

SUKUK FINANCING FOR FOREST PROTECTION IN INDONESIA

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ABSTRACT

Bonds are securities used to raise funds where the issuer repays the principal and interest at maturity time. They are part of green finance that promotes and supports sustainable development programs. Sukuk is a rapidly growing Islamic bond used to finance infrastructure development projects, including sustainable forest management. State Sukuk infrastructure projects have been successfully implemented in Indonesia since 2013 and continue to increase. In general, Indonesia has 120.5 million hectares of forested land, or 64% of its total land area, and 5.3 million hectares of marine conservation areas. However, pressures on forests have contributed to their destruction, mainly by anthropogeny. Forest conservation and protection receive the threat of significant and complex damages that degrade and fragment habitats. Therefore, this study aimed to investigate Indonesia's policy, process, analysis, and gaps in practicing state Sukuk for financing forest management. Statistical analysis of variance was used to analyze time-series data from 2018 to 2021. A qualitative scientometric approach helped explore supported policies, relevant literature reviews, and in-depth interviews with key informants. The results showed that the issuance of state Sukuk does not always meet green projects' technical arrangements and procedures. Implementing forest management infrastructure projects only captures about 0.2% to 1% of state Sukuk projects. The forest management projects are categorized into 47% animal conservation, 22.2% studies on environment and forestry, 17.6% tourism, 7.2% education, and 6% ecosystem conservation. This study helps investors participate in green development, especially protecting forests in Indonesia. Additionally, a green Sukuk contributes direct and indirect economic values for economic benefits and environmental services.

Keywords: forest management, forest protection, green finance, green bonds, green Sukuk.

INTRODUCTION

Forests contribute to human life by supporting valuable tree and animal biodiversity, reducing greenhouse gas emissions, and providing social and economic benefits of woods, non-timber products, and ecosystem services. Practicing sustainable global forest management and eliminating deforestation requires an investment of US\$70 to 160 billion per year (AGF/CPF, 2012). Total global investment in forest conservation and SFM was approximately US\$18 billion annually (Tomaselli, 2006). Therefore, the investment in forest management is crucial to fill the big gap of the increased requirement.

Indonesia is one of the most forest-rich countries, having 120.5 million hectares of production, protection, and conservation forests. Production forests are managed by the company, while the government manages conservation and protection forests. Although forest management by the government is implemented using the state budget, it requires strengthening with more funds. However, the government only uses existing funds for the most priorities and regular expenses due to the limited source of the state budget. An additional budget is needed to fill the gap for implementing sustainable forest management. According to Santoso et al. (2019), a mature organization must have sustainable funding to implement activities, meaning the government should take the lead for having possible financing.

Pressures on forests have contributed to their destruction, such as encroachment, forest, and land fires, as well as illegal logging and trade in wild flora and fauna. The threat produces habitat degradation and fragmentation, leading to ecological islands (Ministry of Environment and Forestry, 2020). Therefore, the government needs financing from various sources to support sustainable forest management and counter the pressures.

Securities such as bonds are financial claims, where bondholders require the borrower's principal and interest payments. Bonds are crucial in economic revenue because interest rates are essential to financial markets and the real economy. Their valuation enables the market to price individual, corporate, and government borrowings. The principal is the sum promised to be repaid by the borrower to the lender. Return on the investment helps an investor buy a bond and combine the coupons and principal (Ho & Lee, 2004). Therefore, the investor would raise business interest for bond investing decisions.

The Asian Development Bank (2021) showed that the outstanding local currency bonds and Sukuk in Indonesia at the end of 2021 were nearly double that of June 2016. Although sovereign issuances dominate the bond market, outstanding corporate bonds and Sukuk have increased by more than 50% in the past 4.5 years, as shown in Figure 1.

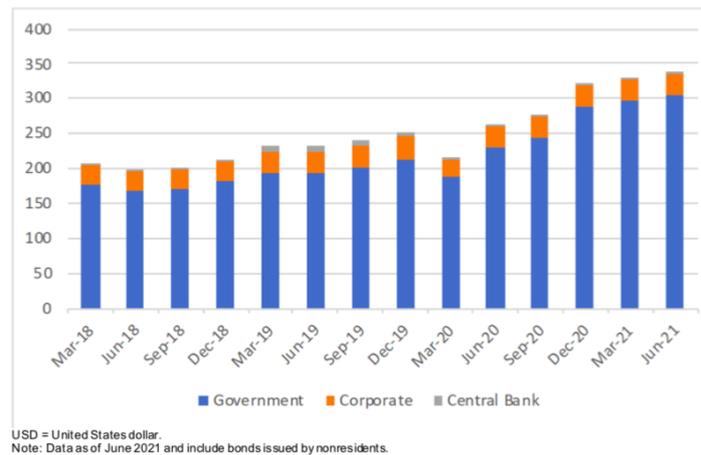


Figure 1. Local Currency Bonds Outstanding in Indonesia (Asian Development Bank, 2021)

In Indonesia, the maturity or term of the bonds is 1 to 10 years. Investment income made from the buying and selling activities of investors is influenced by changes in macroeconomic variables such as Bank Indonesia interest rates, bond coupons and maturity, and profitability (Altavilla et al., 2018).

The government of Indonesia uses bonds as a funding source to strengthen and fulfill the development program's state budget deficit. Since an increased funding requirement does not increase revenue spending, the government should finance the budget deficits by increasing borrowing. It issues a government or sovereign bond to fund the state budget's routine deficit. The first retail state bond in Indonesia was published in July 2006, continued in 2008, and sold to the public (Pakpahan et al., 2016) in a primary market.

A green bond is a commitment to finance or refinance green projects and follows the financial sector's role to support environmental protection. These bonds are becoming a popular mechanism to finance climate-friendly or environmentally sustainable projects.

The first green bond of €600 million was issued in 2007 by the European Investment Bank for renewable energy and its efficiency financing (International Bank for Reconstruction and Development/the World Bank, 2015). In 2008, the World Bank issued the first green bond for Scandinavian investors. Since then, the green bond market has multiplied, with more than USD 100 billion in 2017 (Reichelt & Keenan, 2017). In Europe, a multilateral development bank initiated a global green bond climate-related development project in 2007/2008 (Filikova et al., 2018). Moreover, the climate-aligned bond market in Latin America and the Caribbean comprised 26 bonds from 22 issuers since December 2014, with a total of US\$ 8.4 billion as of August 2017. These projects used 32% of the bond financial support on energy, 24% on transportation, 8% on agriculture and forestry, 1% on water projects, and 35% on multi-sector projects (Velloso, 2017). The local and regional bank engagement was highly interested in broadening global intervention with various green development investment sectors.

Indonesia ratified the Paris Agreement, a global agreement on climate change as the Indonesian Law Number 16 of 2006. This law becomes a legal basis in implementing Indonesia's commitment to environmental protection. Green bonds are debt securities issued to finance or refinance environmentally sound business activities. This is based on financial services authority regulation number 60/POJK.04/2017 concerning issuance and requirements of environmental debt securities. Indonesia's commitment to green development was adjusted and adopted into national enabling conditions.

Indonesia is still developing the green investment tools applied in infrastructure sectors. According to Otoritas Jasa Keuangan (2016), developing green bonds requires supervision and regulatory mapping used by debt securities in the capital markets. In comparison, experiences from China, India, Mexico, Turkey, and Peru are used to understand the regulators' efforts in developing the green bond market. The project's life cycle financed by the World Bank follows the stages of the country partnership, identification, preparation appraisal, board approval, implementation and supervision, completion, and evaluation. Furthermore, the cycle tracks the World Bank's financing in green bond projects through three stages. These are reviewing the project pipeline, screening eligible projects, allocating green bond proceeds, reporting progress, and impacting the investors. In this case, Indonesia may utilize the experiences and approaches made by other countries.

One recent development in Islamic finance is an Islamic bond or Sukuk. Although the Sukuk market is smaller than the conventional bonds, it has great potential for expansion, development, and innovation (Iqbal & Mirakhor, 2013). In some countries, Islamic financing is a potential alternative for macroeconomic development (Echchabi et al., 2018). Therefore, Indonesia may utilize Islamic finance because it is one of the highest Muslim population countries.

The Sukuk market has become increasingly standardized around *ijara*, *murabaha*, and *mudaraba-wakala* structures. Sukuk al-ijara is classical and used since 2008 as a sale and leaseback agreement. It is suitable when the issuing company has unencumbered commercially leasable assets, such as real estate, ships, or aircraft (Latham & Watkins, 2017). The issuance of Sukuk by the

Indonesian government has developed gradually to include underlying assets and contracts used. The first State Sukuk was issued in October 2008 using an Ijarah sale and leaseback contract with the underlying issuance.

Sukuk has become increasingly popular in the past few years due to the governments' willingness to raise finance through sovereign issues for most Islamic population countries, including Indonesia. The preparation of Sukuk follows the Islamic law that prohibits *riba* interest in generating profits for investors. The first Sukuk was issued by Malaysia in 2000, followed by Bahrain in 2001, and has since developed as an effective mechanism to raise finance in the international capital markets through Islamic structures (Sherif, 2017).

There is no difference between the yield of maturity and green bonds and Sukuk in practice. A green Sukuk developed in Islamic jurisdiction markets mirrors the green bonds' nature in accommodating socially responsible investments. Therefore, the green labels may indicate good practices of human ecology in financing sectors.

Based on Indonesia's Law number 19/2008 and finance minister of Indonesia regulation number 218/pmk.05/2013, state Sukuk uses sharia principles with evidence of assets in rupiah and foreign currencies. It is one of Indonesia's primary development sources for financing government infrastructure projects. The project-based state Sukuk (PBS) strongly supports the government's efforts to accelerate infrastructure development. An underlying Sukuk project issuance uses existing infrastructure projects under the state budget for the current year to determine transactions, while a project financing Sukuk is explicitly issued to finance specific projects. Based on the previous experiences in Indonesia, a source of funding is allocated from Sukuk as the projects' earmark (Nopijantoro, 2017). Consequently, the state Sukuk has become one of the primary funding sources.

Project financing in Indonesia has used earmarked state Sukuk since 2013, with the total allocation reaching IDR 62.4 trillion or USD 43.7 million in 2018, based on the 2021 exchange rate. In March 2018, Indonesia successfully priced an international Sukuk offering totaling USD 3 billion, including USD 1.25 billion and USD 1.75 billion of 5 and 10 years, respectively. The tenor of 5 years' Sukuk is the first green Sukuk globally.

The Government of Indonesia also issued the world's first retail green Sukuk (ST006) of IDR 1.46 trillion (USD 104.4 million) for a 2-year tenor, with a gain of 6.7%. It issued the second (ST-007 series) in November 2020, broadening the domestic investor-based and tapping into the growing demand for green and sustainable investment. In 2020, the government offered a global green Sukuk of US 750 million for a 5-year tenor, with a yield of 2.3%. This was followed by a retail green Sukuk (ST007) of IDR 4.5 trillion (USD 385.7 million) for a 2-year tenor, with a gain of 5.5% (Ministry of Finance, 2021). State Sukuk was used to construct roads and bridges, railroad lines, water resource projects, and lecture buildings. It was also used to develop and revitalize hajj halls, rehabilitation Office of Religious Affairs and Hajj Manasik, and establish National Parks (Antaraneews.com, 2021). The government is willing to pay more attention to the big promise of this funding source.

This study aimed to determine how the state Sukuk supports development projects and promotes sustainable forest management in Indonesia. It is expected to promote stakeholders to protect the environment by promoting green development and engaging investor participation in forest preservation.

METHOD

This study used quantitative and qualitative approaches such as the scientometric methodology useful to the scientific community in analyzing a given topic (Mooghali, 2011). The qualitative scientometric approach was used to analyze data using a descriptive qualitative method (Hsieh & Shannon, 2005) and news media content analysis (Howland et al., 2006). Silalahi et al. (2018) employed the approach to examining the energy sector using mixed-method content analysis and in-depth interviews. The scientometric approach used policy and relevant literature review and in-depth interviews with key informants in this study.

A quantitative approach used data calculated by statistical analysis of variance (ANOVA) to determine differences in preference of Sukuk funding between programs. This study used time-series statistical data from 2018 to 2021 obtained from the Ministry of Environment and Forestry.

STATE SUKUK FOR FINANCING STATE BUDGET

Indonesia has frequently implemented a financing policy regarding a deficit budget, which could happen when government spending plans are higher than revenues (Rahardja and Manurung, 2004). The higher funds required to implement a government development plan produce a budget gap that requires more foreign loans to cover. Since 2000, Indonesia has covered the shortages from domestic and abroad loans (Soebagiyo, 2012), mainly using state Sukuk (Amaliah & Aspiranti, 2017). The gap occurs consistently, meaning additional funding is mostly a high demand.

Law number 15 of 2017 states that domestic and foreign loans could fulfill deficit financing, and domestic funding could come from banking and non-banking government securities (Hariyanto, 2017). Also, Law number 9 of 2020 on the state budget year 2021 states that the state Sukuk was used to mobilize public funds and increase the state budget. State Sukuk is a sharia-based and a potential source of development funds from domestic and international institutions (Latifah, 2020).

Government regulation number 56 of 2011 regarding project financing through the issuance of state sharia securities stipulates that state Sukuk is used and determined in the state budget. Total state Sukuk project financing for the 2013-2019 budget used for seven

ministries reached IDR 90.91 trillion, from IDR 0.8 trillion in 2013 to IDR 28.43 trillion in 2019, as shown in Figure 2. This increase indicated the role of strengthening Sukuk in state budget financing (Mary et al., 2019).

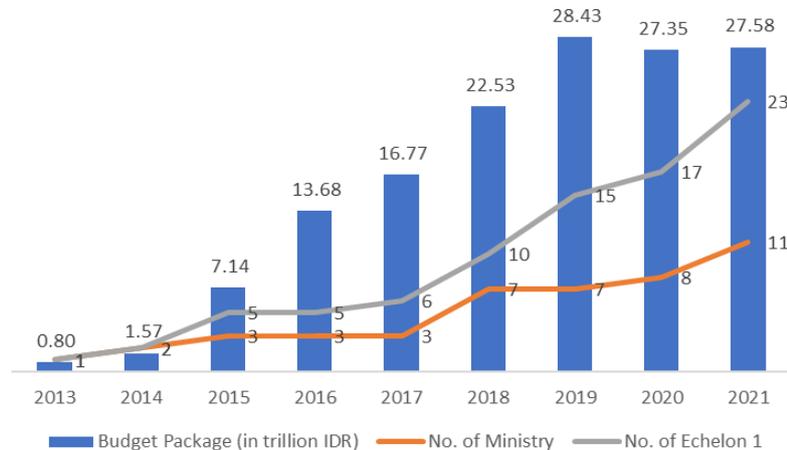


Figure 2. Total financing allocation of state Sukuk year 2013-2021 (DJPPR, 2020)

The Indonesian Government initiated green financing in 2017 and became one of the world's first and largest Global Green Sukuk sovereign issuers in 2018 with USD 1,250 billion. After receiving positive responses from the global market, the government issued a state green Sukuk of USD 750 million in 2019, making Indonesia the first country to issue green Sukuk for two consecutive years. In 2020, the country resumed its commitment to sustainable financing by publishing its third green Sukuk of USD 750 million for five years. It attained 33.74% of the achievements in tapping green investors and reducing state budget costs. Consequently, the returns on global green Sukuk increased from 3.75% to 3.90% from 2018 and 2019 but reduced to 2.30% in 2020 (DJPPR, 2020).

Indonesia has an ambitious commitment to reducing greenhouse gas emissions by 29% at the country's unconditional commitment or 41% with assistance from other international communities of 2030 on the carbon dioxide emissions from land-use and energy sectors (Wijaya et al., 2017). However, this environmental and humanity commitment would be difficult without sufficient support and effort from financing sectors.

The development of environmental and social impact indicators improves the openness of green Sukuk and attracts more ethical investors. A development sustainability reporting and rating methodologies could enhance the quality of green Sukuk (Aassouli et al., 2018). Therefore, the government of Indonesia aims to improve the green Sukuk by developing green instruments, presenting impact reports and audits by credible international institutions, and preparing quality assets instruments (DJPPR, 2020).

STATE SUKUK FOR FOREST MANAGEMENT

Indonesia is the world's largest archipelagic nation, with 120.5 million hectares of land, or 64% of its total land designated as the national forest area, and 5.3 million hectares of marine conservation areas. Table 1 shows three forest functions, including 68.8 million hectares of production forest, 29.6 million hectares of protection forest, and 22.1 million hectares of conservation forest (Nurbaya et al., 2020). The forests belong to Indonesia and contribute to global climate change by reducing carbon emissions.

Table 1. The extent of land cover types in Indonesia (Nurbaya et al., 2020)

Land cover	Forest Area* (in millions of hectares)							Non-Forest Area (APL)	Grand Total	%
	Permanent Forest					HPK	Total			
	HK	HL	HPT	HP	Total					
(1)	(2)	(3)	(4)	(5=1+2+3+4)	(6)	(7=5+6)	(8)	(9=7+8)	(10)	
A. Forested	17.4	24.0	21.4	17.8	80.6	6.3	86.9	7.2	94.1	50.1
- Primary forest	12.5	15.9	9.8	4.7	42.7	2.5	45.3	1.5	46.8	24.9
- Secondary forest	4.8	7.8	11.3	9.7	33.6	3.7	37.3	4.9	42.2	22.5
- Plantation forest*	0.1	0.3	0.4	3.5	4.3	0.0 ^e	4.3	0.8	5.1	2.7
B. Non-forested	4.5	5.6	5.4	11.4	26.8	6.5	33.4	60.3	93.6	49.9
Total Terrestrial Area	21.9 ^d	29.6	26.8	29.2	107.4	12.8	120.3	67.5	187.8	100.0
% Forested Area*	79.6	81.0	80.0	61.0	75.0	49.1	72.2	10.7	50.1	

Notes: HK – Conservation Forest; HL – Protection Forest; HPT – Limited Production Forest; HP – Permanent

- A Percentages are calculated by dividing each row's Grand Total (column 9) by Indonesia's Total Terrestrial Area (187.8 million hectares).
- B Plantation forest is developed by humans and includes Industrial Plantation Forest and planted forest from reforestation or regreening within or outside the Forest Area.
- C The actual figure is 42.1 thousand hectares.
- D This figure refers to the terrestrial KSA/KPA area's total land area.
- E Percentages are calculated by dividing each row's forested total (row A) by the Total Terrestrial Area in the same column.

The green bond and Sukuk market grow, though insignificantly compared to the total bond market. Agriculture has a high challenge for the green bond issuance sector and needs more investments in soil carbon sequestration (Cochu et al., 2016). Similarly, the forest is also a carbon pool that needs restoration and protection.

The forest sector is a promising target for green bonds, including the green Sukuk project. In line with this, the government of Indonesia published a green bond and Sukuk framework, indicating the green sectors' eligibility to be financed and refinanced by the green Sukuk. The framework was developed based on the green bond principles and received CICERO's second-party opinion (Ministry of Finance, 2021). Therefore, the forest sector would need to adapt to the green Sukuk project, including eligibility for green financing principles. The ministry of environment and forestry developed an infrastructure project proposal to implement priority forestry programs from state Sukuk funding. This was based on the minister of national development planning regulation number 8 of 2020 concerning procedures for managing projects funded through the issuance of state sharia securities.

The Indonesian state Sukuk has reached 2,939 infrastructure projects within eight ministries and state institutions. It spread out over 34 provinces, with IDR 118.26 trillion (USD 8.712 million) financing, including infrastructure projects in 13 national parks. They include Baluran, Gunung Gede Pangrango Aketajawe-Lolobata/Halmahera national parks. Three national parks received IDR 51 billion (USD 3.7 million) from the state Sukuk, including IDR 21 billion (USD 1.5 million) for the Baluran national park to develop bridges, access roads, pavilions, toilets, prayer rooms, and toilets (DJPPR, 2021a). Furthermore, the finance ministry awarded the Gunung Halimun Salak national park as a center for biodiversity research and education (DJPPR, 2021b). This was due to the high demand for mobilizing funding from Sukuk for green infrastructure projects in the forestry sector.

The state Sukuk initiated by the ministry of environment and forestry commenced in 2018 with funds ranging from IDR 0.05 trillion in 2018 to IDR 0.29 trillion in 2020, as shown in Figure 3. The funds' trends increased from 2018 to 2020 but decreased from 2020 to 2021. Moreover, the state Sukuk for the ministry of environment and forestry was only 0.2% in 2018, 0.4% in 2019, 1% in 2020, and 0.7% in 2021. In comparison, the national Sukuk funds was only 0.2% in 2018, 0.4% in 2019, 1% in 2020, and 0.7% in 2021. The allocation of IDR 0.62 trillion from 2018 to 2021 was for infrastructure development projects.

The protection of forests involves maintaining their ecological function, such as for production or direct and indirect economic benefit from wood, water, tourism, genetic resources, and microclimate. This means sustainable production should also follow sustainable forest management, such as implementing reduce-impact forest harvesting techniques.

The Sukuk projects included 47% tourism and animal conservation, 7.2% education, 6% ecosystem conservation, and 22.2% research, as shown in Figure 4. The state Sukuk program contributes to the acceleration and productivity of the forestry priority program, including production, conservation, and protection of forest resources. One major crucial contribution from the forestry sector is environmental services, including tourism.

A case study in Bali, Indonesia, showed that utilizing forest areas for tourism attracted foreign domestic tourists. A collaboration between forestry and tourism could attract tourists, provide more jobs, and preserve natural resources (Utama, 2015). Forests are also a habitat for plant and animal conservation. Therefore, better management could combat illegal logging and avoid the degradation of forests in many countries. Habitat and biodiversity losses threaten the survival of some species, particularly protected primates and large mammals (FAO and UNEP, 2020). Forests have an organism community comprising plants, fungus, animals, air, water, and soil resources useful as a natural laboratory for studies. Additionally, they are rich in complex ecosystems, making their restoration and conservation from degradation increasingly important.

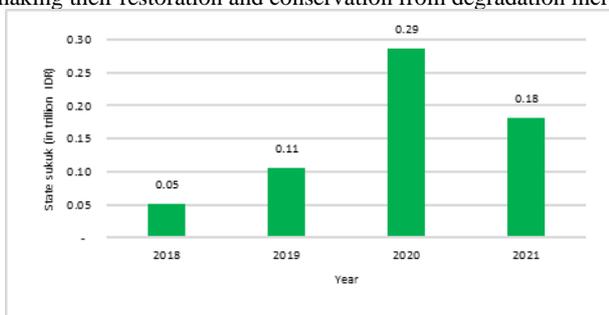


Figure 3. State Sukuk projects in Indonesia's ministry of environment and forestry 2018-2021

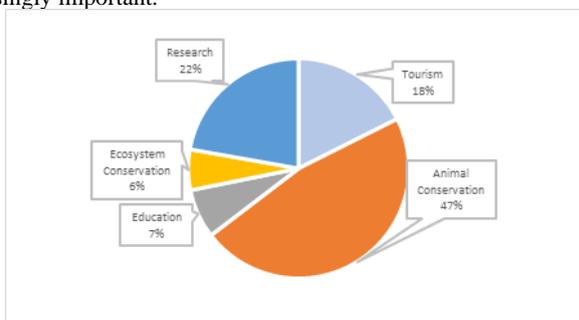


Figure 4. State Sukuk projects funds allocation in Indonesia's ministry of environment and forestry 2018-2021

Statistical analysis of variance (ANOVA) examined the diversity of state Sukuk projects in the ministry of environment and forestry. The ANOVA was based on the null and alternative hypothesis of having similar and different statistical variance among treatments. Table 2 shows a P-value of 0.4 greater than 5%, meaning the null hypothesis is accepted and implying no significant difference preference within the project types.

The five forestry programs in the state Sukuk in the ministry of environment and forestry are tourism, animal conservation, education, ecosystem conservation, and research. The statistical calculation in this study showed no preference between the MoEF projects program and no specific focus on a particular program. Therefore, a green Sukuk contributes direct and indirect economic values for environmental services, such as tourism, animal conservation, education, ecosystem conservation, and research.

Table 2. Analysis of variance state Sukuk of forestry projects

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	1.07256E+22	4	2.6814E+21	1.0796194	0.40129583	3.055568
Within Groups	3.72549E+22	15	2.4837E+21			
Total	4.79806E+22	19				

CONCLUSION

Investment has an essential role in the country's economic development by contributing to development efforts for environmental protection with green investment, including from bonds. In this case, a bond is a fixed-income instrument representing a loan used by the government to support the state budget in financing infrastructure projects. Green bonds promote environmental-based projects that produce positive climate benefits. Sukuk is an Islamic bond that uses sharia principles with evidence of assets. In Indonesia, state Sukuk is one of Indonesia's primary development funding sources for financing infrastructure projects. A green Sukuk developed in Islamic jurisdiction markets mirrors the nature of green bonds in accommodating socially responsible investments. The state Sukuk infrastructure projects have been successfully implemented in Indonesia since 2013 and continue to increase.

Forests contribute to human life by supporting valuable tree and animal biodiversity, reducing greenhouse gas emissions, and providing social and economic benefits of woods, non-timber products, and ecosystem services. In line with this, the Sukuk Islamic bond is rapidly growing and widely used to finance infrastructure development projects, including supporting sustainable forest management.

This study showed that the ministry of environment and forestry's infrastructure projects focus on the environment, the closer indicator to the world bank's green requirements, capturing about 0.2% to 1% of state Sukuk projects. The projects covered 47% animal conservation, 22.2% research on environment and forestry, 17.6% tourism, 7.2% education, and 6% ecosystem conservation. However, the statistical test showed no difference within these projects.

A green Sukuk contributes direct and indirect economic values for environmental services. Therefore, investors should invest in state Sukuk in Indonesia to promote sustainable forestry management by mitigating carbon emissions.

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