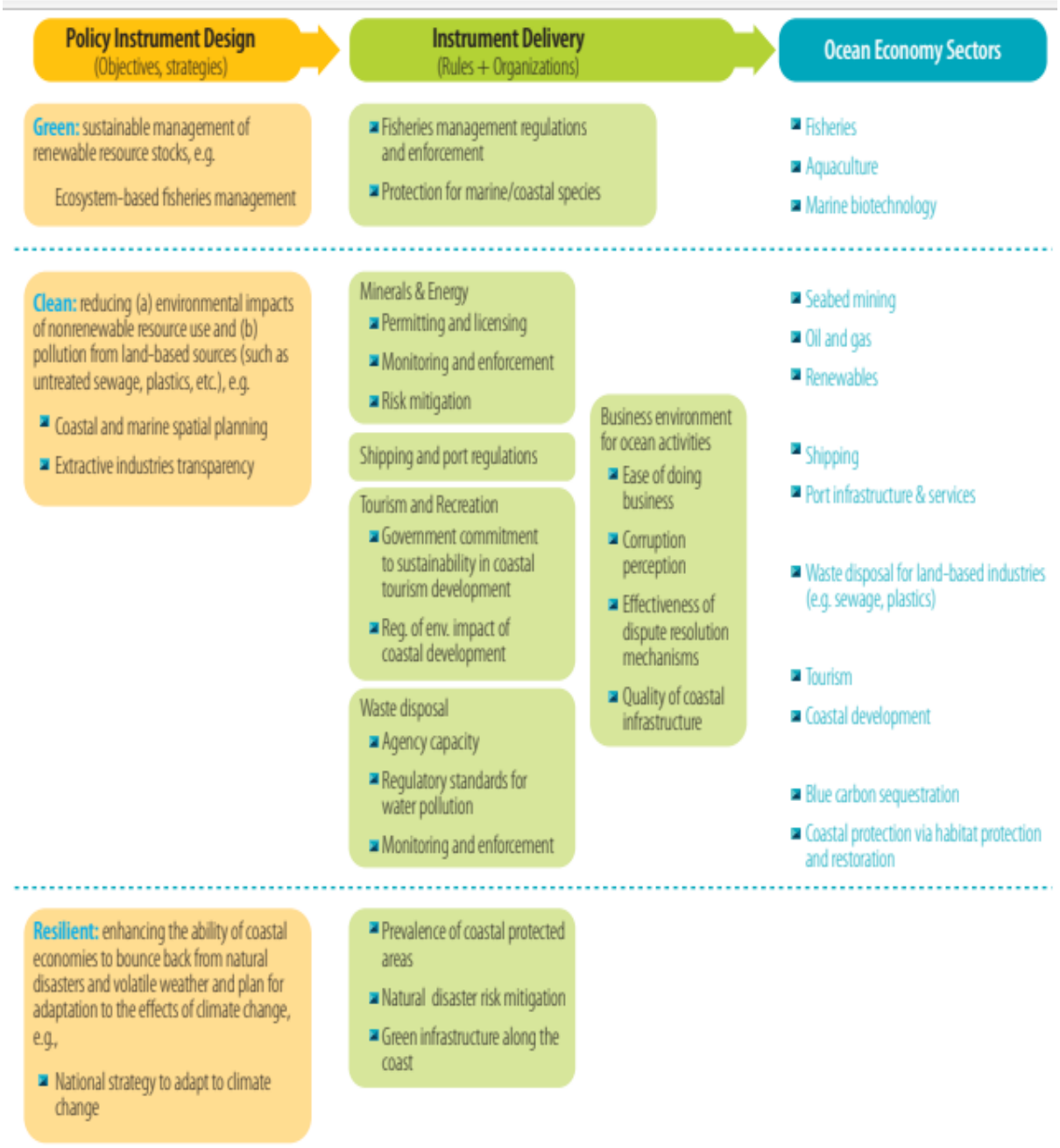

Figure 2. Conceptual Framework Proposed Blue Economy Policy Framework to Harmonize Ocean Health and Economic Growth
(Sources: World Bank, 2012; Economist Intelligence Unit, 2015; and Patil et al., (2016)

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The major dilemma facing developing countries is how to balance the need to reduce poverty with the obligation to maintain the health of marine ecosystems. In fact, marine health is critical to food security, livelihoods, and the global economy. Therefore, a strong sustainability approach model is expected to provide significant social, economic, and environmental benefits (Clube & Tennant, 2020).

Rayner et al., (2019) identified that inter-sectoral conflicts often occur in marine resource management. This is due to the limited nature of marine resources and various interests in their utilization. For example, there is a conflict between the tourism sector and offshore hydrocarbon exploitation (Klinger et al., 2018), or between various fisheries activities such as fish farming, ponds, and small-scale fisheries. Therefore, it is important to create synergy between various sectors in blue growth, in order to make a real contribution to regional economic development and the achievement of the Sustainable Development Goals (SDGs).

The blue growth approach must be more flexible and adaptive to the dynamics of economic, social, and environmental change. Thus, the policies implemented can be more responsive in facing the challenges and opportunities that develop in the marine economic sector (Hoerterer et al., 2020).

Sulawesi Economic Corridor: Strategic Role in Fisheries, Aquaculture, and National Mining Development

The Sulawesi Economic Corridor was established through Presidential Decree No. 48 of 2014 as part of the national strategy to strengthen the competitiveness of the natural resource-based economy. This region is designed as a production and processing center in the fisheries, oil and gas, and mining sectors, with the main target of supporting national and international trade. With its strategic geographical position, the Sulawesi Economic Corridor acts as a trade gateway to the East Asian, Australian, and American markets, as well as being the epicenter of marine and mining-based industrial development.

The fisheries and aquaculture sector is a major contributor to the Sulawesi economy, with fisheries production accounting for around 22% of the total national fisheries production. Of this amount, around 24% comes from capture fisheries, while 74% comes from aquaculture. The aquaculture sub-sector in this region is growing rapidly with leading commodities such as seaweed (47%), shrimp (21%), and various types of fish such as milkfish, tilapia, and carp in smaller proportions (Presidential Decree No. 48 of 2014).

In the global context, demand for fishery products continues to increase along with the growing public awareness of healthy and sustainable food consumption. Indonesia, as one of the world's largest fishery producers, is faced with the challenge of increasing export competitiveness while maintaining the balance of marine ecology. Therefore, modernization of technology-based cultivation systems, application of blue economy principles, and efforts to mitigate the impacts of climate change are important factors in driving sustainable growth in this sector.

Improvement of fisheries infrastructure, such as the development of integrated marine and fisheries centers (SKPT), development of marine product processing industries, and digitalization of fisheries supply chains are strategic steps to ensure the economic stability of fishermen and pond farmers. In addition, certification of sustainable fisheries products is also increasingly strengthened to meet export standards to international markets that are stricter on issues of sustainability and product traceability.

In addition to the marine sector, the Sulawesi Economic Corridor also has a strategic role in the national mining industry, especially as a major producer of nickel. Nickel reserves in this region are estimated to reach 8% of the total global reserves or around 50% of national reserves. Economically, the nickel industry makes a significant contribution to Sulawesi's Gross Regional Domestic Product (GRDP), with an average contribution of around 6%.

Since early 2015, there have been four main areas that have become centers for the development of the nickel mining industry, namely: Sorowako, East Luwu Regency, South Sulawesi; Morowali, Central Sulawesi; Pomalaa, Kolaka Regency, Southeast Sulawesi; and North Konawe, Southeast Sulawesi.

In its development, the mining area in Southeast Sulawesi continues to expand, with the addition of the Morosi and Routa areas as part of the national mining industry network. This expansion is increasingly driven by the increasing global demand for nickel as the main ingredient in the production of electric vehicle (EV) batteries. With the increasing transition to green energy and global sustainability, the

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Sulawesi nickel industry has a great opportunity to become a major player in the global electric vehicle battery supply chain.

However, behind the great potential, the mining sector also faces serious challenges in terms of environmental sustainability. Uncontrolled mining activities risk causing ecosystem degradation, water source pollution, and deforestation that threatens biodiversity. Therefore, the implementation of more environmentally friendly mining practices through the concept of good mining practice, post-mining land reclamation, and the application of waste management technology are crucial in ensuring a balance between resource exploitation and ecological sustainability.

As one of the economic corridors with great potential, Sulawesi is faced with major challenges in building a balance between economic growth and environmental preservation. Several strategic policies that can be implemented include:

a. Improving Infrastructure and Connectivity
   Strengthening logistics and transportation routes to facilitate the distribution of fishery and mining products. Development of industrial areas based on local resources to increase the added value of products.
b. Implementation of Blue Economy and Green Economy
   PrinciplesEncourage the sustainable use of marine resources with an ecosystem conservation approach. Strengthening regulations on sustainable and environmentally friendly mining practices.
c. Strengthening Human Resources and Industrial
   DigitalizationTraining and education for fishermen and pond farmers in implementing modern technology. Use of digital technology in the fishery and mining supply chain to increase efficiency and transparency.
d. Collaboration between Government, Private Sector, and Local Communities
   Increase synergy between central and regional governments in formulating targeted policies. Encourage private sector involvement in sustainability-based investments.

With the implementation of the right strategy, the Sulawesi Economic Corridor can continue to develop as a center of economic growth that is not only oriented towards resource exploitation, but also emphasizes ecological and environmental sustainability, especially in waters.

Blue Economy Model Strategy for Integration of Fisheries, Marine and Mining Sectors in Sustainable Development in Eastern Indonesia

Analysis of various previous studies reveals that there are still limitations in research that examines the relationship between the fisheries, marine, and mining sectors in the blue economy model scheme. Studies that are widely discussed in various countries generally still focus on aspects of achievement, obstacles, development directions, sustainable tourism, cross-country and inter-sectoral cooperation, and coastal poverty (Auad & Fath, 2022; Xie, 2021; Zafra, 2021; Kobayashi et al., 2021; Islam & Sarker, 2021; and Chen et al., 2020). However, these studies have not yet produced a blue economy strategy model in the form of a general framework that can be used as a concrete action plan.

Recent studies conducted by Pace et al., (2023), supported by Novaglio et al., (2022); Cisneros-Montemayor et al., (2021); Claudet et al., (2020); Wisz et al., (2020); Hoerterer et al., (2020); Brent et al., (2020); Winther et al., (2020); Van-Hoof et al., (2019); Issa et al., (2019); Laibach et al., (2019); Voyer et al., (2018); and Wiebe et al. (2018), identified four main agendas that need to be the focus of future research related to the implementation of the blue economy. The four agendas include integrated marine resource management (both interregional and cross-interest), the implementation of a "polyculture" system that coordinates various sectors, innovation based on interdisciplinary research, and the development of collaborative databases to support marine ecosystem services.

In the Indonesian context, studies related to the blue economy in the last five years are still general, both in terms of spatial aspects and in the types of businesses studied (Marwiyah & Fitria, 2022; Wahyuddin et al., 2022; Nurfauzi & Mansur, 2022; Rasyid et al., 2022; Chandra et al., 2021; Prayuda & Sary, 2019; and Zamroni & Mirwantini, 2018). Therefore, further studies are needed that highlight the impact of mining activities on the fisheries and marine sectors and their implications for the sustainability of the blue economy.

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Another challenge is the absence of a comprehensive and measurable strategic scheme that includes a multi-sector and interdisciplinary approach in developing the blue economy. Information on the blue economy model that prioritizes a balance between the fisheries, maritime, and mining sectors is very important to encourage new economic growth in the Eastern Indonesia region. This is becoming increasingly urgent considering that the National Long-Term Development Plan (RPJPN) and the National Medium-Term Development Plan (RPJMN) will end in 2024/2025. In addition, the acceleration of the development of the Sulawesi Economic Corridor is also scheduled to end in 2025. Therefore, this study contributes to providing strategic information that can be a basis for the central and regional governments in formulating long-term and medium-term development policies. The results of this study are also expected to be a guideline in the continued development of the Sulawesi Economic Corridor, at least until the Sustainable Development Goals (SDGs) target is achieved in 2030.

5. Conclusion

Based on the results of the research analysis, the development of the blue economy in Indonesia, especially in the eastern region, still faces various challenges. One of the main gaps is the lack of integration between the fisheries, marine, and mining sectors in the blue economy scheme. Previous studies have discussed more about achievements, challenges, and cross-sector cooperation without producing concrete strategies that can be implemented as action plans. Therefore, a more comprehensive and measurable approach is needed by considering multi-sector and interdisciplinary aspects. In the context of accelerating the development of the Sulawesi Economic Corridor, there is a similar vision with the agenda offered in the second review. Both emphasize the importance of a comprehensive economic database, a study of the contribution of the mining and petroleum sectors, and an analysis of the causal relationship between the main sectors as the basis for a new economic growth strategy in Eastern Indonesia.

However, the fundamental difference lies in the main focus of the study. The first review highlights the lack of integration of the fisheries, marine, and mining sectors in the blue economy and the need for a multidisciplinary approach to address this gap. Meanwhile, the second review is more oriented towards policy implementation, by offering a concrete agenda in the form of data provision, performance studies of the main sectors, causal relationship analysis, and formulation of strategies and policies based on balance between sectors. Thus, these two reviews complement each other, where the first review provides an academic perspective on the gaps in blue economy research, while the second review offers implementative solutions in the context of development policies in Eastern Indonesia.

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