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## Analysis of The Role of Banking in Supporting Decarbonization Policy in The Shipping Sector in Indonesia

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### Abstrak

Penelitian ini menganalisis secara komprehensif kebijakan dan instrumen perbankan dalam mendukung dekarbonisasi sektor pelayaran Indonesia, dengan fokus pada identifikasi tantangan, peluang, dan rekomendasi strategis. Tinjauan pustaka menunjukkan bahwa bank-bank besar di Indonesia, seperti Bank Mandiri, BNI, dan BRI, telah mengambil langkah-langkah strategis melalui pengembangan kerangka keuangan berkelanjutan yang komprehensif, meskipun industri maritim masih menghadapi tantangan seperti biaya bunga pinjaman yang tinggi dan kurangnya dukungan pembiayaan publik. Dengan dukungan dan komitmen yang konsisten dari perbankan, Indonesia diharapkan dapat memanfaatkan potensi maritimnya secara optimal dengan tetap menjaga lingkungan dan mendorong pertumbuhan ekonomi yang berkelanjutan. Penelitian ini bertujuan untuk memberikan kerangka konseptual dan praktis bagi para pemangku kepentingan dalam upaya dekarbonisasi sektor pelayaran Indonesia.

Kata Kunci: *Dekarbonisasi, Sektor Pelayaran, Perbankan, Kebijakan, Keuangan Berkelanjutan, Indonesia*

## Abstract

This study comprehensively analyzes banking policies and instruments in supporting the decarbonization of Indonesia's shipping sector, focusing on identifying challenges, opportunities, and strategic recommendations. A literature review shows that major banks in Indonesia, such as Bank Mandiri, BNI, and BRI, have taken strategic steps through the development of a comprehensive sustainable finance framework, although the maritime industry still faces challenges such as high loan interest costs and a lack of public financing support. With consistent support and commitment from banks, Indonesia is expected to make optimal use of its maritime potential while preserving the environment and encouraging sustainable economic growth. This research aims to provide a conceptual and practical framework for stakeholders in efforts to decarbonize Indonesia's shipping sector.

*Keywords: Decarbonization, Shipping Sector, Banking, Policy, Sustainable Finance, Indonesia*

## INTRODUCTION

Global climate change is a complex challenge that requires a comprehensive transformation of various economic sectors, with the maritime transportation sector being one of the significant contributors to global greenhouse gas (GHG) emissions. The international shipping sector currently accounts for about 3% of the world's total anthropogenic emissions, with projected increases in maritime trade volumes predicted to triple by 2050. The context of Indonesia as an archipelagic country with great maritime potential presents challenges as well as strategic opportunities in implementing a comprehensive and sustainable decarbonization strategy. According to UNCTAD (2020), the maritime transport sector is responsible for a substantial share of global emissions, making it imperative to integrate sustainable practices to achieve the targets outlined in the Paris Agreement.

Indonesia's commitment to climate change mitigation has been realized through a number of national policies, including the ratification of the Paris Agreement, the establishment of a Nationally Determined Contribution (NDC), and a target to achieve net-zero emissions by 2060. As noted by Yadav et al. (2021), such commitments highlight the urgency of adopting green policies, not only within the energy sector but across all critical industries, including maritime transport. The banking sector has a crucial role in supporting the transition to a low-carbon economy, especially through innovative and sustainable financing mechanisms. Financial institutions, as stated by Bocken et al. (2019), are key enablers of the low-carbon transition, offering the necessary capital and risk management tools that can drive investment in green technologies. The complexity of decarbonization in

the shipping sector requires a multidimensional approach that integrates technology, economics, regulatory frameworks, and adaptive financing strategies.

This study aims to comprehensively analyze banking policies and instruments in supporting the decarbonization of Indonesia's shipping sector, with a focus on identifying challenges, opportunities, and strategic recommendations. Through a quantitative approach, the study will explore green financing mechanisms, climate risk management strategies, and product innovations that can accelerate the adoption of low-emission technologies in the maritime industry. In line with the findings of Aspar (2022), innovative financing strategies such as green bonds and sustainability-linked loans have the potential to catalyze the transition to green shipping by providing crucial capital to shipowners and operators for upgrading to cleaner technologies. The academic and practical contributions of this research are expected to provide a conceptual and practical framework for policymakers, banking practitioners, and stakeholders in efforts to decarbonize Indonesia's shipping sector.

As highlighted by various experts, the decarbonization of maritime transportation requires not only the adoption of green technologies but also the design of policies that foster investment in these technologies. According to Kaps and Tanguay (2021), collaboration between the banking sector, government bodies, and maritime industry stakeholders is essential to creating an environment that promotes both innovation and the responsible adoption of low-carbon solutions. Therefore, the role of banks and financial institutions cannot be overstated—they must be at the forefront of providing the necessary financial products and services that can drive this transition. Through this research, the study will shed light on how Indonesia can leverage its banking sector to drive the decarbonization of its shipping industry and meet its climate goals.

## RESEARCH METHOD

This study uses a qualitative approach with a case study design to explore and analyze green financing policies implemented by Indonesian banks in supporting the decarbonization of the maritime sector. A qualitative approach was chosen because this study aims to understand in depth how these policies are implemented and their impact on the maritime sector, focusing on the challenges and opportunities faced. The case study design was chosen because it allows researchers to explore phenomena in a very specific context, namely green financing policies and the maritime sector in Indonesia.

The data in this study will be obtained from two main sources. First, secondary data in the form of policy documents issued by Bank Mandiri, Bank BNI, Bank BRI, and Indonesian government policies related to green financing and decarbonization of the maritime sector. Second, annual reports and termination reports from these banks that provide information on green financing practices and their efforts in supporting the maritime sector. In addition, reports from international organizations, such as the IMO (International Maritime Organization), as well as government regulations related to the maritime sector and environmental policies will be analyzed to obtain a more complete picture.

Data collection will be carried out through a literature study involving documentation from various relevant sources. Researchers will collect and analyze policy documents published by Indonesian banks and the government related to maritime decarbonization efforts. Annual and poverty reports of Indonesian banks will also be analyzed to explore how much influence green financing policies have on the maritime sector and how these banks integrate poverty principles into their operations. Furthermore, policy analysis will be conducted by assessing the implementation of green financing policies in the maritime sector, as well as the challenges and opportunities faced by these banks.

Data analysis will be conducted using a qualitative descriptive analysis approach, which aims to describe and understand the policies implemented, and analyze the main themes that emerge from the policy documents and reports that have been collected. Thematic analysis techniques will be used to identify and group relevant themes, such as "challenges", "opportunities", "environmental impacts", and "green financing strategies". Furthermore, this study will analyze green financing policies implemented by Indonesian banks, compare these policies, and assess their effectiveness in supporting the objectives of maritime decarbonization.

The steps of this research begin with the collection of relevant secondary data, followed by an in-depth analysis of green financing policies and strategies implemented by Indonesian banks. From this analysis, this research will identify existing challenges and opportunities, and provide recommendations on steps that need to be taken by financial institutions and the government to support the decarbonization process of the maritime sector.

The expected results of this research are a better understanding of green financing policies implemented by Indonesian banks, their impact on the maritime sector, and the challenges and opportunities that can be utilized to accelerate decarbonization. This

research is also expected to provide useful recommendations for Indonesian banks and the government in accelerating the transition of the maritime sector to a low-carbon economy.

## RESULT AND DISCUSSION

Based on the provided literature review, it can be analyzed that banking institutions in Indonesia have taken strategic steps to support decarbonization in the maritime sector. Major banks such as Bank Mandiri, BNI, and BRI have developed comprehensive sustainable finance frameworks to facilitate the transition toward a low-carbon economy.

1. Bank Mandiri's Sustainable Finance Framework represents a comprehensive approach to environmental, social, and governance (ESG) integration within Indonesia's financial sector, particularly focusing on transformative transportation initiatives and infrastructure development. The framework's sophisticated classification system meticulously categorizes sustainable transportation activities across multiple dimensions, encompassing low-carbon land transport solutions such as electric vehicles and mass transit systems, water transportation innovations including electric vessels and efficient port infrastructure, and cutting-edge vehicle energy efficiency technologies that promote reduced emissions and improved operational performance. This robust framework not only facilitates the strategic deployment of sustainable financial instruments such as green bonds, sustainability-linked loans, and transition finance but also establishes rigorous monitoring and reporting mechanisms that ensure transparency and accountability in tracking the environmental impact of funded projects. By aligning with international standards and best practices, including the International Capital Market Association (ICMA) principles and the ASEAN Green Bond Standards, Bank Mandiri's framework creates a credible platform for attracting both domestic and international investment in Indonesia's sustainable transportation sector while simultaneously contributing to the nation's commitment to the United Nations Sustainable Development Goals, particularly SDG 9 (Industry, Innovation, and Infrastructure), SDG 11 (Sustainable Cities and Communities), and SDG 13 (Climate Action). The framework's holistic approach includes detailed criteria for project evaluation, comprehensive impact assessment methodologies, and stringent reporting requirements that enable stakeholders to effectively measure and communicate the environmental and social benefits of their investments, thereby fostering increased confidence in sustainable finance initiatives and accelerating the transition toward a low-carbon transportation ecosystem in Indonesia.

2. Bank BNI has established a sophisticated and multi-layered approach to environmental finance through its comprehensive integration of ESG principles into its operational framework, particularly evidenced by the strategic establishment of its ESG Sub-Committee which serves as a specialized governance body for evaluating and directing environmentally conscious project investments. The bank's implementation of the Environmental and Social Safeguard (ESS) framework demonstrates its commitment to rigorous environmental standards and regulatory compliance, while simultaneously providing a structured methodology for assessing and mitigating potential environmental and social risks associated with funded projects. This robust approach is further strengthened by BNI's strict adherence to OJK (Financial Services Authority) regulations regarding green financial instruments, ensuring that its sustainable finance initiatives maintain the highest standards of regulatory compliance and market credibility. The bank's Green Bond program represents a significant advancement in sustainable finance within Indonesia's banking sector, with proceeds strategically allocated to support transformative projects in transportation infrastructure and technological innovation, including but not limited to electric vehicle infrastructure, sustainable port development, and low-emission transportation systems. Through this comprehensive framework, BNI not only facilitates the flow of capital toward environmentally sustainable projects but also ensures that these investments are properly vetted, monitored, and evaluated for their environmental impact, creating a robust ecosystem for sustainable finance that aligns with both national development goals and international environmental standards while promoting the transition toward a more sustainable transportation sector in Indonesia.
3. Bank BRI's comprehensive commitment to sustainable finance is exemplified through its meticulously structured approach to environmental and social responsibility, anchored by its groundbreaking 2019-2023 Sustainable Finance Action Plan and the sophisticated development of its Sustainability Bond Framework, which adheres to rigorous international standards including the International Capital Market Association (ICMA) principles and ASEAN Sustainability Bond Standards. The bank's framework demonstrates exceptional thoroughness in its core components, encompassing precise methodologies for fund allocation that ensure capital is directed towards qualified sustainable projects, a robust project evaluation and selection process that incorporates comprehensive ESG criteria, transparent fund management protocols that maintain clear segregation of sustainability bond proceeds, and detailed reporting

mechanisms that provide stakeholders with regular updates on both the allocation of funds and the tangible environmental and social impacts achieved through funded projects. This commitment is further reinforced by BRI's proactive approach to impact measurement and reporting, utilizing advanced metrics and monitoring systems to track and quantify the environmental and social benefits generated by its sustainability bond asset portfolio, including but not limited to reductions in greenhouse gas emissions, improvements in energy efficiency, and positive social impacts on local communities. The recognition received from OJK validates BRI's leadership position in sustainable finance within Indonesia's banking sector, while its pioneering sustainability bond issuance represents a significant milestone in the country's journey towards a more sustainable financial ecosystem, creating a replicable model for other financial institutions and contributing substantially to Indonesia's broader environmental and social development objectives while maintaining the highest standards of transparency and accountability in sustainable finance practices..

Indonesia's maritime industry is navigating a complex transition towards decarbonization through an intricate web of financial innovations and strategic partnerships, despite significant challenges in accessing affordable financing and limited public sector support. The sector's transformation is being catalyzed by sophisticated blended finance mechanisms that strategically combine concessional funding from development institutions with commercial capital, effectively reducing the overall cost of financing and making sustainable maritime projects more financially viable. This innovative approach is complemented by progressive banking policies that incorporate sustainability criteria into lending decisions, including preferential interest rates for green projects, extended loan tenors for sustainable vessel investments, and specialized financial products designed specifically for maritime decarbonization initiatives. Major financial institutions are developing comprehensive frameworks that integrate environmental, social, and governance (ESG) considerations into their maritime sector lending practices, while simultaneously working to establish green shipping portfolios that support the adoption of low-carbon technologies and alternative fuels. The collaboration between multiple stakeholders - including commercial banks, development finance institutions, maritime industry players, and government agencies - is creating a more robust ecosystem for sustainable shipping finance, with initiatives such as green bonds, sustainability-linked loans, and transition finance instruments providing diverse funding options for shipowners and operators. These efforts are further supported by capacity-building programs that enhance

the maritime industry's understanding of sustainable finance options and improve project bankability, while innovative risk-sharing mechanisms and guarantee schemes help mitigate the perceived risks associated with new green technologies, ultimately accelerating Indonesia's progress toward achieving its maritime decarbonization goals and contributing to the broader national objective of transitioning to a low-carbon economy.

Table 1. Matrix of Banking Policies Supporting Decarbonization in Indonesia's Shipping Sector

Bank	Policy	Focus on Maritime Sector	Framework
Bank Mandiri	Sustainable Finance Framework	<ul style="list-style-type: none"> <li>• Low-carbon land and water transportation</li> <li>• Low-carbon infrastructure</li> <li>• Vehicle energy efficiency</li> </ul>	<ul style="list-style-type: none"> <li>• Classification, monitoring, and reporting of sustainable finance</li> <li>• Supporting the issuance of sustainable financial instruments</li> </ul>
Bank BNI	<ul style="list-style-type: none"> <li>• Environmental, Social &amp; Governance (ESG) Sub-Committee</li> <li>• Environmental and Social Safeguard (ESS) Framework Commitment to OJK</li> <li>• Regulation No. 60/POJK.04/2017 Green Bond Issuance</li> </ul>	<ul style="list-style-type: none"> <li>• Sustainable transportation infrastructure</li> <li>• Technological innovations to reduce environmental impact</li> </ul>	<ul style="list-style-type: none"> <li>• Environmental and Social Management Framework (ESMF) Environmental and Social Management System (ESMS)</li> </ul>
Bank BRI	Supporting inclusive and sustainable growth in the shipping sector.	Supporting inclusive and sustainable growth in the shipping sector.	<ul style="list-style-type: none"> <li>• Use of Funds Project</li> <li>• Evaluation and Selection</li> <li>• Fund Management</li> <li>• Reporting</li> </ul>

The table matrix above shows that major banks in Indonesia, namely Bank Mandiri, Bank BNI, and Bank BRI, have implemented sustainable financial policies that support decarbonization in the shipping sector. Each bank has a specific focus within the sector, such as low-carbon transportation, sustainable infrastructure, and technological innovation.

## CONCLUSION

Indonesia's banking sector, spearheaded by the triumvirate of Bank Mandiri, BNI, and BRI, has emerged as a pivotal force in driving maritime decarbonization through sophisticated sustainable finance frameworks. These institutions have demonstrated exceptional foresight in developing comprehensive strategies that align with both national environmental objectives and international sustainability standards, creating a robust foundation for the transformation of Indonesia's maritime sector.

Bank Mandiri's sustainable finance framework stands out for its meticulous approach to classification and monitoring of sustainable activities within the transportation sector. The bank's framework particularly excels in its detailed categorization of low-carbon land and water transportation initiatives, demonstrating a nuanced understanding of the diverse requirements across different transport modalities. This systematic approach enables precise tracking of environmental impact while facilitating efficient capital allocation to projects that demonstrate the highest potential for emissions reduction.

BNI's establishment of a dedicated ESG Sub-Committee represents a significant institutional commitment to environmental stewardship. This specialized governance structure ensures that environmental considerations are integrated into the core decision-making processes, particularly in evaluating and directing investments in sustainable maritime projects. The bank's implementation of the Environmental and Social Safeguard (ESS) framework further strengthens its capability to assess and mitigate potential environmental risks associated with funded projects.

BRI's 2019-2023 Sustainable Finance Action Plan demonstrates the bank's long-term commitment to environmental sustainability. The preparation of its inaugural sustainability bond issuance, supported by a robust Sustainability Bond Framework, showcases the bank's dedication to transparent and accountable sustainable finance practices. BRI's emphasis on impact reporting ensures that stakeholders can track the tangible environmental and social benefits generated through funded projects.

The alignment of these banking frameworks with international standards represents a crucial step in attracting global investment to Indonesia's sustainable maritime sector. By adhering to recognized principles such as the International Capital Market Association (ICMA) guidelines and ASEAN Sustainability Bond Standards, these banks create credible platforms for channeling both domestic and international capital into sustainable shipping projects.

The monitoring and reporting mechanisms established by these banks demonstrate

sophisticated approaches to tracking environmental impact. Through detailed metrics and regular evaluations, these institutions ensure that funded projects deliver measurable environmental benefits while maintaining transparency in the use of proceeds from sustainable financial instruments.

Project evaluation methodologies across these banks show particular attention to the unique challenges of maritime decarbonization. The frameworks incorporate specific criteria for assessing shipping projects, including considerations of technological innovation, operational efficiency, and potential emissions reduction, ensuring that funded initiatives align with both environmental objectives and commercial viability.

Fund management protocols established by these banks ensure the proper allocation and tracking of sustainable finance proceeds. This includes clear segregation of funds, detailed documentation of project selection criteria, and regular reporting on fund utilization, creating a transparent and accountable system for sustainable maritime finance.

The banks' commitment to impact reporting demonstrates their understanding of the importance of measuring and communicating environmental benefits. Through comprehensive reporting frameworks, these institutions provide stakeholders with detailed insights into the environmental and social impacts of funded projects, contributing to the broader understanding of sustainable maritime practices.

The challenges faced by Indonesia's maritime industry in accessing affordable financing are being addressed through innovative financial solutions. Blended finance mechanisms, combining concessional funding with commercial capital, help reduce the overall cost of sustainable maritime projects while maintaining commercial viability.

Stakeholder collaboration emerges as a crucial element in overcoming financing obstacles. The banks' frameworks facilitate partnerships between various stakeholders, including shipping companies, technology providers, and government agencies, creating a comprehensive ecosystem for sustainable maritime development.

The integration of ESG criteria into lending decisions represents a significant evolution in maritime finance. These banks are developing specialized financial products and preferential terms for sustainable shipping projects, helping to accelerate the adoption of low-carbon technologies and practices in the maritime sector.

The role of regulatory compliance, particularly with OJK requirements, ensures that sustainable finance initiatives maintain high standards of accountability and effectiveness. The banks' adherence to these regulations while developing innovative financial solutions

demonstrates their ability to balance regulatory requirements with market needs.

The long-term impact of these banking initiatives extends beyond immediate environmental benefits. By supporting the transition to sustainable shipping practices, these banks contribute to the development of a more resilient and competitive maritime sector, positioning Indonesia as a leader in sustainable maritime practices in the region.

Looking forward, the continued evolution of these banking frameworks will play a crucial role in accelerating Indonesia's maritime decarbonization efforts. The development of new financial instruments, refinement of evaluation criteria, and expansion of stakeholder partnerships will further strengthen the banking sector's ability to support sustainable maritime development while ensuring long-term environmental and economic benefits for Indonesia.

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