

Original Research Article

Development of Green Sukuk in Indonesia Based on The Pillars of Sustainable Development

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ABSTRACT

Green Sukuk represents a transformative Islamic financial instrument specifically designed to fund environmentally friendly projects that accelerate the achievement of the Sustainable Development Goals (SDGs). Despite its potential, the issuance and management of Green Sukuk in Indonesia still encounter several operational clusters that require further optimization. This research aims to provide a comprehensive literature review regarding the development of Green Sukuk in Indonesia, analyzed through the framework of the SDGs Pillars (Social, Economic, Environmental, and Governance). The methodology employed is a qualitative literature review, utilizing a three-stage data analysis technique: data reduction, data display, and conclusion drawing/verification. The findings reveal that Green Sukuk plays a pivotal role as a catalyst for the sustainable development agenda and climate change mitigation. However, the instrument faces significant structural hurdles, including liquidity constraints in secondary markets, the risk of greenwashing, and the necessity for more rigorous impact reporting standards. The study concludes that while Green Sukuk is a vital financing bridge, further empirical research is essential to examine its practical implementation and ensure measurable contributions toward achieving Indonesia's 2030 SDG targets.

Keywords: Green Sukuk, SDGs, Islamic Finance, Climate Change

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1. Introduction

Green financing is a financing instrument that aims to obtain funds for environmentally friendly project efforts and support climate change. This instrument that is usually circulated in the capital market is *green bonds*, *Green Sukuk*, and other funding instruments in the capital market because of its *Long-Term* nature. *Green Financing Instruments* must reduce CO₂ emissions and prevent pollution (Tang and Zhang, 2020). According to the Asian Development Bank (ADB), developing countries will need USD 210 billion per year from 2016 to 2030 in terms of infrastructure investment to maintain their growth momentum, alleviate poverty, and respond to climate change (Abdullah and Keshminder, 2022). Climate Bond Initiative (2022) reports that annual green bond *Issuance* could potentially reach \$5 trillion by the early 2025s. Currently, the lack of funding is an obstacle in realizing a green economy and achieving the SDGs in many countries, especially developing regions (Azhgaliyeva et al., 2020).

Indonesia became the first green sukuk issuing country in the world, (Siswantoro & Surya, 2021). Green sukuk is one of the innovative sharia-based financial instruments that aims to support Indonesia's commitment to combat climate change, reduce greenhouse gas emissions and be channeled to green projects in accordance with the Green Framework of the Republic of Indonesia (Abrorov, 2020). Sukuk is an Islamic financial market instrument with rapid growth in the last decade in various countries, sukuk is an alternative source of funding that is in demand because of the existence of underlying assets that make schemes in sukuk able to make economic sectors move (Razak et al., 2019). Green sukuk is the first government-owned Islamic financial instrument in its issuance for projects in accordance with the Sustainable Development Goals (SDGs), so green sukuk is one of the government's green financing that focuses on achieving the increasing NDC target.

Compared to other green instruments such as green bonds, green sukuk has several advantages, namely: (1) Green sukuk must be based on sharia principles derived from the Qur'an such as honesty, justice, there should be no usury, maysir and gharar, meaning that as long as it does not contradict sharia principles, Islamic financial instruments will continue to develop and innovate according to the needs and developments of the times. (2) Green sukuk is one of the Islamic financial instruments that has the need for an underlying asset in financing distribution, so that this will increase the real sector. In contrast to green bonds, which have a debt scheme based on the company's balance sheet. (Raeni et al., 2022). (3) Green Sukuk is an Islamic financial instrument as the first climate controller from the government, because it is most in line with national development goals. In line with climate change mitigation and adaptation, it is also in line with sustainable development goals. (Smaoui et al., 2020). (4) In contrast to Green bonds which are loan instruments, retail green sukuk is an instrument that establishes the holder as the owner of a portion of the undivided underlying assets.

Currently, the world's focus is on climate change adaptation and mitigation, green sukuk is used as one of the sharia investment instruments that aims to secure investment in sustainable projects in every country (Smiths et al., 2021). In addition, based on the impact of reducing carbon emissions in the 2023 green sukuk report, the total emissions that have been successfully reduced by 10.5 million tons of CO₂ (UNDP Innovative Financing Lab, 2023).

This is in line with the postulate contained in Q.S. Al-Qasas verse 77 "... Do not do any damage to the earth. Indeed, Allah does not like those who do harm" this verse states that environmental conservation is not an option, but a social obligation (Tafsir of the Ministry of Religion of the Republic of Indonesia).

Furthermore, the SDGs are an important aspect because they are associated with national development goals, so the SDGs goals are the main parameters for the whole world, especially Indonesia considering the geographical conditions that are vulnerable to natural disasters. The SDGs are made and integrated with the RJPMN (national medium-term development plan) for 2020-2024 which is the *nawacita* of the president's vision and mission. And based on Presidential Regulation No. 59 of 2017 challenging the implementation of the achievement of the SDGs, there are three planning documents, namely: the SDG roadmap, the National Action Plan, and the Provincial SDG Regional Action Plan. So that the main goal of optimizing the issuance of green sukuk as a green thematic instrument of the government will be better planned and the specific goals targeted to succeed are broader than just reducing carbon emissions. Because of the 17 SDG goals, almost all of them can be accommodated by green projects that are used as the underlying assets by green sukuk.

Data from the Ministry of Finance (2020) states that the average state budget allocation for climate change is only Rp 102.65 trillion per year or equivalent to 4.3 percent of the total state budget expenditure. This explains that the government still needs other sources of funding to carry out mitigation and adaptation actions in order to achieve the target of GHG emission reduction commitments (Anggraini et al., 2023). On the other hand, the funding gap needed for the National Greenhouse Gas Action Plan (RAN GHG) is still very large. On the way, there are also many obstacles and problems that are not optimal considering that this green sukuk instrument is still relatively new, namely since 2018. For example, related to the issue of transparency and accountability due to risk aspects such as *Greenwashing* and good governance (Raeni et al., 2022), limited human resources and market participants' understanding of environment-based Islamic capital market products, innovation, socialization and risks, especially in green sukuk (Karina, 2019), and the gap in green Sukuk investors in the domestic market and in the global market (Suherman., et al, 2019).

In the development of green infrastructure in Indonesia, very large funding is needed, considering the geography of Indonesia which is an archipelagic country, so there needs to be equitable development to the regions and in accordance with the mission of sustainable economic development. Indonesia has strength in terms of demographics, including the majority of the Muslim population and a very large millennial generation. Existing sharia financing instruments have begun to be in great demand by the public and this is an opportunity in developing green sukuk to achieve the goals of sustainable economic development.

Research (Khalilurrahman & Mubarrak, 2022) states that retail green sukuk as a means of green sharia investment is an instrument that encourages the acceleration of the achievement of sustainable development goals and is in line with sharia *maqashid*, although there are problems in the lower price level compared to sukuk in general, but the perceived environmental impact is much greater than the return in profit. this is in accordance with Islamic law which states "losses must be eliminated" and "avoiding losses has a higher priority

than achieving benefits." These principles should be the main reason for the issuance of this green sukuk.

Research (Fitrah & Soemitra, 2022) that the green sector funded by Green Sukuk follows the sharia maqashid within the framework of *al-kulliyah al-khamsah*, namely maintaining religion (*hifdzu ad din*), preserving the soul (*hifdzu an Nafs*), preserving reason (*hifdzu aql*), preserving posterity (*hifdzu an nasl*), and preserving property (*hifdzu al Maal*). The potential for the issuance of green sukuk can be seen from increasing investor awareness about the importance of environmental conservation. To achieve the Sustainable Development Goals, Green Sukuk can be used to conserve the environment and natural resources, save energy, encourage the use of renewable energy, and reduce the impact of greenhouse gas emissions. research from (Araminta et al., 2022) states that the Government, as a regulator, is expected to provide support through various strategic policies to support Green Sukuk, such as by developing a stronger legal basis and incentives in the form of tax reductions, as well as strengthening information and literacy to the public about Green Sukuk.

Research that focuses on studying the development of green sukuk and its relation to sustainable development goals is still quite limited. The method used in this study is literature review. Similar research includes Ulfah et al (2024) examining the understanding of green sukuk issues, exploring lessons for government policy and identifying potential future research directions. Alam et al (2023) explain the development and evaluation of green sukuk financing. Fahad & Areeba (2022) identified, critically evaluated, and synthesized the existing literature on green Sukuk. Qosim et al (2023) analyzed green sukuk in previous research as an alternative to financing green infrastructure development in Indonesia. Amalia & Kholis (2024) tested the extent to which ST007 green sukuk contributes to supporting a sustainable green economy in Indonesia. Prayogo et al (2024) analyzed the bibliometrics of the green sukuk literature. Bagaskara et al (2024) examined the mapping of research around Green Sukuk.

2. Literature Review

Sukuk can be defined as securities in which there is ownership rights to tangible assets of goods, values, or services or services, either in single amounts or in large quantities in the form of a certificate explaining the ownership of the asset from a party. Sukuk in principle has similarities with conventional bonds, the difference is in the concept used, namely various types of contracts, such as lease contracts, sale and purchase or profit-sharing agreements and not interest like in conventional bonds. Sukuk also has a certain number of assets that are the basis for issuing sukuk and can be used as supporting transactions, in sukuk there is also an agreement, which is an agreement that is prepared in accordance with sharia principles by the related parties. In order for this sukuk financial instrument to be free from *riba*, *gharar*, and *mahsyir*, sukuk must be based on sharia.

The following is the evidence of the Qur'an which is used as the basis for green sukuk related to the preservation of nature and the destruction of land and oceans caused by human actions, Allah Ta'ala said in Surah al qashash verse 77

وَأَتَّبِعْ فِيمَا آتَاكَ اللَّهُ الدَّارَ الْآخِرَةَ وَلَا تَنْسَ نَصِيبَكَ مِنَ الدُّنْيَا وَأَحْسِنَ كَمَا أَحْسَنَ اللَّهُ إِلَيْكَ وَلَا تَبْغِ
الْفَسَادَ فِي الْأَرْضِ إِنَّ اللَّهَ لَا يُحِبُّ الْمُفْسِدِينَ

*Wabtagi fīmā ātākallāhud-dāral-āakhirata wa lā tansa naṣībaka minad-dun-yā wa aḥsing kamā
aḥsanallāhu ilaika wa lā tabgil-fasāda fil-arḍ, innallāha lā yuḥibbul-mufsidīn*

"And seek what Allah has bestowed upon you in the Hereafter, and do not forget your portion of worldly pleasures and do good as Allah has done good to you, and do not do evil on the earth. Indeed, Allah does not like those who do evil" (QS Al Qashash:77) (Al-Fath Rice, Al-Qur'an, Tajweed, Translation, and Transliteration, Jakarta, 2018, 394)

ظَهَرَ الْفَسَادُ فِي الْبَرِّ وَالْبَحْرِ بِمَا كَسَبَتْ أَيْدِي النَّاسِ لِيُذِيقَهُمْ بَعْضَ الَّذِي عَمِلُوا لَعَلَّهُمْ يَرْجِعُونَ

*zahalal-fasādu fil-barri wal-baḥri bimā kasabat aidin-nāsi liyuḏīqahum ba'dallazī 'amilu
la'allahum yarji'un* (QS Ar Ruum :41).

It means:

"It has been seen that the damage on land and in the sea is caused by the deeds of human hands; Allah wants them to feel some of the consequences of their deeds, so that they may return (to the right path)." (AlFath Rice, Al-Qur'an, Tajweed, Translation, and Transliteration, Jakarta, 2018, 408).

As the basis for the issuance of green sukuk, in addition to the expansion of policies and regulations in its implementation, Indonesia has developed a framework that contains the use of results, project evaluation and selection processes, results management, and reporting. On the other hand, green bonds are bonds that provide funding for green projects such as renewable energy, low-carbon transportation, and other low-carbon projects that can contribute to climate change mitigation or adaptation (Aasouli et al., 2018). The principle of green bonds in Indonesia is regulated in the Financial Services Authority Regulation No.60/POJK.04/2017. One of the things discussed in this regulation is the type of business that can be financed from the issuance of green-based projects (Ramadhan & Wirnyaningsih, 2019). Meanwhile, green sukuk is a policy issued as a method to increase the potential of the international investment climate for financing and refinancing green projects in Indonesia as a form of Indonesia's commitment in the Paris Agreement (Suroso et al., 2020).

3. Methodology

This research uses a literature study approach, which is a form of research conducted by collecting journal articles with themes relevant to the research objective (Zed, 2014), namely the development of green sukuk in Indonesia based on the sustainable development pillar

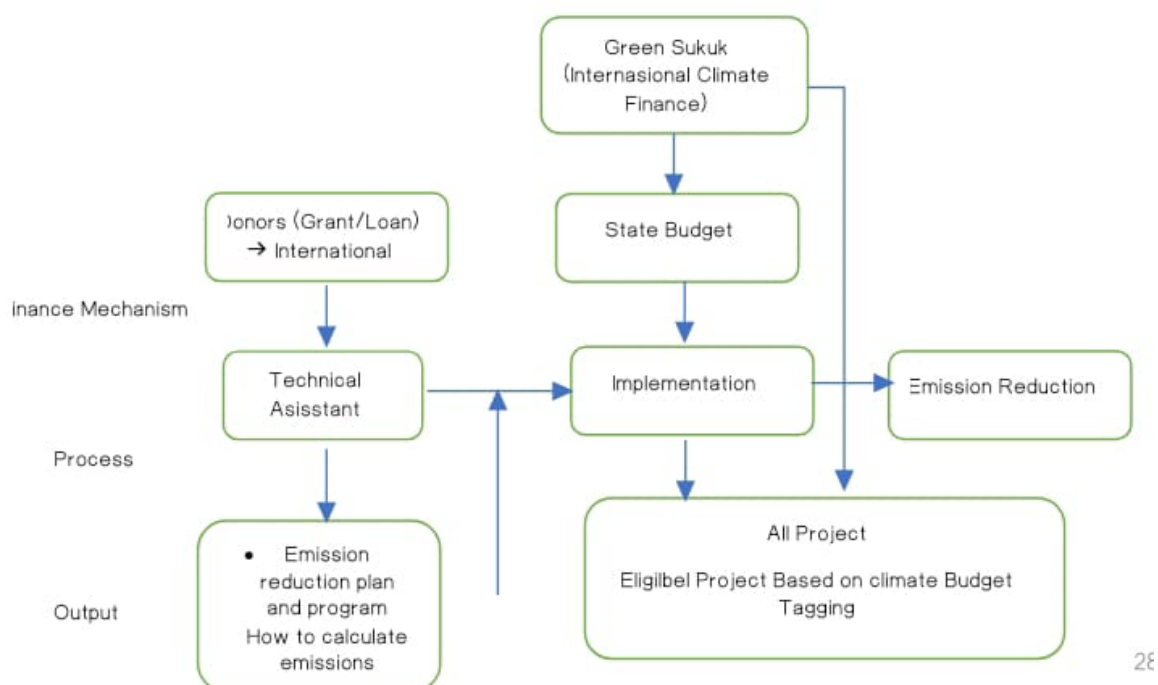
(SDGs). Furthermore, for data analysis, the three stages of qualitative analysis according to Miles and Huberman (1994) are utilized, which are: 1) Data reduction stage, where data obtained from journal articles is reduced, summarized, and selected, then focused on important and relevant matters, and arranged systematically. 2) Data display stage, which involves presenting the information obtained from data reduction so that conclusions can be drawn. 3) Conclusion drawing/verification stage, which involves seeking the meaning of the collected data and drawing conclusions.

4. Results and Discussion

Based on the existing literature, there are financing instruments for green projects or for the purpose of achieving the SDGs agenda or "SDGs bonds", such as:

- a. *Green Bond* : *Green Bond* is a financing instrument that existed in 2014 for the purpose of financing green projects such as reducing environmental pollution, reducing air pollution levels, and other environmentally friendly projects. (Prakash and Sethi, 2021; Sisodia et al., 2022). Many countries have published *Green Bond* to finance all sustainable development programs in their countries and regions such as Indonesia, Malaysia, Hong Kong, China, India, and other countries. The development was even more rapid after it was first released. The development was even more rapid after it was first released. Based on (Sun et al. 2020) request *Green Bond* has grown from US\$3.4 billion to US\$156 billion (Zhang et al., 2022). Based on Bloomberg data, globally, China is the issuing country *Green Bond* largest by total emissions *Green Bond* of \$110 billion in 2010. Followed by Indian states that have issued *Green Bond* as much as \$10 billion in the same year.(Prakash and Sethi, 2021).
- b. Social Bonds: Social bonds are one of the financing instruments that have existed since 2010. This social financing mechanism is still newly introduced and used by the government in financing social projects. According to *International Capital Market Association* (ICMA) in 2020, special social bonds to finance part or all of social projects that have met the requirements. Social bonds can also be used for capital raising purposes as well as used for environmental projects. The country that issued this social bond was Indonesia. India issued this social bond to support women's empowerment programs in its country (Prakash and Sethi, 2021).
- c. Sustainable Bonds: While sustainable bonds are securities or securities with a fixed income scheme and deliberately combine green projects and social projects. So that the bond becomes a link between *Green Bond* and social bonds with the aim that they can be used to finance all projects that have a positive impact on the environment and society. *Sustainability bond* has a structure similar to *Green Bond*. However, they differ only in the use of results specific to planet-related SDGs. Meanwhile, the obligation of sustainability is not only for the planet but also for humans themselves (Prakash and Sethi, 2021).

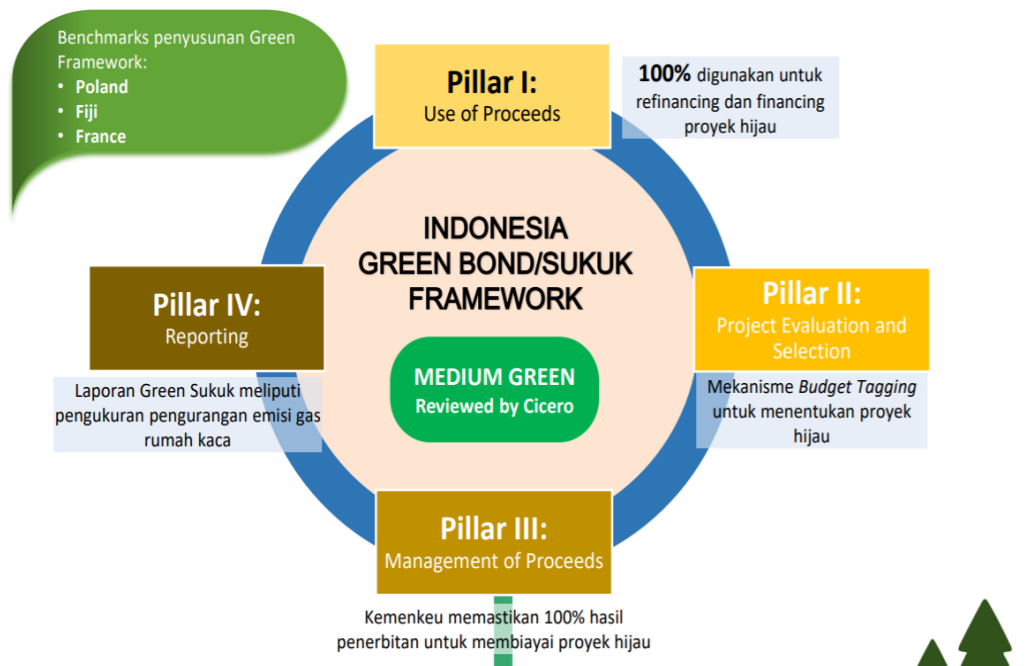
Indonesia is the first green sukuk issuing country in the world, which shows Indonesia's commitment in the Paris Agreement (Suroso et al., 2020; Siswantoro & Surya, 2021). The following is a scheme of the Green Sukuk financial mechanism in Indonesia.



Source : (Suroso *et al.*, 2020)

Figure 1. Financial Mechanism Scheme *Green Sukuk* in Indonesia

Based on the image above, there are two assistance mechanisms from international climate finance. First, *International Climate Finance* (ICF) encourages technical assistance in the development of the GHG RAN (National Greenhouse Gas Action Plan) which is then integrated into the National Medium-Term Development Plan (RPJMN). The programs in the RPJMN are financed by the State Budget and the circulation of funds is regulated using the retail green sukuk financing mechanism. In addition, *Green Sukuk Framework* which can be categorized as Indonesia's green initiative has become a supporting instrument in the financing system and implementation of integrated climate change programs (Suroso et al., 2020).



Source : cicero

Figure 2. Indonesia *Green Bond/ Sukuk Framework*

Based on figure 2 above, Indonesia has a framework for the development of bonds or *green sukuk*. In the pillars presented in the chart, there are four pillars that are stages in the initial process of issuance planning to the final stage of the bond fund development report or *green sukuk*. The fundamental difference in the issuance of *green sukuk* and ordinary *sukuk* lies in the *underlying assets* used, as well as the management of the process supervised by the ministry of finance and the evaluation that continues to be carried out so that the funds managed are on target. In the above framework, Indonesia makes Poland and France as benchmarks in the issuance of *green bonds/sukuk*.



Source : *Policy Research Working Paper* (Aasouli et al., 2018)

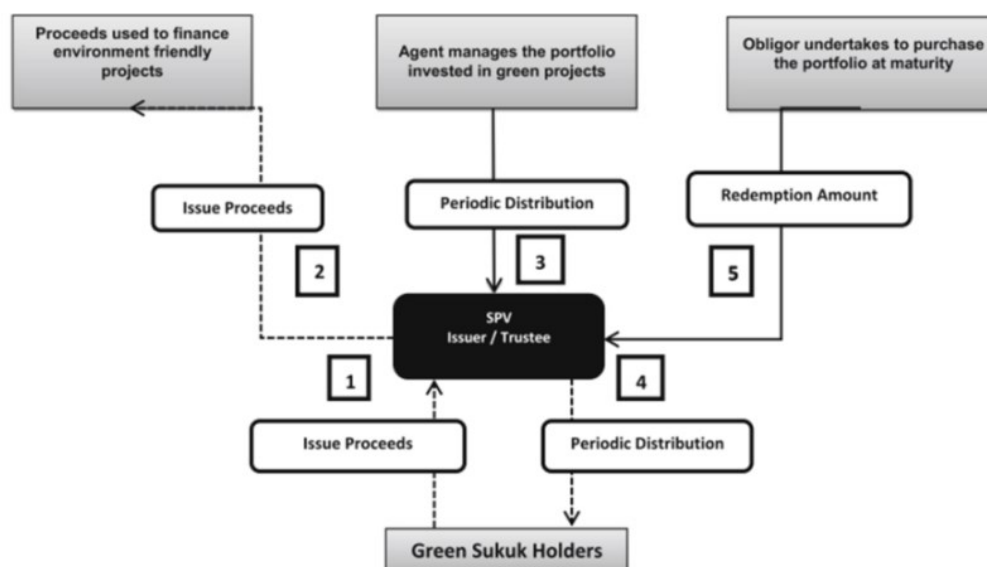
Figure 3. Key principles of the green sukuk process

Green Sukuk Indonesia introduced after eleven years of publishing *Green Bond* by the European Investment Bank in 2007 i.e. in 2018. *Green Sukuk* issued by Malaysia, for example,

of 250 million Malaysian Ringgit (MYR) intended to finance large-scale photovoltaic solar projects (Khalilurrahman and Mubarrak, 2022). *Green Sukuk* increased by more than three times in 2019, with massive investments in renewable energy projects. Existence *Green Sukuk* is an essential tool for solving sustainability problems and is also designed to solve environmental and climate problems (Abdullah and Nayan, 2020). *Green Sukuk* is one of the new innovations that combines Islamic finance and green finance in Islamic financial instruments or products (Septiana and Dewi, 2008).

Green Sukuk has similarities with *Green Bond* issued where all funds from the Islamic capital market are intended to finance green or environmental projects (Keshminder et al., 2022), which contributes to the mitigation and climate change adaptation and preserving biodiversity so that it is well maintained. *Green Sukuk* is a financial instrument that is in line with the objectives of *Maqashid Syariah* such as promoting sustainable development through the principles of justice or equality (Husain, 2020). Purpose *Green Sukuk* is to encourage the development of sharia-compliant green investment (Liu and Lai, 2021). Meanwhile, all funds from the issuance *Green Sukuk* It can be used for environmental management with the aim that natural ecosystems are well maintained along with changes in environmental conditions.

In addition, *Green Sukuk* and *Green Bond* have similarities in the use of funds to invest in green projects that achieve environmental benefits. However, the two also have differences, where *Green Sukuk* have uniqueness such as profit-risk sharing, the existence of an interest in asset ownership, and the opportunity to lose principal or profit on the basis of the asset. (Husain, 2020). In addition, *Green Bond* is contractual debt without an asset base and periodic fixed coupon payments (interest). and nominal value at maturity. While sukuk or *Green Sukuk* is not a loan but the ownership of the underlying asset or the benefit of a particular asset or project, so that the asset is at risk. In the case of returns, *Green Sukuk* may vary according to the condition of profit or loss so that the invested capital is not guaranteed to be returned (Husain, 2020).



(Source: Alam, Duygun, & Ariss, 2016)

Figure 4. Illustration of the Structure of *Green Sukuk*

Figure 3. shows that the structure *Green Sukuk* involves securitizing future cash flows from environmental projects in assets with certain criteria. The funds obtained from the issuance of sukuk will be used for green projects in accordance with sharia principles. Then, the profits obtained from the portfolio after deducting the costs arising from the SPV or *Special Purpose Vehicle* It is then forwarded to the sukuk holder. The obligor also has a commitment to buy the portfolio at the time of *Green Sukuk* expires or SPV matures. In the case of sukuk prices, the purchase price will be determined as the aggregate amount of the nominal amount of unpaid trust certificates and periodic distributions that are still due. In terms of assets *Green Sukuk*, based on the definition of Climate Bond Standard Certification, solar parks, biogas plants, wind power plants,(Alam et al., 2016).

Climate supports sustainable development programs such as creating a healthy environment and developing a low-carbon and climate-resilient economy, adequate financial support is needed which is also referred to as 'sustainable finance'. In other words, sustainable finance is a source of funding other than traditional funding sources that are currently insufficient to cover the financing needs of sustainable development in various countries, especially developing countries. The existence of the concept of sustainable finance shows that the government needs alternative sources of funds to support sustainable development programs to avoid the domino effects of climate change such as increasing poverty, hunger, and also declining national economic growth. Based on the PPLH (Environmental Protection and Management) Law Number 32 of 2009, climate change is a change that is directly or indirectly caused by human activities that cause changes in atmospheric composition and climate variability (KLHK, 2020).

The Sustainable Development Goals / SDGs are development that is carried out by prioritizing welfare by maintaining ecosystems and biological roles to create a good environment without risking future generations. The Sustainable Development Goals / SDGs Goals are comprehensive and apply to all countries consisting of 17 goals, 169 targets and 289 indicators in the 2022 Bappenas SDGs dashboard. These goals are: 1) No poverty; 2) No hunger; 3) Improved welfare and health; 4) Quality education; 5) Gender equality; 6) Sanitation and clean water; 7) Affordable and reliable energy; 8) Decent jobs and economic growth; 9) Industry, innovation, and development; 10) Reduce inequality; 11) Sustainable communities and cities; 12) Responsible consumption and production; 13) Climate action; 14) Life at sea; 15) Life on land; 16) Peace, justice, and strong institutions; 17) Partnerships for goals (BAPPENAS' SDGs Dashboard, 2020).

Several literature discusses the potential of *green sukuk* in achieving the Sustainable Development Goals (SDGs) and other environmental issues, especially to address climate change issues. Several studies on *green sukuk* also discuss the issue of the COVID-19 crisis and green accounting systems. Therefore, from the studies that have been conducted, conclusions can be drawn to assist parties, including the government and policy makers, in formulating strategic policies. Previous research related to Green sukuk can be seen in Table 1. as follows:

Table 1. Previous Research

Yes	Author	Title	Conclusion	Research Equations
1.	Juan C. Reboredo	<i>Green bond and financial markets: Co-movement, diversification and price spillover effects</i>	<i>Green bonds</i> are affected by substantial price overflows from the fixed income markets of companies and treasuries and that large price swings in the stock and energy markets have a negligible impact on <i>the price of green bonds</i> .	Green sukuk is a diversification in investment portfolios that are safe for spillover effects, so it can be used as a reference for green sukuk
2.	Stephan , AndreasSun, Chen	The impact of liquidity risk on the yield spread of <i>green bonds</i>	Descriptive evidence suggests that <i>green bonds</i> and conventional bonds have the same impact on liquidity risk	Liquidity risk in green sukuk is an unavoidable aspect so it needs to be used as a reference in determining yield spreads
3.	Yousaf, ImranSuleman, Muhammad Tahir Demirer, Riza	Green investments: A luxury good or a financial necessity?	Green investment is not a luxury, but a necessity to improve financial stability and performance, especially during market turbulence in a number of countries due to the covid 19 pandemic	Green sukuk is a basic need because in Islam protecting the environment is mandatory, so it is not a luxury item, this can be used as a reference for the effects of Covid 19
4.	Santoso, Ivan Rahmat	Green sukuk and sustainable economic development goals: Mitigating climate change in Indonesia	A number of projects funded by <i>Green Sukuk</i> include sustainable natural resource management, energy efficiency, green tourism, resilience to climate change, green buildings, sustainable transportation, sustainable agriculture, waste and energy waste management, these projects must also be in accordance with sharia, and in accordance with the	Eligible projects funded by green sukuk have various indicators in this article have similarities in determining green projects that must be in accordance with the green sukuk framework

			requirements of green infrastructure	
5.	Keshminder, J. S. Abdullah, Mohammad SyafiqMardi, Marina	Green sukuk – Malaysia surviving the bumpy road: performance, challenges and reconciled issuance framework	It was revealed that among the challenges faced in the <i>green sukuk</i> market were poor green taxonomy, difficulties in identifying green assets, time-consuming and expensive, no attractive benefits and exposure to high-risk profiles.	The common obstacles of green sukuk in Indonesia are the existence of a green taxonomy that has not yet been agreed upon between regulators, the difficulty of identifying green assets and the fact that they have a high risk profile.
6.	Liu, Felicia H.M.Lai, Karen P.Y.	Ecologies of green finance: <i>Green sukuk</i> and development of green Islamic finance in Malaysia	Malaysia's state-building goals, specifically through the expansion of Malaysia's sukuk market and advancing its status as the frontier of Islamic financial innovation, the potential to boost the <i>current green bond</i> market is more doubtful.	Green sukuk in Indonesia has a diverse target market, but in the case of the global market, there is an investor gap because the status in the domestic market sold is retail.
7.	Naeem, Muhammad Abubakr Raza Rabbani, MustafaKarim, Sitara Billah, Syed Mabruk	Religion vs ethics: hedge and safe haven properties of Sukuk and green bonds for stock markets pre- and during COVID-19	The strong safe-haven features of ethical (green) bonds (<i>Green sukuk</i> and <i>green bonds</i>) reveal that adding <i>green bonds</i> to investment portfolios brings a considerable diversification avenue for investors who tend to take less risk in periods of economic stress and turbulence.	In the same vein, investing in green sukuk will encounter various risks, especially before and after the covid 19 pandemic. So this article is a reference in how to hedge with portfolios and diversification
8.	Azhgaliyeva, D., Kapoor, A., Liu, Y.	Green bonds for financing renewable energy and energy efficiency in South-East Asia: a review of policies	Green bond <i>policies</i> in ASEAN are effective in promoting <i>green bond</i> issuance. However, this does not mean that <i>green bond policies</i> are effective in	The basic policy in Indonesia is quite strong in the issuance of green sukuk, but this article is a reference in looking at the policies of other countries in supporting the plan of the movement to

			promoting renewable energy and energy efficiency projects in ASEAN.	reduce carbon emissions.
9.	Ibrahim, A.-J., Shirazi, N.S.	The role of islamic finance in fostering circular business investments: The case of oic countries	Islamic financial instruments such as a mix of Islamic finance, <i>green sukuk</i> , and the charitable sector to attract public and private investment in Indonesia's circular business sector	The similarity in Indonesia green sukuk is able to create circular business investments, especially green investments
10.	Keshminder, J.S., Singh, G.K.B., Wahid, Z.A.B., Abdullah, M.S.	<i>Green Sukuk: Malaysia taking the lead</i>	The <i>green sukuk market</i> is still small and liquidity constraints make it difficult for investors to gain access. In order for the government to increase <i>green sukuk issuance</i> , information on the performance, challenges, risks, and opportunities in the field of <i>green sukuk</i> must be available to issuers and investors	Liquidity risk in Malaysian green sukuk can be a reference for Indonesia to reduce these risks
11.	Siswantoro, D.	Performance of Indonesian <i>Green sukuk</i> (islamic bond): A sovereign bond comparison analysis, climate change concerns?	The condition of excess demand does not always correlate with performance. The decline in the price of <i>Indonesia's green sukuk</i> is caused by macroeconomic factors so that a good image of green activities does not always attract investors directly.	One of the risks in green sukuk is that market risks have similarities because they are macroeconomic factors
12.	Noordin, N.H., Haron, S.N., Hasan, A., Hassan, R.	Complying with the requirements for issuance of SRI sukuk: the case of Khazanah's Sukuk Ihsan	The definition of eligible SRI sukuk issuers in the Guidelines on Sukuk appears to be more stringent compared to those provided in the GBP and the U.S. SIB Act.	The SRI framework can have similarities with the green sukuk framework in Indonesia because of the same targets and objectives in various green projects, so that the success of the

			Nevertheless, the SRI Sukuk Framework provides a more comprehensive but precise list of SRI projects, which includes environmental and social aspects, compared to the GBP (which focuses only on the broad category of environmental projects) and also the U.S. SIB Act (explicitly outlining 13 social projects that align with the U.S. Federal Government's agenda in addressing social ills).	sukuk treasure project can be adopted
13.	Morea, D., Poggi, L.A.	An innovative model for the sustainability of investments in the wind energy sector: The use of <i>Green sukuk</i> in an Italian case study	The economic and financial analysis of the investment case study of wind farms on Italian land, sequentially to evaluate their profitability and bankability according to the above-mentioned criteria, shows a strong dependence of incentives to achieve grid parity. Alternative financing models are introduced based on the use of <i>green sukuk</i> (Islamic financial instruments)	In Italy, it has had good success in managing green sukuk, including in terms of profitability and strong incentives, in Indonesia it is necessary to see this as a reference so that issuers get proper greenium
14.	Baldi, F., Pandimiglio, A.	The role of ESG scoring and greenwashing risk in explaining the yields of green bonds: A conceptual framework and an econometric analysis	<i>Green Bond returns</i> are not only determined by the rating and volatility as conveyed by standard financial theory, but are also influenced by the level of ESG dimension of the	Governance constraints in green sukuk are a challenge, especially the risk of greenwashing, so in this article there is a similarity that the ESG dimension needs to be based on professional governance

			underlying infrastructure and the ease of greenwashing practices.	
15.	Jia, W., Jia, X., Wu, L., (...), Wang, E., Xiao, P.	Research on regional differences of the impact of clean energy development on carbon dioxide emission and economic growth	CED (clean economic development) does not play an important role in reducing CDE (carbon dioxide emissions) and driving economic growth from a linear perspective; The influence of CED on CDE and economic growth in western, central and eastern China differs significantly from a nonlinear perspective. Therefore, the Chinese Government should fully play an important role on clean energy in reducing CDE and driving economic growth	The similarities in this study are related to how green projects are able to support economic growth, and SGDs (sustainable development)

(Keshminder et al., 2022) explained that green sukuk is essential to drive financial inclusion, social responsibility, and help Islamic countries achieve the SDGs. Every stakeholder involved in the issuance of green sukuk is given the opportunity to claim, promote, and create the image of their organization or individual as an institution that supports environmental sustainability and climate change (Ghorchi & Kavianirad, 2019). In addition, green sukuk, also known as green financial instruments, contributes to increased investment flows into projects that focus on environmental issues (MoEF, 2020; Meo & Abd Karim, 2022; Rasoulnezhad & Hesary, 2022).

According to Keshminder et al (2022) and (Liu and Lai, 2021), governments can proactively issue green sukuk to support renewable energy projects and also fund technologies or infrastructure that can help address environmental issues such as air pollution and flood disasters. In addition, liquidity issues and the issuance of sukuk which are still small in size because they are only to fund certain green projects hinder the growth of the green sukuk market. The government must also work with other parties involved in the green sukuk issuance process to address the problem of business greenwashing. Therefore, to prevent misinformation issues that can reduce trust, reporting must be done with transparent standards. Research from (Suroso et al., 2022a) also shows that green sukuk can be used as a creative way for

governments to finance the achievement of emission reduction targets. Green sukuk can play an important role in initiating more energy sector programs to achieve the government's national and international emission reduction goals.

Furthermore, the Coronavirus Disease 2019 (COVID-19) phenomenon has developed into a disease problem that has become a global pandemic today (Chamani et al., 2020). This is because COVID-19 has become an economic and medical problem for many countries around the world (Burhan, 2020). According to research by Narayan et al. (2022), the diversification of financial instruments, especially Islamic financial instruments such as green sukuk, has negatively impacted the economy in various important sectors in various countries. Policy recommendations that can be made are to utilize the diversification of financial instruments. In addition to conventional financial tools, the government needs many sources of funds to achieve socio-economic recovery. Because they have the same potential as conventional financial instruments based on empirical evidence, sukuk and green sukuk can be used as alternative sources of financing.

Among the articles published that have discussed green sukuk on other issues such as transparency; Traceability; Public Accounting System; Climate change; Sovereign Green Bonds and Sukuk are Raeni et al., (2022) who have explored the issuance of green sukuk in developing countries such as Indonesia. As a green sukuk issuing country, Indonesia needs accountable green sukuk accounting reporting. The results of their analysis found that there are limitations in transparency and traceability in the financial accounting system related to the financing of climate change projects.

Raeni et al., (2022) also recommend the need for a modification of the financial accounting system in which governments can allocate funds for green projects, including adaptation and mitigation programs from the adverse impacts of climate change, from existing public revenues. The special marking of the allocation of funds for green sukuk projects can help reduce the inappropriate use of funds or cover other government budget deficits. An adequate tracing mechanism can reduce the risk of using funds from green sukuk to other projects.

The author's review includes some benefits for further research on the topic of green sukuk. For further research, Keshminder et al. (2022) suggest involving parties such as sukuk issuers and experts from various countries that dominate the large-scale issuance of green sukuk. This is done to obtain data to measure problems and find solutions, creating a comprehensive green sukuk issuance framework, which can be used by many countries, especially developing countries facing various environmental problems.

Raeni et al. (2022) suggested that further research related to *Green Sukuk* requires a comparative investigation of institutions, institutions, countries that have published *Green Sukuk*. The results of the study with one of the examples of countries that have published *Green Sukuk* cannot be generalized to countries that have issued *Green Bond* or other Islamic financial instruments. In addition, further research is also needed to further analyze the time difference in GHG (Greenhouse Gas) calculations related to climate-related financial instruments. The current calculation is based on the period of the financial instrument used whereas climate

change has a long time period. In addition, more research on the effectiveness of guarantees related to climate finance initiatives is needed.

5. Conclusion

This study aims to examine the strategy for the development of green sukuk in Indonesia based on the pillars of sustainable development using the literature study method. This study concludes that to support the sustainable development agenda (SDGs), there are a number of financing instruments such as green bonds, social bonds, and sustainable bonds that have grown rapidly. Green and social projects such as green sukuk, a financial innovation that combines green and sharia finance principles, strengthen the commitment of countries, especially Indonesia, in supporting low-carbon environmental and economic targets. To achieve the Sustainable Development Goals (SDGs), which consist of 17 global goals for economic, social, and environmental well-being, green sukuk can be integrated into SDGs programs and offer financing alternatives for developing countries. Through innovative and inclusive financing approaches such as green sukuk, it can help reduce the impact of climate change and also ensure the sustainable well-being of future generations.

This explains that green financing instruments, especially green sukuk, have a significant role in supporting the sustainable development agenda (SDGs) and climate change mitigation goals. There are many benefits offered through financing by green sukuk, including increasing financial inclusion, social responsibility, and the image of organizations that are committed to environmental sustainability. With the help of these instruments, sustainable projects can be funded, especially in developing countries, which require inventive methods of sustainability financing. However, green sukuk faces issues such as liquidity, greenwashing risks, and clear reporting requirements. Further research is needed to strengthen the accounting and traceability systems of green sukuk issuance, as well as to develop a more comprehensive issuance framework that can be implemented in different countries.

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