

A Study Literature Review: Sustainable Finance: Green Finance, Green Investment, And Green Insurance in Indonesia and Global Perspective

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ARTICLE INFO

Keywords: Sustainable Finance, Green Finance, Green Investment, Green Insurance, ESG

Received : 23, October

Revised : 25, November

Accepted: 27, December

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ABSTRACT

The issue of sustainability is increasingly pressing amidst worsening global economic conditions, including global warming and green land loss. This study aimed to compare the regulation and implementation of sustainable finance in Indonesia with global practices and to understand why the implementation in Indonesia is slower than in other countries and how ESG disclosures can influence this. This study used a literature study that examines various academic sources and reports related to sustainable finance. The finding shows the key challenges that hinder the progress of green finance in Indonesia, such as lack of market awareness, weak regulations, and limited private sector participation compared to significant progress in global practice with strong regulations and high awareness of environmental risks.

INTRODUCTION

The worsening global economic conditions due to the population explosion coupled with the decreasing availability of green land has raised the issue of sustainability. This is inseparable from the effects that these economic conditions have on global warming. Global warming has become an increasingly urgent challenge around the world, driving a major transformation in the world's financial system towards a more sustainable model. Sustainability issues such as environmental, economic and social issues are still a concern in the world today, where these issues encourage the world to change their financial systems into more sustainable and environmentally friendly financial activities. This sustainable finance activity is supported by green finance, green investment and green insurance which emerged to tackle these issues and as one of the steps to achieve the Sustainable Development Goals (SDGs). Sustainable finance is a financial activity or financial practice that focuses on environmental, social and governance (ESG) that can offer long-term economic and environmental stability. Important components of sustainable finance include green finance that funds activities that benefit the environment (green activities), green investment that provides capital to sustainable businesses and green insurance that reduces the risk of activities or businesses in reducing the impact of climate change.

Sustainable finance in the world is already looking very good, where many countries, financial institutions and companies are increasingly aware of the importance of supporting activities related to the social economy without damaging the environment, such support can be seen in the way they finance, invest and insure these activities. For example, London excels with green bonds and renewable energy, the US excels with technology and green infrastructure, Germany excels with renewable energy and green banking and Japan excels with disaster risk management and sustainable manufacturing. In Indonesia, the application of sustainable finance is still in the development and implementation stage. This is because the Indonesian state does not yet require companies to report on this sustainable finance. So, there are still many companies that still do not report or participate in the sustainability program.

Commonly discussed sustainable finance implementations are green finance, green investment, and green insurance. Green Finance is an approach that applies to the financial sector that integrates sustainability in every decision given, both in terms of loans and investments. The development of Green Finance is driven by increased global awareness of the importance of sustainable development and international commitments. Green Investment is a policy of allocating capital to projects and initiatives that do not only pay attention to financial returns, but also pay attention to environmental aspects. This green investment can cover a wide range of sectors, from clean technology, renewable energy, to green infrastructure. As investor demand for financially rewarding and environmentally positive investments increases, the trend of green investments continues to grow rapidly. Green Insurance is a policy that integrates insurance services with sustainability aspects. The insurance services provided cover almost all sectors because Green Insurance does not only function

as a risk transfer mechanism, but also as a tool to encourage environmentally friendly behavior through incentive premiums and underwriting requirements.

The concept of sustainability in Indonesia is overseen by the Financial Services Authority (OJK) as the regulator and supervisor of the financial sector in Indonesia, which defines sustainable finance as "an ecosystem with comprehensive support for policies, regulations, norms, standards, products, transactions and financial services that harmonize economic, environmental and social interests in financing sustainable activities and financing the transition to sustainable economic growth". To accelerate the implementation of environmental, social and governance (ESG) principles, OJK on January 15, 2021 published the Sustainable Finance Roadmap Phase II (2021-2025). Sustainable finance activities in Indonesia have begun to receive a lot of attention, which can be seen from the issuance of the first green sukuk in Asia which was named Best Bond 2021, where this issuance is a way to ensure the achievement of social and economic goals without damaging the environment. Kurniawati (2024) states that Indonesia has a green banking sector that is running well even though Indonesia is a developing country. However, there are still some major challenges faced by developing countries such as lack of access to green finance products and services, and lack of awareness and understanding of green finance (Kripa, 2023).

This paper will discuss the regulation and implementation of green finance, green investment, and green insurance in Indonesia, and compare it with regulation and implementation in a global perspective. The purpose of this paper is to find out why the implementation of sustainable finance in Indonesia is slower compared to other countries and how ESG disclosure can affect this and what Indonesia can learn from other countries in implementing sustainable finance.

LITERATURE REVIEW

Legitimacy Theory

Legitimacy theory is a theory popularized by Dowling and Pfeffer (1975) which says that companies try to ensure that their operations are in accordance with the requirements and expectations of society. A company is in danger if it does not comply with the regulations and norms of society. Therefore, companies are constantly striving to ensure that they do their business properly. From a global perspective, legitimacy theory focuses on how companies integrate sustainability to gain approval from investors, regulators and society. While in Indonesia, the application of this theory sees challenges such as low awareness from the public, weak regulations and inconsistent implementation, this causes low motivation from companies to apply green finance, green investment and green insurance to company activities.

Stakeholder Theory

Basically, stakeholder theory refers to the idea that stakeholders will influence or even can influence. This theory emerged as a result of increased awareness and understanding that companies have stakeholders who are thought to generate significant value. (Freeman, 2010). Globally, this theory also explains the importance of ESG implementation in companies and the issuance of sustainability reports, where companies meet the expectations of stakeholders who are more aware of the environment. While in Indonesia this theory highlights the gap in the awareness and involvement of stakeholders towards the environment, this will limit the demand for sustainable financial activities.

Green Finance

Green finance according to the World Economic Forum is "any organized financial activity, whether it is a service or product, that has been developed to guarantee a better environmental consequence. In order to encourage the growth of green project or reduce the environmental impact of more conventional enterprises, it consists of a variety of loans, debt arrangements, and investments. or a mix of both ". Meanwhile, according to UNEP "The goal of green finance is to boost the amount of money flowing to sustainable development initiatives from the governmental, private, and non-profit sectors (via banking, microcredit, insurance, and investment). Changes in national regulatory frameworks, harmonizing public financial incentives, increasing green financing from various sectors, aligning public sector financing decision-making with the environmental dimension of the Sustainable Development Goals, increasing investment in clean and green technologies, financing for climate smart blue economies and sustainable natural resource-based green economies, and increasing the use of green bonds are some ways to promote green financing". Based on these two explanations, it can be said that green finance is a financial structure that helps and supports the implementation of the goals of the SDGs, the existence of green financing which has several financial services in Investment, Banking and Insurance to cover social, environmental and economic aspects. To fulfill the increasing demand for green financial services, there are new instruments and institutions such as Green Bonds, Carbon Market Instruments, Green Banks, and Green Funds. Companies that partake in green financing would be committed to green projects that help reduce carbon emissions and drive a low-carbon economy (Tian et al., 2022).

Green Investment

One of the strategy to obtain and maintain legitimacy and support from stakeholders is green investment. By doing this, the company can control the negative impact of its operational activities could be controlled (Indriastuti and Chariri, 2021). In his research, Chariri et al. (2018) explains that in green investment there is a shift in mindset in business, from those who only see P 1 (profit) to P 3 (Profit, People and Planet). Some companies that have been listed in the capital market implement green investment to appeal a potential stakeholders. Green investment can be interpreted as the companies attempt to manage environmental issues by reducing the negative effect of business

activities on the environment. Green investment can increase competitive advantage, reputation and company value. According to Aeni and Murwaningsari (2023), companies should be encouraged to make green investments because there are three main social responsibilities: conservation of natural resources, environmental protection, and justice. By doing this, they can reduce the environmental impact of their operations by reducing energy consumption and carbon emissions.

Green Insurance

Green investment is an investment activity carried out by companies that are sought as protection to reduce environmental impacts and manage the environment due to company activities or commonly called environmental investment (Utomo & Kaujan, 2019). In his research Hu et al. (2023) and You et al. (2024) explain that green insurance is a critical element of green financing, which is extensively employed in the management of environmental risks and the governance of the environment. By improving environmental management and strengthening supervision in insurance companies, green insurance will be effective in reducing or avoiding environmental pollution. In addition, green insurance is an innovative product that integrates environmental protection and the financial sector, which not only contributes to improving regional environmental quality, but also contributes to raising awareness and management of environmental risks in companies and encourages the development of green finance and the environmental protection industry. Green Insurance is an emerging insurance model that aims to improve environmental quality through financial means by involving companies in their environmental management activities, as well as environmental supervision and inspection.

METHODOLOGY

This research methodology uses a literature study approach to analyze the regulation and implementation of sustainable finance, green investment, and green insurance in Indonesia and how it compares to global practices. Data sources are drawn from various academic literatures and related reports, focusing on legitimacy theory and stakeholder theory to understand the challenges and progress in the implementation of sustainable finance. The data collected will be analyzed qualitatively to identify factors that influence the speed of implementation in Indonesia compared to other countries, as well as the influence of ESG disclosures. This study is limited by the Indonesian context and data availability that may affect the results, and is conducted over a period of time that does not include policy changes after the study period.

RESEARCH RESULT

Sustainable Finance in Indonesia and Global Perspective Green Finance

Green finance has become an important tool for achieving sustainability goals. The European Union's Green Deal, which requires European countries to eliminate gas emissions in Europe by 2050, and the EU Taxonomy, which allows financial and non-financial companies to have a common understanding of environmentally sustainable economic activity, both provide clear guidance on sustainable finance activities that ensure alignment with environmental goals. With this application, London still ranks first in the Global Green Finance Index (GGFI) which meets the criteria of very "green" in companies or projects undertaken to contribute to the reduction of greenhouse gas emissions (Long Finance, 2024), and Europe issued more than 53 percent of aligned green bonds in 2023 and green bond issuance in 2023 rose 3 percent from USD 843 billion to USD 870 billion (Climate Bond Initiative, 2024), this increase can reflect global investor confidence. Meanwhile, countries such as the United States and Canada are utilizing frameworks such as the Task Force on Climate-Related Financial Disclosure (TCFD), which has a standardized climate risk report, to integrate sustainability into financial markets, thereby promoting transparency and corporate accountability. Although Germany is one of the leaders in the movement towards a green economy, there are still several challenges faced in its implementation, some of which are the lack of standards and transparency, difficulties in measuring social and environmental impacts, and limited access to green financing (Adickesallee, 2024). This is also in accordance with research conducted by Rasoulinezhad & Taghizadeh-Hesary (2022) which states that to achieve sustainable economic growth for environmental issues, the government must implement supporting policies with a long-term approach to encourage private participation in green energy project investment.

Singapore is the most active country in promoting Green Finance to support the transition to a low carbon economy. The implementation of Green Finance in Singapore is in the form of issuing green bonds (Green Bond) and funding of USD 2 billion to support asset management that focuses on green investments. Their regulations are also fairly mature, because most of them are contained in the Green Finance Action Plan (2020), Environmental Risk Management Guidelines (2020) and Sustainable Bond Grant Scheme which regulates the development of the green finance ecosystem, environmental risk management, and incentives for companies that issue green bonds. Nonetheless, according to Subramaniam and Loganathan (2024), in order to increase private investment in the renewable energy sector, the nation must continue to prioritize the development and enhancement of green financing structures, such as investment funds and green bonds. Additionally, an efficient regulatory framework that includes establishing clear goals for the production of renewable energy, establishing enticing feedback tariffs or pricing structures, and streamlining processes to expedite project development and funding is required.

The green finance sector in Indonesia is centered on initiatives undertaken by the government, such as the issuance of green sukuk which reflects the

country's commitment to achieving the goals of the SDGs in line with the objectives of the Paris Agreement. The proceeds from the green sukuk issued in 2018 amounted to 1.25 billion USD which will exclusively be distributed to environmentally friendly projects in accordance with the Green Framework of the Republic of Indonesia (PPID, 2018). Regulations related to Green Finance are regulated in Financial Services Authority regulations No. 51 and No. 60 of 2017, Law No. 32, and Bank Indonesia regulation No. 14 of 2012. In its implementation, in addition to Green Sukuk, there is also Green Banking, renewable energy projects, and Energy Efficiency programs. Although attractive, participation from the private sector in green finance is still limited due to weak regulatory support and low market awareness. As research findings from Arifudin et al. (2024) stated that there are challenges in the development of green sukuk, namely lack of capacity of financial institutions, lack of awareness and incentives, mismatch of financing maturity, lack of information about green projects, and lack of banking sector capacity.

Green Investment

Green investment is attracting a lot of attention globally, which can be seen from the integration of environmental, social and governance (ESG) principles carried out by companies. Research conducted by Friede et al (2015) which examines the relationship between ESG and financial performance in more than 2000 empirical studies, found that there is a positive impact of ESG on financial performance and the relationship between the two appears stable over time, while research conducted by Siwiec (2024) which also examines the relationship between ESG and financial performance shows "The results indicate a positive relationship between the disclosure of ESG activities and the financial performance of companies as measured by ROA. It was also observed that for companies operating in the financial sector, the correlation is greater, compared to companies operating in other sectors." From these two studies it can be seen that the implementation of ESG is very important for companies. In the United States, ESG funds dominate investment portfolios supported by regulation and demand from investors, and the Securities and Exchange Commission (SEC) is considering requiring the reporting of all ESG-related financial and non-financial information (Anand, 2022). Whereas in Germany, green investment funds are used in renewable energy, sustainable infrastructure and innovative technologies that are fully supported by strong government incentives, where Germany is the main destination for Foreign Direct Investment (FDI), because Germany always ranks first as the most attractive investment destination can be seen from the stable legal environment, reliable infrastructure, highly skilled workforce and world-class research and development that exists in the country (U.S. Department of State). In addition, institutional investors such as pension funds and sovereign wealth funds are also increasing their capital allocation towards green sectors including renewable energy, sustainable agriculture and green technologies. One study that discusses the application of Green Investment in Germany is (D'Orazio & Löwenstein, 2022), where overall, the role of the public sector, especially investment banks such as KfW, is very significant in creating

an enabling environment and mobilizing investment in the renewable energy sector in Germany. This has enabled the development of clean energy technologies, such as wind and solar power plants, which rely heavily on long-term financing with higher market risks. Although there is no denying that there are still some challenges presents such as high market risk, policy uncertainty, and limited capital for initial investments.

In addition to Germany, Singapore continues to strengthen its position as the center of Green Investment in Asia. One of them is by regulating comprehensive policies to continue to support sustainability. The regulation is the Singapore Green Plan 2030, which includes targets for reducing carbon emissions and increasing the use of renewable energy, and the Green Finance Action Plan, which was completed by the Monetary Authority of Singapore (MAS), which aims to develop green financial solutions and carbon markets. The implementation of Green Investment in Singapore is in the Green and Sustainability-Linked Loan Grant Scheme (GSLs), Green Bonds Program and Project Greenprint which are supported and incentivized by tax and building capacity. Despite being a leader in Asia, the country still faces several challenges related to the implementation of Green Investment. Some of them are standardization issues for Green Investment classification and complexity issues in verifying sustainability claims and high compliance costs. Based on research conducted by Hidayat et al. (2024), Singapore has a mature financial market in terms of sustainable financial products such as green bonds. The availability of sustainable investment instruments and high demand from investors may lead to similar trends in sustainable investment, and an impact on the sustainable development index.

Meanwhile, green investment in Indonesia has started to become important, given the country's natural resources, vulnerability to climate change and the government's commitment to sustainability. This commitment is carried out by the government by promoting renewable energy, energy efficiency and green infrastructure with regulations and policies issued. Policies and regulations issued such as setting a target of 23 percent renewable energy in the energy mix by 2025 and achieving net-zero emissions by 2060, implementing green tax by providing incentives to companies that invest in green technology or support sustainability such as tax holidays and providing high taxes if companies do not comply with environmental standards or do not involve ecosystem restoration practices, then there is the Minister of Energy and Mineral Resources Regulation Number 50 of 2017 Energy Sources concerning Utilization of Renewable for Electricity Supply which has undergone the second amendment in 2020. Although green investment is becoming more active, there are still some challenges faced such as uncertain returns, lack of understanding about green investment, regulatory challenges and the fact that there are still many companies that take advantage of the green investment phenomenon to claim their companies are greener than they really are.

Green Insurance

Green Insurance is emerging as an important component of sustainable finance that addresses environmental risks and supports climate resilience. Green Insurance is being applied globally to reflect the growing role of the financial sector in mitigating climate change and promoting sustainability. In the global scope, green insurance is gaining attention from countries that have very strong regulatory frameworks, have a high awareness of climate risks and have a strong insurance industry, such as Germany and Japan. Germany is very proactive in supporting sustainability initiatives, including the field of green insurance. There are various insurance products that support renewable energy projects such as solar panels, wind turbines and bioenergy plants as well as covering operational and technological risks such as damage to operational equipment, natural disasters, ensuring extreme climate conditions. Whereas in Japan with a geographical location that is prone to natural disasters such as earthquakes, tsunamis and typhoons, the insurance industry in this country is more focused on these circumstances and integrates the implementation of climate adaptation measures into a policy. Japanese insurance companies also play an important role in financing low-carbon technologies such as hydrogen energy and electric vehicles. The Japanese government also promotes disaster preparedness and climate adaptation with insurance companies. In addition, there are global programs such as the Insuresilience Global Partnership which aims to increase the resilience of developing countries and protect the lives and livelihoods of the poor and vulnerable from disasters through Climate and Disaster Risk Finance and Insurance solutions (Insuresilience Global Partnership). Germany is very proactive in supporting sustainability initiatives, including the field of green insurance.

Apart from Germany, Green Insurance is also regulated by the Monetary Authority of Singapore (MAS), in the form of Guidelines on Environmental Risk Management (EnRM Guidelines) 2020, Green Finance Action Plan 2019, MAS Environmental Risk Management Guidelines (ENRM) for Insurance, Sustainable Insurance Initiative Singapore, and Financial Services and Markets Act 2022 which regulates aspects of governance, frameworks, and provisions covering financial sector regulations including Green Insurance. Although still quite new, the current state of Green Insurance in Singapore is quite promising. This is because Singapore is famous for its pro-environmental policies and its efforts to become a green finance center. This is what triggers the increasing number of products and incentives provided by companies and governments to the public in terms of Green Insurance products. The implementation of Green Insurance in Singapore consists of several important components, namely through the Regulatory and Policy Approach through the obligation of insurance companies to integrate environmental risks in operations and the implementation of Guidelines on Environmental Risk Management since 2022; Insurance Product Innovation through green property insurance with Green Mark certification, special policies for electric and hybrid vehicles, and protection for green infrastructure projects; Industry practices through NTUC Income applying discounts for low emission vehicles, AIA Singapore integrating ESG criteria in underwriting, Great Eastern focusing on clean energy projects, and Prudential

developing sustainable investment products; Capacity Building through training for underwriters on environmental risks, collaboration with environmental experts for assessments, and educational programs for insurance agents and brokers; Industry Initiatives through the establishment of working groups for standardization, regular forums to share best practices, and the development of a joint environmental risk database. Some of the challenges in implementing Green Insurance in Singapore are raising public awareness, the need for standardization in environmental risk assessment, and competition with other regional financial centers. The author has not found scientific articles that specifically discuss Green Insurance in the country. One of the articles that the author found is that in Singapore, the focus of insurance is still on a short-term scale. So there needs to be a new policy or rule to regulate insurance in a long-term scope considering the population in the country continues to increase and the need for long-term insurance in every aspect. The research was written by Fong and Borowski (2022), which looks at how Singapore is addressing the issue of long-term care (LTC) amid an aging population, as well as the policy changes needed to improve the insurance system and provide better protection for those who need care.

The development of green insurance in Indonesia is very low compared to the development of green finance and green investment in supporting sustainable finance. Based on the ASEAN Insurance Surveillance Report 2022 in the Indonesian Insurance Roadmap 2023-2027 by OJK, Insurance Penetration in Indonesia is still low compared to other ASEAN countries such as Singapore, Malaysia, Thailand and the Philippines and literacy and inclusion in the Insurance sector is still below the level of other Financial Services, this is in line with the relatively low penetration and density levels in Indonesia. However, Indonesia has several programs such as the implementation of the INSURED program from The International Fund for Agricultural Development (IFAD) which aims to make climate risk insurance accessible to small producers in Indonesia, especially coffee and cocoa farmers in order to increase resilience to the impacts of the climate crisis (IFAD, 2023). Then there is Climate Risk Insurance aimed at micro, small and medium enterprises (MSMEs) from MCII which aims to explore the insurance potential of MSMEs (MCII, 2019). The discussion of Green Insurance is a very interesting thing to study more deeply, unfortunately, research that discusses Green Insurance is very rarely carried out by researchers from Indonesia. Therefore, further research is needed to find out how the relationship between the application of green insurance and economic sustainability in Indonesia. Research conducted by Yusuf et al. (2024), discusses the role of ESG in the Indonesian insurance industry, namely as a determinant of competitive advantage, a tool to improve company performance, a tool to ensure company sustainability in the future.

DISCUSSION

Green Finance

Based on the findings of previous research on green finance, it can be seen that green finance can promote green technology innovation and become a reference for companies to innovate in green technology Ronaldo & Suryanto

(2022) and Altaira & Margaretha Leon (2023). Green finance also has a positive influence on company profitability with credit risk having a relationship between the two, on green financial performance can increase company profits which have an impact on increasing the company's financial sustainability and company value, while in the Islamic banking sector green financing has no effect on the bank's financial performance, Afifah et al. (2023), (Sulistiyowati & Alviansyah, 2023) and Febriyanto et al. (2023), in the trend analysis on ESG Disclosure researched by Aulia et al. (2023)) who found a positive influence of the amount of ROE and PER on ESG disclosure, but no effect on the amount of ROA on ESG disclosure and the amount of ROE and PER on ESG disclosure with firm value as intervening. Then the research conducted by Sofie and Augustine (2024) which demonstrates that both full and partial Sustainability Finance testing has been shown to improve ESG performance. Green innovation banking firms, on the other hand, demonstrated a positive impact on ESG performance, whereas green finance as a whole showed no benefit. Foreign-experienced CEOs were unable to mitigate the impact of green innovation and sustainable finance on ESG performance.

Research findings from Zhang et al. (2021), Saydaliev and Chin (2023), and Masduqie et al. (2021) linking Green Financing with Financial Inclusion and Green Economy show that the fluctuating growth indicators of the green economy over the study period are related to the unserious nature of government policies, public spending on human resources and R&D. Green energy technology encourages a sustainable green economy through labor-oriented production activities and technology and different effects in different countries, climate change mitigation indicators have a significant impact on the gross domestic product of the ASEAN economy, the application of maqashid sharia values to the operational system through provisions, procurement activities, and regulations set and realize 10 principles on the concept of green economy which also supports three programs in the Sustainable Development Goals (SDGs). While Rasoulinezhad and Taghizadeh-Hesary (2022) which examines CO₂ emissions shows that green bonds are a suitable method for promoting green energy projects and reducing CO₂ emissions significantly. Then research conducted by L. Zhang et al. (2024) shows that green financial policy significantly reduces short-term loans used as long-term investments in companies. Green financial policy inhibits the mismatch of investment maturity and corporate financing by increasing loan availability, lowering financing costs and increasing the proportion of long-term loans. The impact is more pronounced in firms with higher internal control quality and firms with more transparent information. Green financial policies can alleviate short-term loans used as long-term investments in non-state-owned enterprises.

Green Investment

The most important variables in Green Investment are firm size, foreign ownership, industry profile and frequency of audit committee meetings and the positive correlation between green investment and financial performance gives companies an idea of how to generate profits without damaging the

environment Chariri et al. (2018) (Kustina et al., 2024) shows that financial literacy has a positive influence on green investment decisions, and environmental concerns have a significant positive impact on green investment decisions. According to the results of research (Mo et al. (Mo et al.)2023) shows that green investment has a positive effect on green growth in highly polluted Asian countries, indicating that financial markets and institutions play an important role in facilitating green investment, thereby affecting sustainable growth, there are differences in the level of effectiveness of green investment depending on the economic context and institutional structure of each country.

The relationship between Green Investment and CO₂ emissions (carbon emissions) can be seen from the results of research from Alfarisy et al. (2023), Dani and Harto (2022), Ramadhani and Astuti (2023), Sulistiyowati and Alviansyah (2023) and Afni et al. 2018). The results of research from (Alfarisy et al., 2023) state that electrical energy consumption can not be able to mediate the impact of green investment, exports, and energy prices on CO₂ emissions, increasing the value of corporate investment in environmentally friendly practices can increase CO₂ emissions, green investment if it increases in value it will increase electrical energy consumption. Dani and Harto (2022) and Ramadhani and Astuti, (2023) revealed that Green Investment has no significant effect and has no positive effect on disclosure of carbon emissions. While Ramadhani and Astuti (2023) and Afni et al. (2018) show that the implementation of green strategies has an influence and positive effect on the disclosure of carbon emissions, meaning that companies that implement green strategies tend to be more transparent in reporting their emissions. Ramadhani and Astuti (2023) also revealed that media exposure was able to strengthen the effect of green investment on carbon emission disclosure but was unable to strengthen the effect of green strategy on carbon emission disclosure. While other findings from Zalida show that investment in green initiatives also significantly contributes to increased disclosure of carbon emissions. The results of this study also consider other factors that affect emissions disclosure, such as company size, industry, or government regulations. While research conducted by Febriyanto et al. (2023) shows that the variable disclosure of carbon emissions has a significant and positive impact on firm value, while green investment has no effect on firm value.

Indriastuti and Chariri (2021) and Ainy et al. (2024) conducted research on green investment in relation to CSR. Where Indriastuti and Chariri (2021) found that green investment and CSR have a positive impact on financial and sustainable performance. However, sustainable performance has an insignificant impact on financial performance and financial performance also did not mediate the impact of green investment on sustainable performance. While Ainy et al. (2024) shows that the Indonesian market still does not fully consider CSR activities in determining investment. Corporate sustainability factors, such as CSR activities are still not a major concern for Indonesian investors. Then, Cakranegara (2021) with research findings that show ESG factors can be applied in investment decision making. While Ratnaningsih et al. (2021) which examines case studies resulting in calculations of NPV, IRR, BEP and IP the investment is said to be feasible and the time required for payback with the

Payback Period is 2 years so that the investment can be said to be feasible because the length of return is less than the investment period of 5 years.

Green Insurance

The research identifies the main challenges companies face in implementing green insurance, including lack of awareness, unclear regulations, and limited resources, developing a roadmap that offers concrete steps and strategies for executive management to adopt and implement green insurance practices. Findings on the tangible benefits that companies can gain, such as improved reputation, reduced risk, and potential financial gains from greener insurance products (Stricker et al., 2022). Research by You et al. (2024) identified the nonlinear effect of green insurance on improving environmental quality, suppressed existing linear effect research, deepened the understanding of its impact on environmental quality, and contributed to the improvement of regional environmental quality. Green insurance can significantly increase a company's green patent application. The ability of insured enterprises to access additional revenue streams, their propensity for taking on greater risk, and their propensity for long-term planning are the mechanisms underlying this positive correlation between green insurance and green innovation. Additional research demonstrates that green insurance can improve the environmental performance of firms by promoting green innovation (Hu et al., 2023)

Green Finance and Green Investment

The findings of a study conducted by Wijaya and Leon (2022) demonstrate how green finance, as measured by green bond instruments and corporate governance, significantly influences investment decisions negatively while risk and green regulations significantly influence them positively. However, this study does not validate the impact of company size and oil price volatility on investment decisions.

Based on research results from Ye and Dela (2023) discovered a strong correlation between sustainable company success in the chemical industry and green finance. This implies that businesses who put sustainability first and make green investments will probably see improved financial results over time. For international chemical companies doing business in Indonesia, corporate social responsibility (CSR) plays a key mediating role in the interaction between green finance, green investment, and sustainable business performance.

Green Bonds

The increase in green bonds aligns with the increase in fund allocation for green financing portfolios, they have a significant influence on fund allocation with green financing portfolio and carbon emissions have a positive causality that could be explained by the impact of green technology investment and sustainability practices. Companies and institutions can implement a project aimed at reducing CO₂ emissions in the transportation sector with funds allocated through the green financial portfolio. This means that the use of Green Bond as a sustainable funding source has the potential to reduce the negative impact of transportation on the environment (Sapiri & Putra, 2023). Mar'I et al. (2024) which examines Using the QQ (quantile-on-quantile) technique, the effects of financial stress and uncertainty on conventional and green bonds and stocks are demonstrated. The middle quantiles of both conventional and green stock are positively impacted by financial stress, whereas the upper quantiles are negatively impacted by financial uncertainty. Additionally, financial stress has a greater effect on all bond kinds.

Green Banking,

In commercial banking, green banking integrates client behavior change, technology breakthroughs, and operational enhancements. The banking sector's embrace of sustainable green banking includes environmental, social, and corporate governance (ESG) management initiatives. ESG disclosure in banking aims to boost market expansion, boost customer trust in banking products and services, and give investors crucial information to help them make investment decisions. Research Kurniawati and Purwaningsih (2024) provides empirical evidence that audit firm affiliation and financial stability have an impact on the level of sustainable green banking disclosure.

Financial Inclusion,

Financial Inclusion which includes access to formal financial services, such as bank accounts, credit, and insurance, has a significant role in influencing Economic Empowerment, especially among marginalized groups and women. The success of Financial Inclusion in promoting Economic Empowerment does not only depend on access to formal financial services, but is also influenced by various institutional, policy, technological, as well as social and cultural factors (Khuan et al., 2014). (2024). "Financial inclusion does not affect sustainable economic growth in Indonesian banking companies. Financial system stability mediates the effect of financial inclusion on sustainable economic growth in Indonesian banking companies" (Machdar, 2020). There are implications for policies related to strengthening the Gade Clean and Gold program to increase public financial inclusion through gold savings products (Karnawijaya et al., 2021).

CONCLUSIONS AND RECOMMENDATIONS

This research shows that the implementation of sustainable finance, namely green finance, green investment, and green insurance in Indonesia faces challenges in its implementation. Although it has started with initiatives such as the issuance of green sukuk and the development of green banking, it still faces various challenges that hinder its progress. The main obstacles include the lack of awareness and understanding of green finance among the public and even companies, weak regulations, and low participation of the private sector which are the main obstacles in implementing green finance, green investment, and green insurance.

Compared to developed countries such as Germany and Singapore, which have successfully integrated sustainability principles through strong regulations and high awareness of environmental risks. Indonesia still needs improvements such as increasing public awareness, strengthening government regulations, and support from the private sector to accelerate the implementation of sustainable finance in Indonesia.

In addition, better ESG disclosures can contribute to increased corporate transparency and accountability which will ultimately make companies more trusted and able to attract more green investments. Therefore, the government and stakeholders need to work together to create a sustainable enabling environment so that Indonesia can achieve the Sustainable Development Goals (SDGs) and contribute to tackling climate change.

Based on the findings of this research on sustainable finance implementation in Indonesia, there are several recommendations, namely:

1. Awareness raising and education, it is important to raise awareness and understanding of the concepts and benefits of sustainable finance among the general public, companies and investors. Training that provides education on sustainable finance practices can be organized.
2. Strengthening regulations, the government needs to strengthen regulations regarding sustainable finance by establishing clear and consistent policies in its implementation such as the government requiring companies to report their sustainability practices and providing incentives for companies that invest in environmentally friendly projects.
3. Support for the private sector, encouraging the private sector to participate in green finance initiatives through fiscal incentives, such as tax reductions or subsidies for sustainability-focused projects. Implementing these can increase interest and investment in the green sector.
4. Multi-stakeholder collaboration, building partnerships between governments, financial institutions and non-governmental organizations to create an enabling environment for sustainability. This collaboration can assist in the development of green projects and improve access to finance.

5. Increased ESG transparency calls for companies to increase disclosure of Environmental, Social, and Governance (ESG) related information to improve transparency and accountability. This can attract more investors who care about sustainability.

ADVANCED RESEARCH

This research has several limitations such as limited available data on sustainable finance in Indonesia which affects the analysis and conclusions. The focus of the research is more on the Indonesian context and its comparison with other countries which limits the generalization of findings to countries with different economic and social conditions. In addition, there are several variables that may be influential such as cultural, political, and social factors that are not directly measured, resulting in an incomplete understanding of the implementation of sustainable finance. Also, this research was conducted within a certain period of time, which means that it cannot cover changes in policies and practices that may occur afterwards. Thus, future research is expected to overcome these limitations and expand the analysis of the implementation of sustainable finance in Indonesia and globally.

ACKNOWLEDGMENT

We would like to thank all those who have contributed to this research. First of all, we would like to thank the authors who have provided valuable insights and knowledge regarding sustainable finance, green investment, and green insurance. We would like to thank Mr. Lalu Hamdani Husnan as the lecturer of Operational Management course. Your support, guidance, and direction during this research process have been very meaningful to us. In addition, we appreciate all those who have provided input and constructive criticism, which has helped improve the quality of this research. Hopefully this research can provide benefits for the development of sustainable finance in Indonesia.

REFERENCES

- Adickesallee, F. S.-U. C. C. for C. and S. E. F. (2024). Sustainable Finance Products in Germany (Issue January).
- Aeni, N. A. N. N., & Murwaningsari, E. (2023). Pengaruh Pengungkapan Emisi Karbon Dan Investasi Hijau Terhadap Nilai Perusahaan. *Jurnal Ekonomi Trisakti*, 3(2), 3135–3148. <https://doi.org/10.25105/jet.v3i2.17890>
- Afifah, Listiana, E., Wendy, Mustarudin, & Giriati. (2023). The impact of green finance on profitability with credit risk as an intervening variable. *International Journal of Applied Finance and Business Studies*, 11(3), 564–576.
- Afni, Z., Gani, L., Djakman, C. D., & Sauki, E. (2018). The Effect Of Green Strategy And Green Investment Toward Carbon Emission Disclosure. *The International Journal of Business Review (The Jobs Review)*, 1(2), 97–112. <https://doi.org/10.17509/tjr.v1i2.13879>

- Ainy, R. N., Aisa, N. N., & Davila, P. I. (2024). Indonesian Market Response to Green Investment. *Jurnal REKSA: Rekayasa Keuangan, Syariah Dan Audit*, 11(2), 155–166. <https://doi.org/10.12928/jreksa.v11i2.9108>
- Alfarisy, I., Rokhmawati, A., & Nurmayanti, P. (2023). Pengaruh Investasi Hijau, Ekspor, Dan Harga Energi Terhadap Emisi Karbondioksida (CO₂) Dimediasi Oleh Konsumsi Listrik. *Diklat Review*, 7(1), 183–195.
- Altaira, H., & Margaretha Leon, F. (2023). Effect of Green Financing and Financing Constraints on Green Technology Innovation in the Consumer Goods Industry in Indonesia. *International Journal of Management Studies and Social Science Research*, 05(01), 53–63.
- Arifudin, Anjani, N., Serliana, N., Auliah, M., & Amaliah. (2024). Green Sukuk: Tantangan dan Strategi Pengembangan Untuk Pembangunan Berkelanjutan Serta Menuju Ekonomi Hijau. *SANTRI: Jurnal Ekonomi Dan Keuangan Islam*, 2(3), 12–20.
- Aulia, A., Febriyanti, F., & Umi, L. P. (2023). Trend Analysis Of ESG Disclosure On Green Finance Performance In Indonesia, Malaysia & Singapore Exchanges. *JAK (Jurnal Akuntansi) Kajian Ilmiah Akuntansi*, 10(1), 79–98. <https://doi.org/10.30656/jak.v10i1.5439>
- Cakranegara, P. A. (2021). Investasi Hijau: Mengintegrasikan Faktor Environmental, Social dan Governance dalam Keputusan Investasi. *Jurnal Akuntansi, Keuangan, Dan Manajemen*, 2(2), 103–114. <https://doi.org/10.35912/jakman.v2i2.112>
- Chariri, A., Bukit, G. R. S. B., Eklesia, O. B., Christi, B. U., & Tarigan, D. M. (2018). Does Green Investment Increase Financial Performance? Empirical Evidence from Indonesian Companies. *E3S Web of Conferences*,
- D’Orazio, P., & Löwenstein, P. (2022). Mobilising investments in renewable energy in Germany: which role for public investment banks? *Journal of Sustainable Finance and Investment*, 12(2), 451–474.
- Dani, I. M., & Harto, P. (2022). Pengaruh Kinerja Lingkungan Dan Green Investment Terhadap Pengungkapan Emisi Karbon. *Diponegoro Journal of Accounting*, 11(4), 1–10. <https://doi.org/10.33508/jjima.v12i2.5350>
- Dowling, J., & Pfeffer, J. (1975). Organizational Legitimacy: Social Values and Organizational Behavior. *The Pacific Sociological Review*, 18(1), 122–136. <https://doi.org/10.2307/1388226>
- Febriyanto, A., Nabiela, L. F. A., & Agisti, F. N. (2023a). Impact Of Green Financing and Financial Factors on Islamic Banks’ Performance in Indonesia: A Regression Analysis. *Journal of Islamic Economic Scholar*, 4(2), 62–77. <https://doi.org/10.14421/jies.2023.4.2.62-77>
- Febriyanto, A., Nabiela, L. F. A., & Agisti, F. N. (2023b). Impact Of Green Financing and Financial Factors on Islamic Banks’ Performance in Indonesia: a Regression Analysis. *Journal of Islamic Economic Scholar*, 4(2), 62–77. <https://doi.org/10.14421/jies.2023.4.2.62-77>
- Fong, J. H., & Borowski, A. (2022). Long-Term Care Insurance Reform in Singapore. *Journal of Aging and Social Policy*, 34(1), 73–90. <https://doi.org/10.1080/08959420.2021.1926867>

- Freeman, R. E. (2010). *Strategic Management*. Cambridge University Press. <https://doi.org/10.1017/CBO9781139192675>
- Hidayat, A., Manurung, A. B. U. S., Liliana, L., Rohima, S., Pertiwi, R., Andaiyani, S., & Shodrokova, X. (2024). Green bonds and the Sustainable Development Index in Asian countries: Panel data evidence. *Argumenta Oeconomica*, 53(2), 107–119. <https://doi.org/10.15611/aoe.2024.2.07>
- Hu, Y., Du, S., Wang, Y., & Yang, X. (2023). How Does Green Insurance Affect Green Innovation? Evidence from China. *Sustainability*, 15(16), 12194. <https://doi.org/10.3390/su151612194>
- Indriastuti, M., & Chariri, A. (2021). The role of green investment and corporate social responsibility investment on sustainable performance. *Cogent Business and Management*, 8(1).
- Karnawijaya, N., Hadiningrum, L. P., & Rokhaniyah, S. (2021). The Gade Clean And Gold: Increasing Financial Inclusion Of Gold Savings Products For Sustainable Green Economy. *IQTISHADUNA: Jurnal Ilmiah Ekonomi Kita*, 10(2), 162–174. <https://doi.org/10.46367/iqtishaduna.v10i2.398>
- Khuan, H., Judijanto, L., Rahmiyati, N., Yusuf, R., & Karyasa, T. B. (2024). Study of the Effect of Green Investment Policy, Technological Innovation, and Sustainable Development on Industrial Competitiveness. *West Science Interdisciplinary Studies*, 2(01), 146–154.
- Kurniawati, A. D., & Purwaningsih, A. (2024). The Impact of Financial Stability and Audit Firm Affiliation on the Level of Disclosure of Sustainable Green Banking. *Media Ekonomi Dan Manajemen*, 39(2), 419. <https://doi.org/10.56444/mem.v39i2.4957>
- Kustina, K. T., Kurniawan, I. M. A. A., & Utari, I. G. A. D. (2024). Pengaruh Literasi Keuangan dan Sikap Peduli Lingkungan Terhadap Keputusan Investasi Hijau Generasi Z. *Wacana Ekonomi (Jurnal Ekonomi, Bisnis Dan Akuntansi)*, 23(1), 25–35. <https://doi.org/10.22225/we.23.1.2024.25-35>
- Machdar, N. M. (2020). Financial Inclusion, Financial Stability and Sustainability in the Banking Sector: The Case of Indonesia. *International Journal of Economics and Business Administration*, VIII(Issue 1), 193–202.
- Mar'I, M., Seraj, M., & Tursoy, T. (2024). The Impact of Financial Stress and Uncertainty on Green and Conventional Bonds and Stocks: A Nonlinear and Nonparametric Quantile Analysis. *Risks*, 12(8), 120.
- Masduqie, M. H. A., Syarifudin, S., & Yudha, A. T. R. C. (2021). Green Economy Of Waste Bank In The Perspective Of Maqashid Sharia In Surabaya. *Jurnal Ekonomi Syariah Teori Dan Terapan*, 8(5), 593.
- Mo, Y., Ullah, S., & Ozturk, I. (2023). Green investment and its influence on green growth in high polluted Asian economies: Do financial markets and institutions matter? *Economic Research-Ekonomska Istraživanja*, 36(2).