



The Impact of Green Bonds and Blue Bonds on Financing Sustainable Projects and Financial Stability

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Abstract. This research aims to analyze the impact of issuing green bonds and blue bonds on the financing of sustainability projects and the financial stability of state-owned enterprises (SOEs) in Indonesia. Green bonds are used to finance environmentally friendly projects, while blue bonds focus on the conservation and management of marine resources. The study explores the extent to which these instruments contribute to corporate profitability, leverage, and liquidity, through a comparative analysis of financial ratios before and after bond issuance. The re-search also identifies key challenges in the implementation of green and blue bonds, including low market liquidity, high issuance costs, and limited investor understanding. Furthermore, a SWOT analysis reveals opportunities for growth through stricter environmental regulations, increased government support, and access to global investors. The findings conclude that the issuance of green and blue bonds has the potential to enhance financial stability and promote environmentally sustainable investments in Indonesia, although regulatory and educational challenges still need to be addressed.

Keywords: Green Bonds, Blue Bonds, Sustainability, Financial Stability, Renewable Energy Projects

1 Introduction

Global climate change has driven numerous countries and economic sectors to transition toward the use of renewable energy and environmentally friendly technologies. Indonesia, as a developing nation with a large population and abundant natural resources, also faces significant challenges in balancing economic growth with environmental protection. To achieve sustainable development, innovative financing approaches that support green and blue projects are essential.

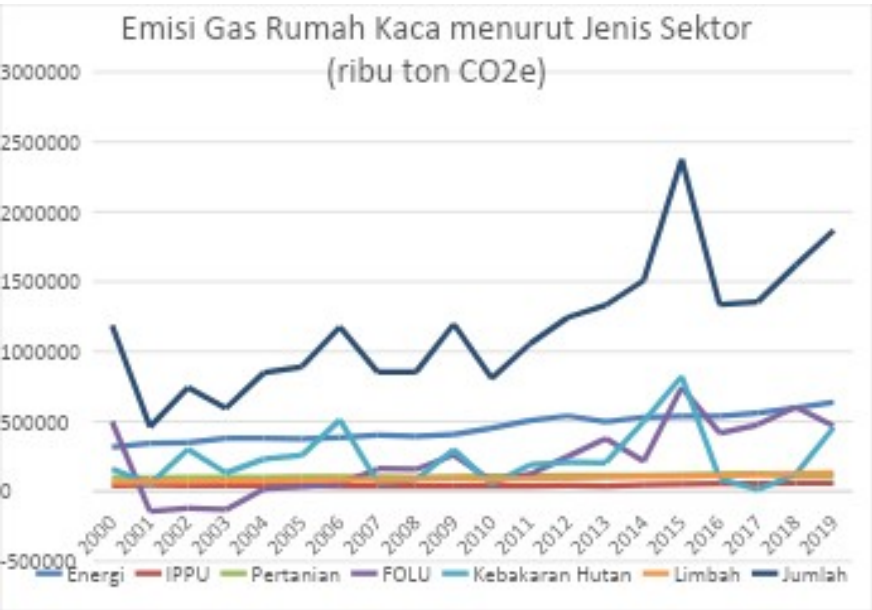


Fig. 1. Greenhouse Gas Emissions by Sector (thousand tons CO₂e) represent a critical metric for evaluating the environmental impact of various industries, highlighting the significant contributions of sectors such as energy, transportation, and manufacturing to overall carbon emissions.

The use of energy companies has resulted in numerous industries contributing to overall greenhouse gas emissions in the form of carbon dioxide emissions, encompassing residential, business, transportation, industrial, agricultural, and electricity sectors. Major producers of greenhouse gas emissions from industrial processes include fossil fuel combustion, cement production, and the use of liquid, solid, and gaseous fuels. The largest driver of total greenhouse gas emissions is CO₂ emissions from fuel combustion. Since 2000, emissions in Indonesia have dramatically increased, peaking at 581 MtCO₂ in 2019. Emissions from industrial sectors are closely tied to energy and processes.

Several companies are becoming aware of the consequences of carbon emissions and can reduce their carbon output through the use of biogas and alternative fuels. According to Presidential Regulation No. 61 of 2011, Article 4, companies' efforts to calculate their carbon emissions can be achieved through carbon emission disclosures in their annual reports and company environmental impact reports. According to Financial Accounting Standards Statement (PSAK) No. 1, companies are encouraged to disclose their social and environmental responsibilities. By disclosing carbon emissions, stakeholders can assess and manage business risks related to climate change and understand the company's environmental accountability [1]

Greater investment in low-carbon industries, energy efficiency, and infrastructure improvement is necessary for transitioning to environmentally sustainable economic

development. An eco-friendly banking system is required to invest in projects focused on energy efficiency and renewable energy [2]. To clarify the implementation of sustainable finance in Indonesia, the government is-sued OJK Regulation No. 51 of 2017 concerning the Implementation of Sustainable Finance for Financial Services Institutions, Issuers, and Public Companies. This regulation also supports the establishment of an inclusive financial services sector that contributes to sustainable development financing [3].

Given its broad impact and relevance to the planet's needs, environmental performance variables have become a significant concern. In reality, many companies prioritize financial over environmental considerations, resulting in poor environmental performance, especially in manufacturing sectors with substantial environmental implications. Several academic studies have examined the relationship between financial performance and environmental performance, yielding varying degrees of success. Effective corporate carbon reduction initiatives can lower capital costs, im-prove financial performance, and enhance corporate reputation. A company's environmental obligations are reflected in the allocation of resources for environmental activities (environmental responsibility) and the resulting environmental performance, which in turn affects financial performance. Research by Zainab & Burhany [4], Khairiyani et al., and Tahun G.P. suggests that environmental performance positively influences corporate financial performance, while Angelina finds a negative relationship.

Indonesia holds significant potential in the development of renewable energy sources such as solar, wind, geothermal, and biomass energy. However, its utilization remains limited compared to its potential. One solution to overcoming funding constraints and accelerating renewable energy development is the issuance of green bonds and blue bonds. These instruments are designed to raise funds specifically allocated to projects that contribute to environmental sustainability and the conservation of natural resources, including renewable energy, energy efficiency, and the protection of marine and coastal ecosystems.

Industries are now expected to take various measures to combat climate change due to growing public awareness of environmental issues. The establishment of the Sustainable Development Goals (SDGs) at the United Nations Conference in 2015 represents one of the initiatives by international organizations. Consumers, businesses, and the general public increasingly recognize the importance of environmental preservation for ecological sustainability. Consequently, to ensure environmental conservation and natural resource sustainability, commercial organizations are being influenced by customer demand to alter their business practices and strategies [5].

Environmental impact and financial crises are two of the main challenges facing the economy. Funding is needed to address these concerning issues, as their neglect could exacerbate the situation. As such, green finance is viewed as a solution to environmental degradation [6]. Green finance is a term used to describe sustainable and environmentally friendly projects and investments. The global economy currently faces significant challenges due to excessive technological usage. Green finance broadly addresses ecological sustainability and development, building a connection between nature and the economy. For this reason, many businesses are investing in blue and green bonds. Green finance and ethical finance are closely intertwined, with

ethical finance defined as investments made according to specific values and principles. Both advocate responsible investing.

Green bonds are typically used to finance projects that have a positive environmental impact, reducing reliance on fossil fuels, such as solar, wind, and other renewable energy power plants. On the other hand, blue bonds focus more on projects related to marine ecosystem sustainability, such as marine resource management, coastal ecosystem conservation, and marine energy development.

One type of fixed-income investment used to finance initiatives that positively impact the environment is the green bond. Like standard bonds, green bonds ensure that profits are used to finance sustainable projects, either wholly or partially. Green bonds also offer investors a fixed return. Blue bonds can be defined as financial instruments aimed at funding the conservation of marine ecosystems and enhancing the role of water bodies in economic growth. The blue economy method is based on valuing and integrating the inherent worth of nature as capital into all aspects of economic activity [7].

The Indonesian government sends a message to global and domestic financial markets through the issuance of green and blue bonds. Since Ross introduced signaling theory, this topic has developed significantly in financial research. This idea builds on the Modigliani-Miller theorem, which posits that financial structure is irrelevant and assumes that markets are fully informed about an entity's operations. According to this idea, the signaling entity—in this case, the Indonesian government—determines the best method for communicating signals to other parties. Additionally, signal receivers, among investors, will respond to the information according to their own perceptions. The use of signals helps reduce uncertainty in decision-making caused by incomplete data and information asymmetry [8].

State-Owned Enterprises (SOEs) involved in sustainability projects can reap numerous benefits, such as enhanced credibility and positive public perception as socially responsible enterprises that attract more capital and clients. Furthermore, such projects facilitate access to green banking options, such as low-interest green and blue bonds, and improve long-term operational efficiency by saving energy and resources. SOEs may also receive government incentives in the form of tax breaks or regulatory support while mitigating environmental and social issues that could compromise their ability to operate sustainably. Considering all these factors, such initiatives advance global welfare goals and strengthen the market position of SOEs.

This study aims to analyze the impact of green and blue bond issuance on the financing of sustainable projects and the financial stability of SOEs in Indonesia. With the growing need for green and blue financing, these instruments are expected to provide better financial stability for companies through diversified funding sources, enhanced global market reputation, and support from environmentally conscious stakeholders.

2 Literature Review

2.1 Green Bonds

Green bonds are bonds issued to raise funds for financing projects that contribute to environmental sustainability. These instruments often attract investors who prefer sustainable investing. In Indonesia, the issuance of green bonds is regulated by the Financial Services Authority (OJK) under Regulation No. 60/POJK.04/2017.

Regulatory Framework in Indonesia: Currently, the Financial Services Authority (OJK) has issued regulations related to the issuance of green bonds through OJK Regulation No. 60/POJK.04/2017 concerning the Issuance and Requirements for Environmentally Friendly Debt Securities (Green Bonds). However, specific regulations for blue bonds have not yet been established, indicating a need for further development.

Bond risks include credit risk, interest rate risk, liquidity risk, and market risk. The yield from bonds reflects the expected return for investors, which is influenced by these risks. Green bonds often have lower yields compared to conventional bonds due to investor preference for sustainable investments, a phenomenon referred to as the "greenium" or green premium.

2.2 Blue Bonds

Indonesia, the largest archipelagic country in the world with over 17,000 islands and a coastline spanning 95,000 km, relies heavily on its marine resources for economic prosperity and societal well-being. However, pressures such as overfishing, marine pollution, and climate change threaten the sustainability of these resources. To address these challenges, innovative and sustainable financing mechanisms are required, one of which is blue bonds.

Blue bonds are financial instruments designed to support investments in marine and blue economy sectors, such as water management, plastic pollution reduction, marine ecosystem restoration, and renewable energy development. In May 2023, Indonesia issued its first blue bond, marking the first of its kind globally. These bonds were issued in accordance with the Green Bond Principles established by the International Capital Market Association (ICMA), with support from the United Nations Development Programme (UNDP) as part of the UN Joint Program to Accelerate SDG Investments in Indonesia.

Projects funded by Indonesia's blue bonds are selected through the Climate Budget Tagging (CBT) mechanism, which identifies budget allocations for climate change mitigation and adaptation. However, no technical criteria currently exist to definitively classify a project as a "blue project," posing a risk of "blue-washing," where companies may falsely label projects as blue to gain financial benefits.

Blue bonds are designed to finance projects aimed at the sustainable conservation and management of marine resources. These instruments align with global efforts to achieve the Sustainable Development Goals (SDGs), particularly SDG 14: "Life Below Water," which seeks to conserve and sustainably use ocean resources. While still in its infancy, the implementation of blue bonds in Indonesia holds significant

potential to support various environmental and social initiatives in the maritime sector.

2.3 Sustainability Projects

Sustainable projects must consider several factors social, economic, and environmental factors when developing their implementation plans. Furthermore, sustainable projects must adapt to changing environmental conditions, address deficiencies, and meet new standards. According to the Brundtland Commission, sustainability is defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." This concept emphasizes the importance of minimizing environmental consequences and optimizing the use of natural resources to sustainably improve the quality of human life.

Sustainable projects must consider several factors, including maximizing the use of natural resources, minimizing environmental impacts, enhancing human welfare, preserving community well-being, and meeting current stakeholder requirements without jeopardizing future generations. Addressing these issues requires collaboration between the public sector, private sector, and society as a whole. Governments must enact laws that promote sustainability and provide financial incentives to companies that adopt sustainable practices. Corporations should take the lead in implementing sustainable practices while ensuring customer and consumer satisfaction. Additionally, society contributes by adopting more sustainable lifestyles and choosing products that are socially and environmentally responsible.

2.4 Financial Stability

According to Suwardjono [9], signal theory refers to the informational signals that investors must evaluate before making investment decisions regarding a particular company. Information plays a crucial role for investors and other business actors within the framework of signal theory. [9] The information in question primarily involves financial statements, which provide details on a company's performance, past and future outlooks, and analysis of market impacts on decisions made by consumers and investors. Businesses with strong financial performance attract investors and consumers, leading to significant capital inflows, which in turn enhances banking operations and profitability over time.

To address global challenges such as climate change, create new economic opportunities, and accelerate the transition to a low-carbon economy, funding for sustainability projects has become crucial. Green infrastructure and renewable energy initiatives are examples of sustainability projects that reduce carbon emissions, drive innovation, and create employment opportunities. Furthermore, access to green financial instruments through sustainability project financing reduces capital costs and improves corporate competitiveness, as investors increasingly consider environmental, social, and governance (ESG) factors. Moreover, this is essential for achieving the Sustainable Development Goals (SDGs), which can only be realized through substantial investment in sustainability-related projects.

Haldane [10] employed a fundamental model to build financial stability, where asset prices ensure optimal levels of investment and savings. From a macroprudential perspective, financial stability is often defined as reducing the likelihood of significant real production losses associated with instances of systemic financial instability [10].

When the three primary functions of the financial system—efficient intertemporal resource distribution between savers and investors, accurate forward-looking risk assessment, and the capacity to absorb shocks from real and financial economies—are satisfactorily fulfilled, financial stability is achieved.

Various indicators can be used to measure a company's financial stability, especially in comparative studies that analyze performance before and after the issuance of green and blue bonds. These include profitability, leverage, and liquidity ratios, which help assess the impact of bond issuance on corporate performance. Key profitability ratios are Return on Assets (ROA), which measures how effectively a company utilizes its assets to generate profit, calculated as net income divided by total assets, and Return on Equity (ROE), which assesses net profit generated from shareholder investments, calculated as net income divided by total equity. Another important ratio is the Net Profit Margin, which evaluates the percentage of revenue that remains as profit after deducting all operating expenses.

Leverage ratios include the Debt-to-Equity Ratio, which measures the proportion of debt relative to shareholder equity, and the Debt to Assets Ratio, which assesses the percentage of a company's total assets financed through debt. These ratios provide insight into a company's capital structure and its reliance on debt, particularly after issuing green or blue bonds.

Liquidity ratios, such as the Current Ratio and Cash Ratio, indicate a company's ability to meet short-term liabilities with its current assets or cash reserves. The Current Ratio is calculated by dividing current assets by current liabilities, while the Cash Ratio is determined by comparing cash and cash equivalents to current liabilities.

Additional metrics, such as Total Asset Turnover, which measures how efficiently a company utilizes its assets to generate sales, and the Operating Margin, which assesses the percentage of profit derived from core operations, further aid in understanding the financial impact of bond issuance. These ratios allow researchers to compare company performance before and after the issuance of green and blue bonds, with the goal of determining whether profitability has increased, leverage has shifted positively, and liquidity has remained stable or improved following the issuance of these bonds.

According to Sugiyono, a hypothesis is a provisional solution to the formulation of a research problem. The hypotheses for this study are as follows [11]:

H1: The issuance of green bonds has a positive impact on financing sustainability projects.

H2: The issuance of blue bonds has a positive impact on financing sustainability projects.

3 Methodology

This research utilizes a literature review and quantitative analysis method. Secondary data were obtained from the financial reports of Indonesian state-owned enterprises (SOEs) that have issued green and blue bonds, as well as from various industry reports and global bond data. A comparative analysis was conducted by examining financial performance before and after the issuance of green and blue bonds, using financial indicators such as liquidity, profitability, and leverage. The policy analysis employed a SWOT approach (Strengths, Weaknesses, Opportunities, Threats) to evaluate the current regulatory framework and identify areas in need of further development.

The sample was selected using purposive sampling with the following criteria: 1) State-owned enterprises (SOEs), 2) Companies listed on the Indonesia Stock Exchange, 3) Companies that have issued green and/or blue bonds. Based on these criteria, the following companies were selected:

3.1 Green Bonds:

PT Sarana Multi Infrastruktur (SMI): In 2018, SMI became the first SOE in Indonesia to issue green bonds. Projects funded through these bonds include sustainable infrastructure initiatives such as clean water management, sustainable transportation, and renewable energy.

PT Bank Negara Indonesia (BNI): In 2022, BNI issued green bonds to finance projects related to renewable energy, energy efficiency, and green buildings.

PT Bank Rakyat Indonesia (BRI): BRI issued green bonds to support environmental projects, including waste management and green infrastructure development.

3.2 Blue Bonds:

1. PT Bank Negara Indonesia (BNI): In 2023, BNI committed to supporting the issuance of blue bonds. Funds from these bonds are directed toward the sustainability of marine ecosystems, particularly in coastal management and sustainable fisheries.
2. PT Bank Mandiri: Bank Mandiri is exploring the issuance of blue bonds to support projects related to marine conservation and water management.

4 Result and Discussion

4.1 Comparative Analysis Results

Table 1. Profitability, Leverage and Liquidity of State-Owned Enterprises (SOEs)

Nama Perusahaan	Tahun	ROA	ROE	NPM	DER	DAR	Current Ratio	Cash Ratio	Total Asset Turnover	Operating Margin
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PT SARANA	2017	2.28	3.68	40.00	61.38	38.03	2.50	0.74	0.03	73.03
MULTI	2018	2.45	4.30	38.20	72.85	41.47	2.29	0.30	0.02	100.35
INFRASTRUKTUR	2023	1.80	4.92	27.29	172.89	63.12	1.55	0.17	0.02	89.69
PT BANK	2021	1.14	8.68	21.94	662.60	86.89	1.21	0.02	0.01	116.31
NEGARA	2023	1.94	13.64	34.33	602.29	85.76	1.22	0.01	0.02	122.11
INDONESIA										
PT BANK	2021	1.81	10.40	21.13	475.11	82.61	1.25	0.02	0.02	133.78
RAKYAT	2023	3.11	19.29	34.11	520.91	83.89	1.16	0.02	0.03	127.15
PT BANK	2022	2.28	17.98	51.59	612.14	77.49	1.31	0.02	0.02	123.86
MANDIRI	2023	2.80	21.20	63.57	577.56	76.37	1.36	0.02	0.03	122.45

Based on Table 1, it can be concluded that profitability, as measured by Return on Assets (ROA), Return on Equity (ROE), and Net Profit Margin (NPM), shows a significant increase when comparing the financial performance of SOEs before and after issuing green and blue bonds. This indicates that companies have successfully increased their profits compared to the previous period. If sustainability projects funded by these bonds prove successful, companies issuing green and blue bonds can enjoy higher profitability. These bonds allow companies to raise capital from environmentally conscious investors without diluting ownership. The funds can be used to support initiatives that enhance operational efficiency, such as reducing energy costs or improving resource management, which in turn lowers operational expenses.

Companies have increased external financing to expand their activities, as reflected in the comparative analysis of leverage ratios, including the Debt-to-Equity Ratio (DER) and Debt to Assets Ratio (DAR), both of which show substantial growth. Leverage is more frequently utilized to enhance profit potential. Increased leverage enables businesses to pursue desired initiatives, such as investments in green technologies or other initiatives, without relinquishing equity capital. However, high debt burdens can complicate long-term investment plans and potentially threaten financial health if not managed effectively. Companies issuing green and blue bonds are doing so to finance projects that are expected to have a positive environmental impact while continuing to grow financially. Since green and blue bonds are debt instruments, their issuance increases corporate leverage, which raises the risk if the projects financed do not generate sufficient revenue to cover debt obligations. Therefore, to balance sustainability and financial health, companies must ensure that the projects are profitable enough to guarantee debt repayment.

The table also shows the results of the current ratio and cash ratio, which measure a company's ability to meet short-term obligations (liquidity). Companies that issue green and blue bonds must maintain strong liquidity to meet the financial commitments arising from these bonds. Insufficient liquidity may hinder a business's ability to support additional sustainability projects or repay its debts.

The Total Asset Turnover ratio measures how efficiently a company uses its assets to generate revenue and indicates how well the company can leverage existing assets, including those financed through green and blue bonds, to drive productivity. The operational profit a business generates from each unit of revenue is reflected in its operating margin. The operational margin of an organization is likely to improve if

green or blue bonds are issued, and the projects they fund successfully increase efficiency. The larger the operating margin, the more profitable the business becomes, even though projects funded by green and blue bonds.

4.2 SWOT Analysis of Green Bonds and Blue Bonds in Indonesia

Strengths.

Government Support. The Indonesian government has demonstrated strong backing for green initiatives through a range of pro-environment policies, including its commitment to the Paris Agreement, fostering a favorable climate for the expansion of green bonds. Additionally, as the largest archipelagic nation, Indonesia has shown significant commitment to marine resource protection and management through initiatives such as the blue economy and blue carbon frameworks, further supporting the development of blue bonds.

Increasing Public Awareness. The heightened awareness of environmental and sustainability issues among both investors and the general public has led to a growing demand for green and blue bonds, positioning them as key instruments for sustainable investment.

Tax Incentives. Green and blue financial instruments are eligible for tax incentives, which enhance their attractiveness to institutional investors by offering additional financial benefits.

Investment Diversification Opportunities. Green and blue bonds introduce new asset classes, allowing investors to diversify their portfolios with environmentally and sustainably focused financial instruments, thereby reducing portfolio risk while contributing to sustainable development.

Abundant Marine Resources. Indonesia's vast marine wealth, including fisheries, coral reefs, and other marine ecosystems, positions the country as an optimal location for blue bond-related projects, especially those targeting marine conservation and sustainable development.

International Support. Global financial institutions have increasingly provided funding or guarantees to support Indonesia's green bond issuances. Similarly, blue bonds have gained international backing as part of global ocean conservation strategies, further facilitating their development.

Growing Global Ocean Awareness. The rising global recognition of the importance of ocean preservation offers Indonesia significant opportunities to attract international investors focused on marine sustainability, enhancing the potential for blue bond issuance.

Weaknesses.

Limited Investor Understanding. A significant portion of local investors lacks a comprehensive understanding of green bonds, particularly concerning their long-term benefits and the economic and environmental impact. This knowledge gap restricts the market's growth and limits investor participation.

Low Market Liquidity. The green and blue bond markets in Indonesia are still in their early stages, resulting in lower liquidity compared to conventional bonds. This low liquidity diminishes their appeal to investors who prioritize highly liquid, easily tradable financial instruments.

Higher Issuance Costs. The issuance of green bonds involves higher costs due to the requirement for independent verification and detailed environmental impact reporting. Similarly, blue bonds necessitate thorough impact assessments and verification processes, further elevating the cost of issuance.

Scarcity of Eligible Green Projects. The availability of green projects that meet the criteria for green bond financing remains limited in both scale and quality. Although Indonesia has abundant marine resources, the number of projects eligible for blue bond financing is still insufficient, particularly in terms of readiness for funding.

Dependence on Environmental Policy. The success of green and blue bonds is heavily reliant on government policies that support environmental sustainability. Any policy shifts that do not favor sustainability could significantly impede the development of these bond markets.

Opportunities.

Expansion of the Green Economy. With sustainability becoming a critical priority across various sectors, the potential market for green projects in Indonesia is continuously expanding, presenting significant opportunities for growth in green financing.

Access to Global Investors. The issuance of green and blue bonds provides access to international investors with mandates for sustainable and environmentally friendly investments, positioning Indonesia to attract global capital.

Strengthening Environmental Regulations. The increasing emphasis on environmental, social, and governance (ESG) regulations is likely to further enhance the demand for green and blue bonds, driving greater investment in sustainable projects.

Climate Change Mitigation and Adaptation. Corporations and governments are increasingly recognizing the importance of investments in climate change mitigation and adaptation, leading to the development of more green and blue projects that contribute to long-term environmental sustainability.

Involvement of International Financial Institutions. International financial institutions such as the World Bank are actively supporting green and blue bond initiatives in developing countries like Indonesia, facilitating the growth of sustainable financing mechanisms.

Global Community Support. The growing global awareness of the importance of preserving marine ecosystems creates opportunities for Indonesia to attract foreign investment in blue bond projects, particularly in marine conservation and sustainable resource management.

Expanding Marine-Based Project Potential. Indonesia's vast marine resources offer substantial potential for marine-based projects, including sustainable fisheries management, coral reef conservation, mangrove restoration, and marine renewable energy, all of which are well-suited for blue bond financing.

Opportunities for Economic Diversification. Green and blue bonds provide Indonesia with the potential to diversify its resource-dependent economy by financing sustainability projects that contribute to long-term economic stability and growth.

Technological Innovation in Marine Management. Advances in marine technology, particularly in resource monitoring and management, are creating more viable projects that can be funded through blue bonds, further enhancing Indonesia's potential in sustainable development.

Threats .

Policy Uncertainty. Despite existing governmental support, inconsistent or unfavorable shifts in environmental policies pose a significant risk to the development of the green and blue bond markets, potentially undermining long-term investor confidence.

Competition from Conventional Bonds. Green and blue bonds face stiff competition from conventional bonds, which are often more familiar and accessible to investors, thereby limiting the growth of sustainable bond markets.

Risk of Greenwashing. There exists a notable risk that some issuers of green bonds may not fully allocate funds toward genuinely sustainable projects, leading to greenwashing, which could erode investor trust and damage the reputation of green bonds.

Lack of Clear Standards. The absence of well-defined and consistent standards for categorizing “blue” projects increases the risk of blue washing, potentially undermining investor confidence and weakening the integrity of blue bond markets.

Macroeconomic Instability. Macroeconomic uncertainties, such as high inflation or global economic downturns, may reduce investor interest in green and blue bonds, particularly in a volatile economic environment like Indonesia.

Accelerating Climate Change. Although blue bonds aim to mitigate the effects of climate change on marine ecosystems, uncontrolled climate change could accelerate the degradation of marine environments, potentially diminishing the effectiveness of projects financed through blue bonds.

The findings from the analysis indicate that the issuance of green bonds exerts a positive influence on the financial stability of companies. This conclusion is consistent with the studies conducted by Khairiyani et al. and Zainab & Burhany [4], which demonstrated that environmental performance positively affects corporate financial performance. However, this outcome diverges from the results of Angelina, who concluded that environmental performance has a negative impact on financial performance.

5 Conclusion

The correlation between green and blue bonds, as indicated by various financial metrics, demonstrates that their issuance has a positive impact on the financial health of companies. The issuance of these bonds contributes to higher profitability when allocated to sustainable projects that enhance operational efficiency and revenue generation. This is evidenced by the performance of companies such as PT Bank Mandiri, which reported a Net Profit Margin (NPM) of 63.59% in 2023, demonstrating the financial benefits of green and blue bond financing. Additionally, companies that maintain strong profitability are able to sustain healthy leverage levels, as illustrated by PT Bank Mandiri's Debt to Equity Ratio (DER) of 577.56 in the same year. This suggests that businesses can effectively utilize debt, including funds raised through green and blue bonds, to support both sustainability initiatives and financial growth.

Liquidity is another key factor in financial stability. While some companies may face challenges with lower liquidity ratios, long-term financial health can still be achieved if they can generate consistent cash flow from projects financed through green or blue bonds. The potential for expanding the market for green and blue bonds in Indonesia is significant, given the country's abundant marine resources, governmental support, and rising public awareness of environmental issues. However, key challenges remain, such as improving market liquidity and enhancing local investors' understanding of these financial products.

The issuance of green bonds in Indonesia has already had a positive impact on the development of renewable energy projects, contributing to economic, environmental, and social benefits. These instruments have proven effective in overcoming funding barriers and encouraging greater investor participation in sustainable projects. Despite these positive outcomes, challenges persist, including incomplete regulatory frameworks and limited awareness among investors regarding the potential of green bonds. Stronger support from the government, financial institutions, and other stakeholders is essential to reinforce the green bond ecosystem in Indonesia.

The development of a comprehensive regulatory and policy framework for green and blue bonds is critical for advancing sustainable project financing in the country. While certain initiatives have been implemented, further efforts are needed to strengthen regulations, increase incentives, and promote education and understanding among investors and issuers. With an appropriate strategy, green and blue bonds could serve as essential instruments in supporting sustainable development and environmental conservation efforts in Indonesia.

The researcher offers several recommendations. First, strengthening reporting standards is essential. There is a need for stricter and more transparent reporting guidelines on the allocation of funds and the environmental impact of projects financed by green and blue bonds. The government should establish a comprehensive regulatory framework for issuing green and blue bonds, outlining clear instructions on project eligibility for funding, the submission of impact reports, and the provision of incentives for both issuers and investors.

Additionally, enhancing investor incentives could increase the attractiveness of green and blue bonds. The government may consider offering further incentives, such as tax reductions or interest subsidies, to stimulate investment in sustainable bonds.

Educational and promotional efforts must also be prioritized to raise awareness about green and blue bonds across public, private, and governmental sectors. A focused educational campaign involving publications, seminars, and workshops on the benefits of green and blue bonds for environmental sustainability would help achieve this. Extending these campaigns would improve investor understanding of the advantages, potential limitations, and long-term returns of green and blue bonds.

Furthermore, multisectoral collaboration is crucial for advancing the development of green and blue bonds. Cooperation between government institutions, financial organizations, academic institutions, and non-governmental organizations is necessary to ensure that the projects funded by these bonds generate significant and transparent impacts. Such collaboration is integral to the successful promotion of these bonds.

For future research, it is recommended that more extensive studies be conducted on the impact of green and blue bonds on corporate financial stability, particularly given the limited research on blue bonds. Future researchers may consider incorporating additional variables and applying alternative analytical methods to deepen the understanding of this area.

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