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Blue Bond: Innovation in Financing Indonesian Maritime Infrastructure Development

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Abstract

Indonesia, the world's largest archipelagic country, possesses vast maritime and geostrategic potential. However, the maritime sector's contribution to national GDP has stagnated at about 11 percent, mainly due to a significant infrastructure financing gap, of which only 25 percent is covered by the State Budget (APBN). Within the blue economy framework, blue bonds are introduced as an innovative instrument to mobilize funds for sustainable maritime development. This study reviews global practices of blue bonds, with particular attention to Indonesia's first issuance in May 2023, and offers policy recommendations. Using a qualitative literature review of regulations and institutional reports, the analysis shows that blue bonds can effectively finance marine conservation and infrastructure but face risks of bluewashing due to the lack of clear technical standards for "blue" projects. The study highlights the need for credible project prioritization, based on Asian Development Bank's (ADB, 2023) eight categories. Strengthened regulations, blended finance, inclusive governance, and transparent implementation are essential to ensure Indonesia's blue bond success and to strengthen its position in the global blue economy.

Keywords blue bond, blue economy, maritime infrastructure, regulation.

1. Introduction

From a geographical perspective, Indonesia is an archipelagic country where more than two-thirds of its territory consists of ocean. This condition makes the Indonesian sea much wider than its landmass, with a coastline length of approximately 81,000 km, placing Indonesia as the country with the second-longest coastline in the world after Canada (Juanda et al., 2023). This geographical advantage provides as a great opportunity for economic growth, while also giving Indonesia strategic potential as a global maritime fulcrum. Indonesia's position, located between the Indian Ocean and the Pacific Ocean, strengthens its role in global trade connectivity, which holds not only geo-economic but also geo-strategic value (Demokrasi & 2017, 2017).

Despite having great geographical potential, the contribution of the maritime sector to the national GDP remains low and tends to stagnate at around 11 percent during the 2026-2020 period, even dropping to -1.50 percent in 2020 (Kemenko Marves, 2021). This problem is further complicated by the limitation of the state budget. The State Revenue and Expenditure Budget (APBN) is only able to cover about 20-25 percent of the development needs for the marine and fisheries sector. For example, the Ministry of Transportation's budget for the sea transportation sector and port development is still limited to around Rp 7-9 trillion per year, or

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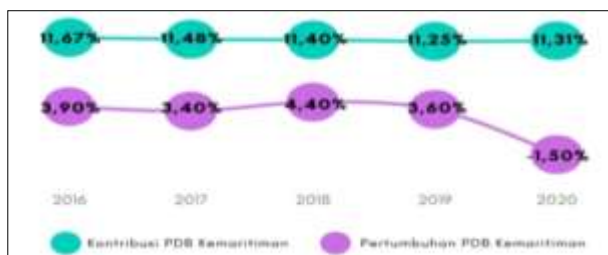
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only a small fraction of the total ministry budget, which reached Rp 33 trillion in 2022. These limitations hinder port modernization and the development of the national sea logistics system (Kementerian Perhubungan, 2022; Dephub, 2023)

Figure 1. Contribution of maritime GDP to National GDP and Maritime GDP Development 2016-2020



Source : Performance Report of the Coordinating Ministry for Maritime Affairs and Investment, 2021

Within the framework of the blue economy, infrastructure development functions as a transformative instrument that links the economy growth agenda with marine ecological protection and the improvement of coastal community welfare, the blue economy emphasizes the importance of balancing economic growth, social inclusion, and environmental sustainability (United Nations, 2021). One of the financial instruments supporting this agenda is the blue bond, which is a bond issued to finance projects oriented towards ocean sustainability and the protection of water resources (International Finance Corporation, 2022). Global practice shows that Seychelles became the first country to issue a Sovereign Blue Bond in 2018 valued at USD 15 million with the support of the Global Environment Facility (GEF) and the World Bank. Indonesia then followed this step by issuing its first Sovereign Blue Bond in the Japanese bond market in May 2023, which successfully raised funds totaling 20.7 billion Yen or about USD 150 million (United Development Programme, 2023).

Although considered a milestone, Indonesia's inaugural issuance also drew criticism. Domestic regulation through POJK No. 18 of 2023 has indeed accommodated environmentally and socially conscious bonds, or transparent reporting mechanisms. Without a clear legal and technical framework, Indonesia risks merely performing bluwashing, which is labeling old financial instrument as "blue" without presenting new substance that supports sustainability.

Based on this background, this research has several objectives. First, to highlight the urgency of Indonesia maritime infrastructure development within the framework of the blue economy. Second, to analyze the concept and global practice of the blue bond and recommend relevant policies for Indonesia. Third, to assess the potential and risks of implementing the blue bond in funding development.

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2. Literature Review

The Blue Economy Concept. The blue economy concept is an approach model that no longer relies on development by conducting excessive exploitation of natural resources and environment. The development model applied in this concept is a long-term economic practice that drives a low-carbon economy (Nurhayati, 2023). Blue economic development is implemented through four pillars, namely: integration of land marine development; clean, inclusive, and sustainable development; increasing the value-added and competitiveness of products through innovation; and the advancement of a just, equitable, and dignified society (Rani & Cahyasari, 2015).

The Blue Bond Sustainable Finance Instrument. The Blue Bond is a form of sustainable bond that utilizes the blue economy concept, which is one component within the 17 Sustainable Development Goals (SDGs). Projects funded through Blue Bonds aim to support the sustainability of the marine environment and preserve clean water resources (Asian Development Bank, Green and Blue Bond Framework, 2021).

There are 8 types of projects that can be financed with a Blue Bond. These projects include (Asian Development Bank, Bonds to Finance the Sustainable Blue Economy: A Practitioner's Guide, 2023): (1) Coastal Climate Adaptation and Resilience Projects; (2) Marine Ecosystem Management, Conservation, and Restoration Projects; (3) Sustainable Coastal and Marine Tourism Projects; (4) Sustainable Marine Food Chain Projects; (5) Renewable Ocean Energy Projects; (6) Marine Pollution Projects; (7) Sustainable Port Projects; and (8) Sustainable Marine Transportation Projects.

The case study of the world's first blue bond issuance by seychelles shows that blue bonds can play a role in mobilizing investment for marine conservation and blue economic diversification. This mechanism provides long-term funding opportunities for the implementation of integrated marine management policies and supports research and innovation in the marine sector. However, the seychelles experience also reveals challenges, such as the need for coordination among stakeholders and adequate institutional readiness to support the bond's sustainability (March et al., 2024).

Gambar 2. Summary of the strengths, enablers, and weaknesses of the Seychelles Blue Bond



Sumber: March et al., (2023)

Thus, the seychells case study provides valuable lessons regarding both the opportunities and challenges of blue bond implementation, and serves as a primary reference for other countries

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seeking to adopt similar instruments to support ocean sustainability.

3. Research Method

This research used the literature study method with a qualitative approach. All data were obtained from relevant secondary sources, such as books, academic articles, scientific journals, official government reports, and international institution publications. This approach was chosen because the research focuses on conceptual analysis and policy evaluation related to Blue Bond implementation without directly collecting primary data. Through the literature study method, this research is able to examine the global and national practices of Blue Bond issuance, review the available regulatory framework, and analyze the potential, obstacles, and risks of its implementation in supporting sustainable maritime development in Indonesia. This approach simultaneously provides a critical academic footing for formulating more relevant and applicable policy recommendations.

4. Finding and Discussion

The Urgency of Indonesian Maritime Infrastructure Development within the Blue Economy Framework. Indonesia has the potential to become a developed country by optimizing its rich maritime potential. To date, Indonesia has only utilized about 10% of its total maritime potential. As the largest archipelagic country in the world, Indonesia occupies a strategic position between the Indian Ocean and the Pacific Ocean, which are major global trade routes and the engines of the world economy. This position provides significant geo-economic and geo-strategic advantages for Indonesia (Muhammad Sajidin, et al., 2024). However, this geographical advantage has not been fully matched by strong maritime connectivity. The Maritime Connectivity Index data in 2018 shows that countries such as China, Singapore, Korea, and Hong Kong are in the top positions in global connectivity, while Indonesia is not yet included in the top five most connected countries. This condition indicates an ongoing gap in the trade cost index, which includes transportation fleets, port modernization investment, and port capacity (Pramuja, 2020).

Figure 3. Maritime Connectivity Level 2018

No	Tingkatan	Most Connected Countries	Index
1	Tingkat Global	China	187,8
		Singapore	133,9
		Korea	118,8
		Hong Kong	113,5
		Malaysia	109,9
2	Tingkat Asia	United Arab Emirates	83,9
		Taiwan	78
		Japan	76,8
		Srilanka	72,5
		Vietnam	68,8

Source: (Pramuja, 2020)

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Within the framework of the blue economy, maritime infrastructure development is not only understood as providing physical facilities but as strategic instrument to ensure the sustainable management of marine resources. This concept emphasizes the importance of green ports that are environmentally friendly, efficient marine waste management systems, and the application of renewable energy technology in port facilities. The Asian Development Bank (2023) affirms that sustainable port projects are one of the main categories that can be financed through the Blue Bond instrument. In addition, maritime infrastructure development serves as a catalyst for expanding Indonesia's blue economic value chain. Adequate infrastructure will support the development of sustainable fisheries, marine tourism, and the utilization of renewable ocean energy. Conversely, without strong infrastructure development within the blue economy framework is not only a domestic need but also a national strategy to strengthen Indonesia's position in the global supply chain while supporting the achievement of the Sustainable Development Goals, especially SDG 14 (Life Below Water).

Analyzing the Concept and Global Practice of Blue Bonds and Recommending Relevant Policies for Indonesia. As a financial instrument, bonds have long been known as medium-or long-term debt securities that can be traded in the capital market. This instrument contains the issuer's promise to pay interest (coupon) periodically and repay the principal loan at a specified time (Jogianto, 2000). From this basic instrument, thematic bond innovations such as the green bond and then the blue bond developed, which are directed at financing sustainable projects in the marine sector. The World Bank (2018) defines the Blue Bond as "a debt instrument issued by governments, development banks, or others to raise capital from investors to finance marine and ocean-based projects that have a positive impact on the environment, economy, and climate. In global practice, the Blue Bond is seen as an innovative instrument capable of providing new funding sources for the marine sector. Seychelles became the first country to launch a sovereign blue bond in 2018 with World Bank support through a blended finance scheme in the form of guarantees and concessional grants. These funds were then channeled through the Blue Grant Fund and the Blue Investment Fund, which successfully opened funding opportunities for marine conservation programs. However, the evaluation also highlighted the weakness of institutional coordination and limited access for small businesses and fishing communities. In line with this initial success, other countries such as Fiji and Indonesia began to explore similar instruments to support coastal resilience programs, mangrove restoration, coastal waste management, and the development of ecotourism. In the context of Indonesia, the first Sovereign Blue Bond issuance was carried out in May 2023 in the Japanese bond market through the Samurai Bond instrument. The Indonesian government offered two series, namely RIJPY0530 with a seven-year tenor and a 1.20% coupon, and RIJPY0533 with a ten-year tenor and a 1.43% coupon, with a total value reaching 20.7 billion Yen or about USD 150 million. This issuance was based on the Republic of Indonesia SDGs Government Securities Framework and the Blue Finance guidance from ICMA, with the aim of supporting sustainable projects in the marine sector while expanding Indonesia's green financing portfolio in the international market.

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Table 1. Blue Bond Payment Mechanism

Seri	RIJPY0530	RIJPY0533
Tenor	7 Tahun	10 Tahun
Jumlah yang Diterbitkan	14,7 miliar Yen	6 miliar Yen
Bunga (Kupon)	1,20%	1,43%
Tanggal Jatuh Tempo	24 Mei 2030	26 Mei 2033

Source: Ananta, P., & Irawaty, D. (2024).

Based on global practice and the evaluation of Indonesia's first Sovereign Blue Bond issuance, there are a number of important aspects that need to be considered so that subsequent issuances are more credible and attractive to investors. Therefore, the following regulatory and strategic recommendations are formulated as a footing to strengthen Indonesia's position in developing sustainable maritime financial instruments:

Strengthening Regulatory Framework and Transparency. Indonesia needs to establish clear and measurable eligible use-of-proceeds categories, accompanied by the obligation for external review and regular impact reporting. This standard will ensure that every funded project has a real contribution to marine conservation and sustainable maritime development. Regulatory clarity and transparency from the outset will reduce the risk of bluewashing while increasing the confidence of institutional investors who are highly sensitive to reputation.

Optimizing Blended Finance Schemes for Fiscal Risk Mitigation. In line with Seychelles practice, Indonesia can utilize a combination of guarantees, technical grants, and philanthropic or multilateral institutional support to lower coupons and strengthen the Blue Bond's attractiveness. The blended finance structure is key for developing countries like Indonesia to maintain fiscal sustainability, because without this mechanism, the debt burden has the potential to increase and reduce long-term investor interest.

Credible and Inclusive Institutional Governance. The formation of an independent management body, such as a trust fund, is needed, involving the government, academics, coastal communities, and the private sector. This institution plays a role in ensuring transparent project selection, fair fund distribution, and equal access for small businesses and fishing communities. Inclusivity in governance not only strengthens social legitimacy but also creates a more convincing sustainability narrative for international investors.

Market Design Attractive to Investors. Subsequent Blue Bond issuances need to be designed by considering variations in tenor, currency, and secondary market liquidity. Investor education and market incentives can also be strengthened to expand the base of domestic and international investors. Investor-friendly market features will reduce demand barriers, while increasing the

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competitiveness of Indonesia Blue Bonds compared to thematic instrument from other countries.

Based on the eight types of projects that can be financed as published by the Asian Development Bank (ADB, 2023), and by considering the maritime infrastructure problems in Indonesia and the principles of the blue economy, the infrastructure that has priority for funding through the Blue Bond can be identified as follows:

Table 2. Infrastructure eligible for Blue Bond financing

No	Blue Bond Project Category (ADB, 2023)	Specific Infrastructure that Can Be Financed
1.	Coastal Climate Adaptation and Resilience Projects	Nature-Based Coastal Protection Infrastructure (Nature-Based Solutions)
2.	Marine Ecosystem Management, Conservation, and Restoration Projects	Infrastructure Supporting Marine Conservation Areas (AKP)
3.	Sustainable Coastal and Marine Tourism Projects	Low-Impact Ecotourism Infrastructure
4.	Sustainable Marine Food Chain Projects	Cold Chain Facilities and Clean Aquaculture
5.	Renewable Ocean Energy Projects	Offshore Power Generation Infrastructure
6.	Marine Pollution Projects	Integrated Coastal Waste Management Infrastructure
7.	Sustainable Port Projects	Green Port Infrastructure
8.	Sustainable Marine Transportation Projects	Alternative Fuel and Clean Fleet Infrastructure

Table 2 shows the details of maritime infrastructure eligible for Blue Bond financing. The project categories that are the main footing in this table are the eight types of projects classified by the Asian Development Bank (2023) in their guide. The specifications of the infrastructure and the impact verification mechanism (anti-bluewashing) formulated in the table are the result of the author's synthesis and analysis of the sustainability criteria set by the international Capital Market Association (ICMA) and the International Finance Corporation (IFC) (2020), adapted to the current needs of Indonesian maritime infrastructure development.

Based on the formulation of categories and infrastructure specifications in Table 2, it appears that the main focus of the Blue Bond in Indonesia must be directed towards projects that have measurable environmental benefits and address critical infrastructure gaps. The key to the Blue Bond's success is not merely the availability of an eligible project list, but how the sustainability of these projects can be guaranteed and accounted for to investors. In other words, the success of the Blue Bond in Indonesia is highly determined by strong regulation, inclusive governance, and a competitive market design, so that this instrument truly functions as a means of sustainable maritime financing and not just a passing financial trend.

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Assessing the Potential and Obstacles of Blue Bond Implementation in Funding Indonesian Maritime Development. The implementation of the Blue Bond as a financing instrument for maritime development in Indonesia has enormous potential in supporting the conservation of marine resources and encouraging sustainable blue economic growth. Based on Principles for Responsible Investment (PRI) statistics, asset managed by institutional investors towards sustainable investment reached USD 103 trillion in March 2020, increasing 15-fold compared to USD 6.5 trillion in 2006. With vast and rich marine potential, Indonesia should be able to utilize the Blue Bond to strengthen marine conservation while encouraging national blue economic transformation. Domestic regulation through POJK No. 18 of 2023 has even accommodated socially and environmentally conscious bond instruments more comprehensively, by establishing sustainability performance indicators and external review mechanisms that can be used as an initial foundation for Blue Bond development in Indonesia. However, there are still a number of obstacles in its implementation. Investor and issuer interest in Blue Bonds is still relatively low, indicating the need for special strategies to expand the investor base and increase market awareness. In addition, practice in the field shows challenges related to project selection and environmental targets reported by bond issuers. Often, the environmental impact is reported excessively or inaccurately, while unexpected negative impact are ignored, some experts even emphasize the need for a clear and standard list of environmental metrics although this is difficult to realize given the broad scope of marine activities (Thompson, 2022). Analytically, the potential of the Blue Bond as a financing innovation in the Indonesian maritime sector is indeed very large, especially in bridging the funding shortfall for sustainable infrastructure development and marine conservation. However, the success of its implementation heavily depends on the capacity of the regulator to form a strong legal framework, formulate specific technical criteria, and effectively oversee the implementation mechanism. Thus, the Blue Bond can make a significant contribution to inclusive and sustainable blue economic development, provided it is balanced with good governance and strong commitment from all stakeholders.

5. Conclusion

Indonesia as the largest archipelagic country in the world has enormous maritime potential from both geo-economic and geo-strategic aspects. However, the contribution of this sector to the national GDP is still low and stagnant, largely due to weak maritime infrastructure and the limited financing capacity of the State Budget (APBN). This condition confirms the urgency of innovative financial instruments capable of bridging the funding gap for sustainable maritime development.

The results of the literature review show that the Blue Bond is a potential instrument to support maritime infrastructure development while strengthening Indonesia's blue economy agenda. Global practices, such as the sovereign blue bond issuance in Seychelles and the inaugural issuance in Indonesia in 2023, show that the success of this instrument is determined by four main pillars: strengthening the regulatory framework and transparency, utilizing blended finance schemes for fiscal risk mitigation, credible and inclusive institutional governance, and a market design attractive to investors.

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Thus, the implementation of the Blue Bond in Indonesia is not just a financing alternative, but also an important strategy to accelerate maritime infrastructure modernization, expand the blue economic base, and support the achievement of the Sustainable Development Goals (SDG 14: Life Below Water and SDG 13: Climate Action). If implemented with clear regulation, good governance, and a competitive market mechanism, the Blue Bond can become a credible, transparent, and effective financial instrument in realizing Indonesia as a global maritime fulcrum.

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