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Article

Policy analysis of green bonds in Indonesia: Strategies for achieving sustainable development

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Abstract: The use of green bonds as a financial instrument to support sustainable development has become a major focus in Indonesia. However, the success of green bond implementation not only depends on market willingness but also on public policies that support and regulate its use. Therefore, this research aims to analyze the impact of public policies on the use of green bonds in Indonesia and how these policies can influence sustainable development. Public policy theory and sustainable development theory are the basis of analysis in this research. Public policy theory is used to understand how public policies are formed, implemented, and evaluated. Meanwhile, sustainable development theory is used to evaluate the impact of public policies on sustainable development. This research uses a qualitative approach with public policy analysis as the main method. Data are collected from various sources, including policy documents, government reports, and interviews with relevant stakeholders. The analysis results show that public policies have a significant impact on the use of green bonds in Indonesia. These policies cover various aspects, such as regulation, incentives, and government support. Additionally, these policies also influence how green bonds are used to support sustainable development in Indonesia. In order to promote sustainable development, it is important for the Indonesian government to continue developing and strengthening public policies that support the use of green bonds. This will help improve the success.

Keywords: sustainable development; public policy; green bonds

1. Introduction

Indonesia faces significant challenges in achieving sustainable development, particularly due to the negative environmental impacts of rapid economic growth, such as deforestation, air and water pollution, and increased greenhouse gas emissions (Qisa'i, 2020; Rahma Febriyanti et al., 2022). Additionally, the exacerbation of climate change has led to more frequent natural disasters, including floods, droughts, and landslides. Despite the Indonesian government's commitment to sustainable development through various policies and programs (Adila et al., 2021), there remains a pressing need for substantial investment in eco-friendly projects to meet the target of reducing greenhouse gas emissions by 29% to 41% below Business As Usual (BAU) levels by 2030 (Osobajo et al., 2020).

In this context, innovative financial instruments like green bonds present a strategic solution for mobilizing private sector funds to support these environmental projects (Mariah, 2010). Green bonds are debt securities issued to finance projects with positive environmental impacts (Nurika et al., 2023). The funds raised from the issuance of green bonds are allocated to projects such as renewable energy, energy efficiency, sustainable transportation, and water management, aiming to advance sustainable development. The benefits of green bonds include: (1) enhancing funding for environmentally friendly projects; (2) raising awareness of sustainability; and (3) improving the environmental profiles of companies.

While the green bond market in Indonesia is relatively new, it has experienced rapid growth in recent years (Rela et al., 2020). In 2022, the total issuance of green bonds in Indonesia reached Rp 22.7 trillion. The Indonesian government has demonstrated strong commitment to sustainable development through its support and promotion of green bonds. In 2018, President Joko Widodo signed Presidential Regulation No. 61 of 2018 on the Issuance and Offering of Sustainable State Debt Securities and Foreign Currency Denominated Sustainable State Debt Securities, providing a legal framework for the issuance of green bonds by the Indonesian government (Davey et al., 2023). Additionally, the Financial Services Authority (OJK) issued OJK Regulation No. 18/POJK.04/2019 on the Offering and Trading of Sustainable Securities, which provides guidelines for companies that want to issue green bonds in Indonesia (Septiana and Dewi, 2022). The Indonesian government has also provided direct financial support to projects funded by green bonds. In 2020, the government launched green bonds worth $1.25 billion to support projects with positive environmental impacts, such as environmentally friendly infrastructure projects and renewable energy projects.

The Indonesian government has also provided tax incentives for companies issuing green bonds (Andi Wirawan and Febriana Sari, 2023). In 2021, the government launched a tax incentive policy offering a 30% tax deduction for companies issuing green bonds. With the support and commitment of the government, the green bond market in Indonesia has grown rapidly in recent years. Various policies and regulations continue to be implemented to promote the development of this market. Indonesia has a significant opportunity to develop a strong green bond market, given its need for environmentally friendly infrastructure, such as efficient transportation networks and renewable energy. With a robust green bond market, Indonesia can finance these projects at lower costs, leveraging its abundant natural resources like sunlight, wind, and water to generate renewable energy (Astika et al., 2021).

The relevance of this research is significant both locally and globally, as it offers guidance for better policies and practices in green bond issuance and utilization in Indonesia. The findings are expected to strengthen the understanding of green bonds, address existing challenges, and support the development of eco-friendly infrastructure and renewable energy industries at reduced costs (Priyanta and Zulkarnain, 2023). By overcoming these obstacles, Indonesia can foster a robust green bond market and achieve more effective sustainable development goals (Agnes and Koestoer, 2021).

However, Indonesia also faces several obstacles and challenges in developing the green bond market. One major obstacle is the lack of understanding about green bonds in Indonesia. Many stakeholders still do not comprehend what green bonds are and their benefits for sustainable development. Additional obstacles include: (1) Lack of knowledge and information about green bonds; (2) Risks associated with green projects; and (3) Insufficient incentives for investors to buy green bonds. Therefore, efforts are needed to increase understanding and knowledge about green bonds in Indonesia. Indonesia also faces challenges in developing environmentally friendly infrastructure. A significant challenge is the prevalent use of non-eco-friendly infrastructure, such as fossil fuel-based transportation. Efforts are essential to develop and promote environmentally friendly infrastructure.

Similarly, Indonesia faces hurdles in developing the renewable energy industry. One of the main challenges is the lack of investment in this sector. Many parties still rely on energy generated from fossil fuels. Hence, efforts are needed to boost investment in the renewable energy industry in Indonesia. By addressing these obstacles and challenges, Indonesia can develop a strong green bond market and support sustainable development. With a robust green bond market, Indonesia can finance eco-friendly infrastructure projects and renewable energy industries at lower costs, thereby achieving better sustainable development goals.

2. Materials and methods

2.1. Experimental design

This article employs a document and qualitative study approach to analyze public policies related to green bonds in Indonesia and their impact on sustainable development. The experimental design comprises two main components: public policy analysis and case studies on the implementation of green bonds.

2.2. Public policy component

2.2.1. Considered components

This research focuses on relevant public policies, including government regulations such as OJK Regulation No. 60/POJK.04/2017 on the Issuance and Requirements for Green Bonds, Indonesia's Green Economy Master Plan 2011-2025, and the National Strategy for Sustainable Finance (SNKB) 2016-2025.

2.2.2. Connection to green bond development

These policies influence the development of the green bond market by providing a legal framework and incentives that support the issuance and investment in green bonds. This study will evaluate how these policies have impacted the growth and effectiveness of the green bond market in Indonesia.

2.3. Policy alternatives for green bonds

In addition to green bonds, other green financial policies such as Sharia green bonds, sustainable loans, and community-based funding will be explored. This research will compare the effectiveness and application of each alternative in supporting sustainable development.

2.4. Research methodology

2.4.1. Document approach

1) Document analysis

This study will analyze policy documents related to green bonds, including legislation, official reports, and government publications. The analysis aims to provide insights into the evolution of policies over time and their impact on sustainable development (Yunita et al., 2023).

2) Analysis method

Data from document studies will be analyzed using content analysis to identify key themes and trends in public policy regarding green bonds (Araujo and Mason, 2021).

2.4.2. Qualitative approach

1) Data collection

Preliminary data will be collected through surveys and interviews with key stakeholders such as government officials, green bond issuers, and investors. (Note: Surveys and interviews have been conducted and will be reported in the results section.)

2) Data Analysis

Qualitative data from interviews will be analyzed using thematic analysis to identify perceptions and experiences related to the implementation of green bonds and their impact on sustainable development (Fitrah and Soemitra, 2022).

2.4.3. Validity and reliability

1) Validity

The validity of the research is maintained through data triangulation and providing informants with the opportunity to review the analysis results (Indriastuty, 2020).

2) Reliability

The reliability of the research is ensured by using structured interview guidelines and conducting an audit trail for transparency in the research process (Purnamawati, 2022).

2.5. Research contribution

This research aims to make a significant contribution to the green bonds literature by:

a) Identifying Policy Strengths and Weaknesses

Providing insights into the strengths and weaknesses of existing policies and their impact on the development of the green bond market.

b) Policy Recommendations

Proposing contextual and practical policy recommendations to enhance the use of green bonds as a financial instrument supporting sustainable development.

2.6. Theoretical framework

2.6.1. Concept development

1) Sustainable development

Integrates economic, social, and environmental aspects with reference to the United Nations Sustainable Development Goals (SDGs).

2) Green bonds

Definitions, characteristics, benefits, and market developments globally and in Indonesia.

3) Public policy

The role and influence of public policy in driving the green bond market, as well as the evaluation of existing policies' effectiveness.

4) Theories and models

Environmental economics theory, public policy theory, green finance theory, and the Porter Hypothesis model explaining the relationship between environmental regulation and firm performance.

2.6.2. Analysis and recommendations

1) SWOT analysis

To assess the strengths, weaknesses, opportunities, and threats in the development of the green bond market in Indonesia.

2) Recommendation formulation

Identifying barriers and opportunities, and formulating policy recommendations to support the use of green bonds in sustainable development.

Through this approach, the research is expected to provide an in-depth analysis of public policy on green bonds in Indonesia and develop practical recommendations to advance the green bond market and achieve sustainable development goals.

3. Results and discussion

This chapter will discuss green bonds, a financial instrument issued to finance projects that have a positive impact on the environment and sustainable development. In this context, it is important to understand the role of green bonds in promoting environmentally friendly and sustainable investments. Factors influencing the acceptance of green bonds, their impact on sustainable development, the implications of public policy on green bonds in Indonesia, challenges and opportunities in the implementation of green bonds, acceptance and implementation of green bonds in Indonesia, as well as comparisons with other countries will be the focus of this discussion.

3.1. Green bonds

Green bonds are specialized financial instruments issued by governments or companies specifically to fund projects with positive environmental impacts (Pratanjana and Simbolon, 2020). Unlike conventional bonds, the funds raised through green bonds must be exclusively allocated to environmentally friendly projects. The primary objective of green bonds is to channel capital into initiatives that protect the environment and advance long-term ecological health. Amid escalating climate change and environmental challenges, green bonds present a dual opportunity for investors: to contribute to sustainable solutions while achieving competitive financial returns.

The increasing appeal of green bonds among environmentally conscious investors reflects a broader awareness of the urgent need for sustainable practices. Investors are increasingly driven by the desire to support projects that align with their values, such as renewable energy installations, energy efficiency improvements, and enhanced waste management systems (ÇETİN, 2022). Funding the development of solar and wind power plants through green bonds significantly reduces reliance on fossil fuels and curtails greenhouse gas emissions. These bonds also support projects focused on advancing energy efficiency, conserving natural resources, and fostering better waste management practices.

In Indonesia, where ambitious targets for sustainable development include energy transition, greenhouse gas emissions reduction, and green infrastructure development, green bonds play a crucial role in financing these objectives. Green bonds not only provide funding for eco-friendly projects but also offer substantial benefits to investors, issuers, and the broader community. Investors gain the opportunity to back projects with positive environmental and societal impacts while earning competitive returns. Issuers, whether government bodies or corporations, can enhance their reputation and access lower-cost funding. The community benefits from cleaner environments and sustainable development outcomes (Taghizadeh-Hesary et al., 2022).

Despite their potential, the development of green bonds in Indonesia faces several significant challenges. A major challenge is the lack of comprehensive education and understanding regarding green bonds among both investors and issuers. Additionally, the absence of standardized criteria for evaluating projects that meet green bond criteria can create uncertainty for investors and hinder market growth. There are also concerns that some green bonds might serve merely as marketing tools rather than genuinely advancing environmental goals. Additional obstacles include the complex issuance process and limited incentives for market participants (Lichtenberger et al., 2022).

Addressing these challenges requires a concerted effort from various stakeholders. The government can play a pivotal role by strengthening regulations and providing incentives for green bond investments. Increased education and outreach are essential to raise awareness and understanding of green bonds. Collaborative efforts between government bodies, corporations, and financial institutions are crucial for establishing clear and actionable standards for green bond projects (Bužinskė and Stankevičienė, 2023). Ensuring transparency and accountability in the deployment of green bond funds is also critical to confirm that these investments deliver tangible environmental benefits.

With growing awareness of environmental protection, the green bond market has the potential to expand significantly and become a vital financial instrument in supporting sustainable projects. Effective collaboration among governments, businesses, and financial entities can enable green bonds to become a major financial instrument in supporting sustainable development. By addressing existing challenges and leveraging opportunities, green bonds can substantially contribute to global efforts in mitigating environmental impacts and achieving sustainability goals.

3.2. Factors influencing the acceptance of green bonds

Understanding the factors influencing the acceptance of green bonds is crucial for navigating the evolving financial landscape and advancing this burgeoning financial instrument. Green bonds, designed to finance environmentally beneficial projects, are shaped by a variety of factors affecting both investors and issuers (Alamgir and Cheng, 2023). This analysis delves into the multifaceted elements that impact green bond acceptance, market dynamics, and sustainable development.

3.2.1. Criteria and standards

One of the primary determinants of green bond acceptance is the clarity and robustness of the criteria and standards used to define and evaluate green projects. For green bonds to gain traction, both investors and issuers require well-defined, measurable, and transparent standards aligned with internationally recognized benchmarks. Clear criteria not only boost investor confidence but also strengthen overall market trust in green bonds. The establishment of robust and transparent criteria is essential for ensuring that projects funded by green bonds genuinely contribute to environmental sustainability, facilitating rigorous evaluation and effective allocation of funds to initiatives with genuine environmental benefits.

3.2.2. Transparency and reporting

Transparency and thorough reporting on the utilization of funds from green bonds are vital for gaining market acceptance. Investors demand assurance that their funds are directed towards projects that not only promise environmental benefits but also deliver tangible outcomes. Transparent reporting mechanisms, including regular updates and detailed impact assessments, are essential for validating the environmental impact of funded projects and fostering investor trust in green bond instruments. Improved reporting practices can mitigate skepticism and reinforce the legitimacy of green bonds as effective tools for sustainable investment.

3.2.3. Sustainability and positive impact

The acceptance of green bonds is significantly influenced by the actual sustainability and positive impact of the projects they finance. Investors are increasingly discerning about the real environmental and social impacts of their investments. Projects funded by green bonds must demonstrate substantial and measurable benefits, such as reductions in greenhouse gas emissions, enhanced energy efficiency, or improved waste management practices. Issuers must ensure that funded projects meet rigorous sustainability criteria and generate meaningful positive outcomes for the environment to attract and retain investor interest.

3.2.4. Uncertainty and risk

Uncertainty and risk associated with green bond-funded projects can affect their acceptance. Investors seek assurances that the risks related to these projects are well-managed and that the potential returns justify their investments. To address these concerns, issuers need to provide comprehensive risk assessments and mitigation strategies. Ensuring that projects are well-managed and that potential risks are transparently communicated can help build investor confidence and facilitate greater acceptance of green bonds.

3.2.5. Government policies

Government policies play a crucial role in influencing green bond acceptance. Supportive policies, including regulations that incentivize green investments and provide clear guidelines for green bond issuance, can significantly boost market acceptance. Incentives such as tax breaks or subsidies can make green bonds more attractive to investors and issuers alike. Effective policy measures that promote green bond market development and address barriers are essential for creating a conducive environment for green bonds to thrive, aligning with broader environmental and sustainability goals.

3.2.6. Consciousness and education

Investor awareness and education regarding environmental protection and sustainability are pivotal in shaping the acceptance of green bonds. As public awareness about environmental issues increases, so does the demand for sustainable investment instruments. Educational initiatives aimed at informing investors about the advantages of green bonds and the importance of sustainability can play a significant role in expanding the market. Enhancing investor education on the benefits and impact of green bonds is crucial for increasing their market acceptance, as well-informed investors are more likely to invest in green bonds and support the transition towards a more sustainable financial system.

3.2.7. Market development

The overall development of the financial market also affects the acceptance of green bonds. A robust and dynamic financial market can enhance the appeal of green bonds by integrating them into diverse investment portfolios. Positive market trends, such as increased investor interest and improved financial infrastructure, can strengthen the position of green bonds. Continuous monitoring and understanding of market developments are necessary to grasp how they influence green bond acceptance, ensuring that green bonds remain a viable and attractive investment option.

Further discussion on green bonds can be understood through a broader definition, which is that such policies are innovative financial instruments designed to finance environmentally friendly and sustainable projects. The acceptance of green bonds in the financial market is influenced by various factors, both from the perspective of investors and issuers. Here are some more specific factors that have been identified:

a. Factors from the investor's side include: (1) Awareness and concern for the environment, where increasing awareness and concern among the public about environmental issues drive investors to seek sustainable investment instruments; (2) Investors will consider the financial performance and investment risks of green bonds before deciding to invest; (3) Government incentives and support, such as tax breaks, can attract investor interest in green bonds; and (4) Investors require transparent and accountable information about the use of green bond funds to ensure their investment has a positive impact on the environment.

b. Factors from the issuer's side include: (1) Characteristics of projects funded by green bonds, such as financial feasibility, environmental impact, and risk profile, will influence investor interest; (2) The reputation and credibility of the issuer, including track record and commitment to sustainability, are important considerations for investors; (3) High issuance costs of green bonds can be a barrier for issuers to issue green bonds; (4) Issuers need to consider investor demand for green bonds when determining the type of projects to be funded.

In summary, the acceptance of green bonds is shaped by a combination of factors, including clear criteria and standards, transparency in reporting, project sustainability and impact, risk management, supportive government policies, investor awareness, and overall market development. Each of these factors plays a critical role in determining how green bonds are perceived and adopted in the financial market. Addressing these factors comprehensively can enhance the market acceptance and growth of green bonds, driving progress toward sustainable development goals. By focusing on these elements, stakeholders can contribute to a more sustainable and resilient financial system.

3.3. The impact of green bonds on sustainable development

In recent years, green bonds have emerged as a vital financial instrument, gaining significant traction among governments, corporations, and financial institutions aiming to finance environmentally beneficial projects. These financial instruments play a pivotal role in supporting sustainable development goals by providing essential funding for projects that promote environmental sustainability. Green bonds are instrumental in financing high-cost projects such as solar power plants, green infrastructure development, and advanced waste management systems (Joyonegoro et al., 2021). The initial high capital requirements for these projects necessitate robust financial backing, which green bonds effectively provide.

Beyond merely financing, green bonds contribute to significant reductions in greenhouse gas emissions and the broader fight against climate change. By directing capital towards renewable energy projects and energy efficiency initiatives, green bonds help decrease reliance on fossil fuels and reduce carbon footprints. This is a critical component of global efforts to mitigate the adverse effects of climate change (Tu et al., 2019). The ripple effect of green bonds extends into the broader economy, fostering the growth of sustainable economic sectors and generating new employment opportunities within green industries. This not only enhances community well-being but also fortifies the overall economy. Here are more specific impacts of green bonds on sustainable development:

a. Fund mobilization and increased investment

Green bonds attract capital from environmentally-conscious investors, directing these funds towards projects such as renewable energy, sustainable transportation, and eco-friendly buildings. This increased investment supports the transition to a more sustainable economy by funding projects that might otherwise struggle to secure financial backing. The capital influx from green bonds accelerates the development of green sectors and enhances their growth potential.

b. Encouraging green innovation and technology

The growing demand for green bonds stimulates innovation and the development of efficient, cutting-edge green projects by both companies and governments. This trend fosters technological advancements and creates new job opportunities within the green technology sector, contributing to both economic growth and environmental sustainability.

c. Enhancing transparency and accountability

Green bond issuance adheres to stringent standards and frameworks, which enhances transparency and accountability in fund utilization. These measures ensure that funds are used responsibly for genuine green projects, thereby bolstering investor confidence and reinforcing the credibility of the green bond market. Enhanced transparency in fund utilization is crucial for maintaining trust and encouraging continued investment.

d. Strengthening cooperation and partnerships

The issuance of green bonds fosters collaboration among governments, the private sector, and civil society, creating a platform for enhanced cooperation in achieving sustainable development goals. This collaborative approach strengthens partnerships and ensures a more integrated effort towards environmental and economic sustainability.

However, the green bond market faces several challenges that need to be addressed to fully realize its potential for sustainable development. First, as the green bond market is still relatively new and evolving, increasing investor awareness and interest is crucial. Second, the issuance process for green bonds in some countries remains complex and time-consuming, which can hinder market growth. Third, green bonds often come with higher investment risks compared to conventional bonds, which may affect their attractiveness to some investors. Despite their significant benefits, addressing these challenges is essential to enhance the green bond market's effectiveness and impact on sustainable development:

a. Greenwashing risk

There is a risk that some entities may exploit the green label to attract investment without genuine sustainability efforts. This risk of "greenwashing" undermines investor confidence and threatens the credibility of green bonds.

b. Lack of standardization

The absence of standardized criteria and frameworks for green bonds across different regions leads to confusion and complicates the comparison of offerings. This lack of uniformity can impede market expansion and affect investment decisions.

c. Limited market size

The green bond market remains relatively small compared to traditional bond markets. Expanding this market requires increased investor education and awareness about the benefits of green bonds and their role in sustainable development.

d. Limited access for developing countries

Developing nations often face challenges such as inadequate infrastructure and expertise, which hinder their ability to issue green bonds and transition to a green economy.

Despite these challenges, the potential of green bonds to advance sustainable development is substantial. They provide critical funding for environmentally-friendly projects, support the growth of green economies, and create job opportunities in sustainable sectors. By financing renewable energy, energy efficiency, and waste management projects, green bonds contribute to reducing greenhouse gas emissions and mitigating climate change. Additionally, projects funded by green bonds that improve clean water access and sanitation significantly enhance community well-being and quality of life. A concerted effort from governments, regulators, investors, and the public is essential to nurture and expand the green bond market. With appropriate support, green bonds can be a powerful tool in achieving global sustainable development goals, stimulating the growth of green economies, creating jobs, and significantly reducing greenhouse gas emissions. Overcoming these challenges and advancing the green bond market is crucial to fully realizing these benefits and achieving global sustainability goals.

3.4. Implications of public policy on green bonds in Indonesia

Green bonds hold significant potential as a financial instrument to advance sustainable development in Indonesia. However, their effectiveness and impact depend heavily on supportive public policies. Since 2018, the Indonesian government has actively worked to develop this market through key policies, such as the Financial Services Authority Regulation (POJK) No. 51/POJK.03/2017, which governs the issuance and offering of sustainable bonds, thereby enhancing the viability of green bonds for financing environmentally friendly projects.

Public policies play a crucial role in facilitating the growth of the green bond market. By endorsing and incentivizing the use of green bonds for funding projects in renewable energy, energy efficiency, and waste management, these policies can significantly accelerate the development of green infrastructure. Such projects often involve high initial costs and substantial financial requirements (Hadaś-Dyduch et al., 2022). Policies that provide fiscal incentives and streamline the issuance process can enhance investor interest and broaden financial access for these initiatives.

Supportive policies also reinforce Indonesia's commitment to reducing greenhouse gas emissions and combating climate change. They align with the nation's vision of becoming more sustainable and environmentally friendly by providing companies and other entities with more affordable and sustainable funding sources (Dwivedy and Sharma, 2023). This alignment supports broader sustainability objectives and encourages the development of green economies.

Moreover, public policies related to green bonds have broader implications. They raise environmental awareness among the public and corporate sectors, encouraging a more serious consideration of the environmental impacts of economic activities. Increased transparency and accountability are also promoted, as companies are required to report on the use of green bond funds, thereby fostering greater honesty about their environmental efforts. Additionally, these policies stimulate innovation and the adoption of new technologies, further advancing sustainability within the corporate sector.

Despite these advancements, challenges remain in fully realizing the potential of green bonds for sustainable development. Addressing these challenges requires collaborative efforts from the government, regulators, investors, and the public. By overcoming these obstacles and fostering a supportive environment, green bonds can become a powerful tool for sustainable development in Indonesia. Through coordinated efforts, they can drive the financing of environmentally friendly projects, enhance market transparency, and encourage technological innovation, playing a crucial role in Indonesia's journey towards a sustainable future.

3.5. Acceptance and implementation of green bonds in Indonesia

The acceptance and implementation of green bonds are essential for advancing sustainable development in Indonesia. Despite their global adoption, Indonesia faces unique challenges in effectively embracing this financial instrument. The issuance of Financial Services Authority Regulation Number 51/POJK.03/2017, which governs the issuance and offering of sustainable debt securities, represents a significant step by the Indonesian government in committing to reduce greenhouse gas emissions and tackle climate change. However, the actual effectiveness of green bonds in Indonesia is still a concern due to limited understanding and awareness among investors, companies, and the general public.

A critical factor for the success of green bonds is public awareness and comprehension of their benefits. Although green bonds have been introduced in Indonesia, many people still lack a full understanding of their potential and implications. Effective educational and outreach programs are necessary to enhance public and investor knowledge and interest in green bonds. Additionally, the successful implementation of green bonds depends on the availability of projects that meet environmentally friendly and sustainable criteria. Indonesia has significant potential for developing projects in renewable energy, waste management, and sustainable transportation, but technical and financial obstacles must be addressed to ensure a robust pipeline of eligible projects.

The government's role in establishing supportive policies and regulations is crucial. Policies that promote the growth of the green bond market, offer fiscal incentives, and set clear reporting standards can boost investor interest and strengthen Indonesia's green bond ecosystem. However, several challenges remain, including the regulatory complexity and bureaucratic hurdles associated with issuing green bonds. Streamlining these processes and enacting regulatory reforms are necessary to facilitate market growth.

Transparency and accountability in the use of green bond proceeds are also vital. Investors and the public must be assured that funds are used effectively for projects with positive environmental and social impacts. Transparent and independent reporting mechanisms are essential to ensure accountability. This requires commitment and collaboration from all stakeholders, including the government, private sector, and civil society, to ensure green bonds become an effective tool for sustainable development.

By enhancing public awareness, supporting the development of sustainable projects, implementing conducive public policies, and addressing existing barriers, Indonesia can harness the potential of green bonds to achieve its sustainable development goals. The country's abundant natural resources, such as renewable energy sources and biodiversity, present significant opportunities for green bond-funded projects. Sustainable infrastructure development is crucial for economic growth and improving citizens' quality of life, with green bonds providing essential funding. The Indonesian government's strong commitment to sustainable development, reflected in supportive policies and regulations, creates a favorable environment for the green bond market's growth. As public awareness of environmental and sustainability issues grows, so does interest in green bonds, which will expand market share and enhance liquidity. Leveraging these opportunities and overcoming challenges will strengthen Indonesia's green bond market and significantly contribute to the country's sustainable development.

3.6. Comparison with other countries

The green bond market in Indonesia has gained increasing attention from governments, companies, and financial institutions aiming to support environmentally beneficial projects. However, a comparative analysis with other countries reveals notable differences and areas for growth.

Firstly, Indonesia's green bond market remains relatively small compared to developed nations. According to the Climate Bonds Initiative (CBI), Indonesia issued approximately $2.5 billion in green bonds in 2021, while Germany and France issued $18 billion and $16 billion, respectively. This highlights the nascent stage of Indonesia's green bond policies and regulations, which are still evolving. In contrast, countries like Germany and Sweden have long-established frameworks that create a more conducive environment for market growth.

Secondly, the sectors dominating green bond issuance differ significantly. In Indonesia, the renewable energy sector accounted for around 40% of the green bonds issued in 2021. In contrast, Germany and France see higher issuance in green building and sustainable transportation. Public awareness and understanding of green bonds in Indonesia remain relatively low, whereas countries like the Netherlands and Denmark have higher awareness, leading to more developed and liquid markets.

Thirdly, while Indonesia has implemented supportive policies, such as Financial Services Authority Regulation No. 51/POJK.03/2017, there are still gaps in the regulatory and infrastructural framework. The availability of sustainable projects in Indonesia, particularly in renewable energy, green infrastructure, and waste management, is limited. In contrast, countries like Japan and Norway have a more diverse array of sustainable projects, contributing to a more robust green bond market.

Fourthly, investor participation in Indonesia's green bond market is relatively low. CBI data indicates a participation rate of around 2% in 2021, compared to 7% in Germany and 6% in France. Indonesia's market is smaller and less liquid than those in the United States and Australia, which attract more investors due to their larger and more liquid markets.

Lastly, investor trust levels also vary. In Indonesia, trust levels in the green bond market stood at around 60% in 2021, compared to 70% in Germany and 75% in France. While the Indonesian government's role in supporting the green bond market is improving, it has been less proactive compared to countries like the United Kingdom and France, where established policies and regulations have fostered a more supportive environment.

In conclusion, although Indonesia's green bond market is relatively small and illiquid, it holds significant potential. By enhancing public awareness, improving regulatory frameworks, and increasing the availability of sustainable projects, Indonesia can develop a more vibrant and effective green bond market. With concerted efforts from the government and society, Indonesia can harness the full potential of green bonds to significantly contribute to its sustainable development goals.

4. Conclusion

Green bonds have emerged as a crucial financial instrument to promote sustainable development in Indonesia. Their acceptance and implementation are influenced by several factors, including public awareness, understanding of green bonds, and the availability of sustainable projects. The impact of green bonds on sustainable development is profound, as they provide funding for environmentally and socially beneficial projects such as renewable energy, green infrastructure, and waste management. Public policy plays a pivotal role in shaping the green bond market in Indonesia. Policies that offer fiscal incentives and establish conducive regulatory frameworks can significantly enhance investor interest and broaden access to finance for sustainable projects.

Despite the challenges of low public awareness and regulatory complexity, there are substantial opportunities for the acceptance and implementation of green bonds in Indonesia. Leveraging the potential of the green bond market can strengthen Indonesia's contribution to sustainable development. Although the green bond market in Indonesia is relatively small and illiquid compared to other countries, Indonesia holds considerable potential to expand this market. Collaboration between the government and the public to raise awareness, deepen understanding, and increase the availability of sustainable projects is essential.

To assist the government and other stakeholders in formulating more effective policies to encourage the use of green bonds as a financial instrument for achieving sustainable development in Indonesia, the following specific recommendations are proposed:

a. Enhancing public awareness and education
    1) Develop comprehensive public education campaigns to increase awareness and understanding of green bonds among investors, companies, and the general public.
    2) Incorporate green bond education into financial literacy programs to reach a broader audience.
b. Strengthening regulatory frameworks
    1) Simplify and streamline the regulatory processes for issuing green bonds to reduce bureaucratic barriers and encourage participation from more companies and financial institutions.
    2) Establish clear and transparent reporting standards for green bond projects to build investor confidence and ensure accountability in the use of funds.
c. Providing fiscal incentives
    1) Introduce tax incentives and subsidies for projects funded by green bonds to make them more attractive to investors.
    2) Offer reduced interest rates for green bond issuances to lower the cost of financing for sustainable projects.
d. Developing sustainable projects
    1) Identify and prioritize the development of projects that meet environmentally friendly and sustainable criteria, such as renewable energy, sustainable transportation, and waste management.
    2) Foster public-private partnerships to leverage resources and expertise in developing and implementing sustainable projects.
e. Promoting investor participation
    1) Create investment platforms and opportunities that cater specifically to green bonds, making it easier for investors to participate in this market.
    2) Encourage institutional investors, such as pension funds and insurance companies, to allocate a portion of their portfolios to green bonds.
f. Fostering government commitment

1) Strengthen government commitment to sustainable development goals by integrating green bond initiatives into national and regional development plans.
2) Establish a dedicated task force to oversee the development and implementation of green bond policies and initiatives.

g. Enhancing market liquidity
1) Encourage secondary market trading of green bonds to improve market liquidity and attract more investors.
2) Develop market infrastructure, such as green bond indices and rating systems, to provide better market transparency and information.

Conflict of interest: The author declares no conflict of interest.

References

Adila, D., Nuryartono, N., & Oak, M. (2021). The Environmental Kuznets Curve for Deforestation in Indonesia. Economics and Finance in Indonesia, 67(2), 195. https://doi.org/10.47291/efi.v67i2.671

Agnes, M., & Koestoer, R. H. (2021). A Review on Sustainable Construction Regulations in Asian Countries: Savvy Insights for Indonesia. Jurnal Ilmu Lingkungan, 19(2), 459–464. https://doi.org/10.14710/jil.19.2.459-464

Alamgir, M., & Cheng, M.-C. (2023). Do Green Bonds Play a Role in Achieving Sustainability? Sustainability, 15(13), 10177. https://doi.org/10.3390/su151310177

Andi Wirawan, D., & Febriana Sari, I. (2023). Green Bond: Financing Alternative for UCO Based Biodiesel Industry. Jejak, 16(2), 415-431.

Araujo, L., & Mason, K. (2021). Markets, infrastructures and infrastructuring markets. AMS Review, 11(3–4), 240–251. https://doi.org/10.1007/s13162-021-00212-0

Astika, I. M., Bastari, O., & Suharyo, O. (2021). The Policy Of Environmental And Sustainable Development In Indonesia. International Journal of Progressive Sciences and Technologies (IJPSAT), 21(1), 267-276.

Bužinskė, J., & Stankevičienė, J. (2023). Analysis of Success Factors, Benefits, and Challenges of Issuing Green Bonds in Lithuania. Economies, 11(5), 143. https://doi.org/10.3390/economies11050143

ÇETİN, D. T. (2022). Green bonds in climate finance and forecasting of corporate green bond index value with artificial intelligence. Journal of Research in Business, 7(1), 138–157. https://doi.org/10.54452/jrb.992368

Davey, O., Putri, R. W., Tristiyanto, et al. (2023). Green bonds in indonesia: synergy between bank indonesia and otoritas jasa keuangan's commitment. Journal of Central Banking Law and Institutions, 2(2), 199–220. https://doi.org/10.21098/jcli.v2i2.37

Dwivedy, D., & Sharma, M. (2023). Role of Green Bonds in Promoting Sustainability and their Effects on Public Policy. Journal of Law and Sustainable Development, 11(6), e1187. https://doi.org/10.55908/sdgs.v11i6.1186

Fitrah, R., & Soemitra, A. (2022). Green Sukuk For Sustainable Development Goals in Indonesia: A Literature Study. Jurnal Ilmiah Ekonomi Islam, 8(1), 231. https://doi.org/10.29040/jiei.v8i1.4591

Hadaś-Dyduch, M., Puszer, B., Czech, M., et al. (2022). Green Bonds as an Instrument for Financing Ecological Investments in the V4 Countries. Sustainability, 14(19), 12188. https://doi.org/10.3390/su141912188

Joyonegoro, A. W., Pamungkas, P., & Wibowo, D. S. (2023). Green bond and economic development: Evidence from Asian and European Countries. Sebelas Maret Business Review, 8(2), 129. https://doi.org/10.20961/smbr.v8i2.81315

Lichtenberger, A., Braga, J. P., & Semmler, W. (2022). Green Bonds for the Transition to a Low-Carbon Economy. Econometrics, 10(1), 11. https://doi.org/10.3390/econometrics10010011

Mariah, M. (2010). Indonesia: A Vulnerable Country in the Face of Climate Change. Global Majority E-Journal, 1(1), 46-56.

Nurika, G., Abidah, H. N., Wikurendra, E. A., et al. (2023). Microplastic Pollution in Green Shells in Aquatic Ecosystems: A Literature Review of Determinant Factors and Management. Jurnal kesehatan lingkungan, 15(4), 257–266. https://doi.org/10.20473/jkl.v15i4.2023.257-266

Osobajo, O. A., Otitoju, A., Otitoju, M. A., et al. (2020). The Impact of Energy Consumption and Economic Growth on Carbon Dioxide Emissions. Sustainability, 12(19), 7965. https://doi.org/10.3390/su12197965

Indriastuty, D. E., Pujianto, Antok Widiantoro, A. (2020). Policy Direction and Regulation of Green Bonds in Indonesia. Journal of Law, Policy and Globalization. https://doi.org/10.7176/jlpg/101-03

Pratanjana, N., & Simbolon, G. O. (2020). Issuance of green bond for sustainable development of peatlands. Sociae Polites, 21(2), 176–192. https://doi.org/10.33541/sp.v21i3.2259

Priyanta, M., & Zulkarnain, C. S. A. (2023). Sustainable Infrastructure Legal Policy in Indonesia: A National Strategic Project Approach for National Development. Sriwijaya Law Review, 7(1), 1. https://doi.org/10.28946/slrev.vol7.iss1.1108.pp1-18

Purnamawati, I. G. A. (2022). Sustainable Finance for Promoting Inclusive Growth. Jurnal Ilmiah Akuntansi, 6(2), 435. https://doi.org/10.23887/jia.v6i2.39208

Putra, F. A. A. (2023). ADB's Role towards Energy Infrastructure Development: Case of Post-COVID-19 Pandemic in Indonesia. Global South Review, 3(1), 21. https://doi.org/10.22146/globalsouth.68419

Qisa'i, A. (2020). Sustainable Development Goals (SDGs) and Challenges of Policy Reform on Asset Recovery in Indonesia. Indonesian Journal of International Law, 17(2). https://doi.org/10.17304/ijil.vol17.2.785

Rahma Febriyanti, A., Tri Ratnasari, R., & Wardhana, A. K. (2022). The Effect of Economic Growth, Agricultural Land, and Trade Openness Moderated By Population Density on Deforestation in OIC Countries. Quantitative Economics and Management Studies, 3(2), 221–234. https://doi.org/10.35877/454ri.qems828

Rela, I. Z., Awang, A. H., Ramli, Z., et al. (2020). Effects of environmental corporate social responsibility on environmental well-being perception and the mediation role of community resilience. Corporate Social Responsibility and Environmental Management, 27(5), 2176–2187. Portico. https://doi.org/10.1002/csr.1956

Septiana, E., & Dewi, G. (2022). Challenges and Opportunities for the Development of Green Sukuk in Indonesia. Research and Critics Institute.

Taghizadeh-Hesary, F., Zakari, A., Alvarado, R., et al. (2022). The green bond market and its use for energy efficiency finance in Africa. China Finance Review International, 12(2), 241–260. https://doi.org/10.1108/cfri-12-2021-0225

Tu, C. A., Thanh, N. C., Hieu, L. Q., et al. (2019). Sustainable development of the green bond market: Study case from Vietnam. Global and Stochastic Analysis, 6(2), 113-138.

Yunita, A., Biermann, F., Kim, R. E., et al. (2023). Making development legible to capital: The promise and limits of 'innovative' debt financing for the Sustainable Development Goals in Indonesia. Environment and Planning E: Nature and Space, 6(4), 2271–2294. https://doi.org/10.1177/25148486231159301