

Sukuk, an Islamic Finance Instrument for Green Infrastructures in Indonesia

Muhammad Said

Faculty of Economics and Business State Islamic University Syarif Hidayatullah Jakarta

ABSTRACT

This paper aims to reveal the effort of Indonesian government and private parties in the issuance of sukuk, its implementation, and its impacts in developing green infrastructures in Indonesia. The study applies two steps of qualitative analysis: literature review and focus group discussion. We review research reports published in various international journals, which are stored in the thematic folders in Mendeley library, and identify citations that can be used as theoretical basis and justifications. We also use secondary data from the official reports of the Ministry of Finance of Indonesia. The focus group discussion, focusing on the theme of green finance, was conducted in the form of a seminar with 12 participants. The group consisted of doctoral students in Islamic banking and finance who are mostly practitioners in Islamic banking institutions. One of the participants is the Director of Sharia Financing at the Ministry of Finance of Indonesia, who has direct authority over sukuk issuance. The researcher acted as an observer during the discussion, taking important notes and asking questions deemed crucial to obtain comprehensive research information. The aim was to triangulate sources to align the perspectives of the speakers with the researcher and avoid subjective bias in the research findings. The study has three major findings. First, the issuance of sukuk is carried out by the government as an alternative funding source to support the limited state budget (APBN). Second, the issuance of sukuk has been designed to have its clear basic foundation that does not contradict with the sharia law. As an Islamic investment tool, sukuk uses contracts such as *Ijarah*, *Murabahah*, *Istishna'*, *Musyarakah*, *Mudharabah*, and *Wakalah*. Third, the issuance of sukuk has received positive responses in the domestic and global markets. Sukuk has made significant contributions to sustainable development in a wide variety of sectors in Indonesia.

Keywords: Islamic finance, SDGS, sukuk, green project.

1. Introduction

Climate change poses a myriad of acute challenges across all facets of modern society. Increasing temperatures, extreme weather events, heatwaves leading to droughts, and forest fires represent only a fraction of the repercussions of climate change (Samir, 2019). The global population surge, reaching approximately 7.549 billion people in 2018, exacerbates the disparity between food availability and the scarcity of natural resources. Moreover, the deterioration of eco-friendly transportation infrastructure, pollution-free facilities, and efficient waste disposal systems further compounds these challenges, threatening not only present but also future generations (Zheng et al., 2021; Endri & Buana, 2022; Raeni et al., 2019; Kumar, 2022; Liu & Lai, 2021).

Since 2011, the government announced the need to accelerate and expand Indonesia's economic development

by establishing six economic corridors with different development themes. The government is estimated to invest USD 178.6 billion for infrastructure development, which will be in the form of among others roads, ports, power and energy, airports, railways, water utilities, and information communication technology infrastructures (Rarasati et al., 2014).

The government commits to realizing the development projects through various policies that make it easier for public to participate in the development of sustainable green projects. The government also invites private sectors to invest in green development projects such as transportation (airports, ports, railways, roads, and bridges), water supply, solid waste and sanitation, and power (Rarasati et al., 2014). Financial services authorities and industries support green development policies through the creation of a green taxonomy, and infrastructure development of sustainable (Study, 2020), and provide green sustainable financing (Bank report, 2021).

Green sukuk is considered a potential finance instrument in relation to green development projects, and a key instrument for financing clean energy and resilient infrastructure projects as well as shorter-term energy efficiency (Aassouli et al., 2018). Green sukuk is an Islamic Financial (IF) instrument scheme that integrates material and spiritual life (Raeni et al., 2019). IF also cares about sustainable development for the benefit of individual, family, society, nation, as well as the globe needs, shelter, and environment that covers the coverage and goals of the SDGs (Billah, 2021). Islamic green finance drives humans to take care of the planet to prevent damage to human beings and animals and trees. In Islam, human beings have the mission of faithfully observing the values given by God. They may utilize the scarce resources of the planet as trustees (Obaidullah, 2018).

A number of researchers have explored the potential of green finance which has been criticized for following highly performative rituals that do not produce environmental benefits. More recently, Islamic green sukuk (often interpreted as an Islamic-compliant version of green bonds) has emerged as a new financial instrument that could address some of these criticisms (Liu & Lai, 2021). Islamic finance has developed into a unique asset class for a survey. An attractive feature of this instrument has been its use in financing renewable energy projects globally (Narayan et al., 2022). The Islamic financial system is based on the principles of sharia, which is the religious law of Muslims (Sobol, 2015; Aassouli et al., 2018; Mohammed, 2022; Moid, 2017; (Samir, 2019). Green sukuk is an innovative way of financing green infrastructure. It has the potential to become a new asset class targeting both Islamic and socially responsible investors (Aassouli et al., 2018). It is a part of Islamic finance as one of the fastest-growing financial segments in the world. It has a broad area such as private equity, project financing, or sukuk, and is close to the real economic sector, profit and loss sharing system. Islamic finance has shown up its capability to minimize the severity and frequency of financial crises (Aassouli et al., 2018).

One of the leading financial instruments in the Islamic finance industry is sukuk. It is the second largest market share after Islamic banking (Mubarrak, 2022). The uniqueness of green sukuk is integrating two different sides; the development of the material in harmony with the spiritual one. This uniqueness, among other things, makes Islamic finance in the international market attract private partnerships in green projects, including in the top ten economic countries; Canada, Denmark, Hong Kong, Japan, New Zealand, Norway, Sweden, Switzerland, United Kingdom, and the United States. (Saeed Meo & Karim, 2022; Mubarrak, 2022).

Islamic finance has a broad spectrum and flexible contract structures such as Mudarabah, Murabaha, Salam, Istishna, and, Ijarah (Endri & Buana, 2022; Siswantoro, 2018). The government of Indonesia has issued the

government sukuk (namely SBSN), similar to the corporate one with more varieties of corporate sukuk issued to both global sovereign sukuk in the international and domestic markets (Ramadhan & Wirnyansih, 2020). It is to support the development of the global Islamic financial market and attract investors to invest in the fast-growing Islamic financial institutions in Indonesia (Risanti et al., 2020).

The issuance of green sukuk was successfully done by Indonesia's government (Siswantoro & Surya, 2021) as the instrument articulates the Paris Agreement and the commitment of the Indonesian government to prevent adverse impacts of climate change (Ramadhan & Wirnyansih, 2020). Due to its success, the Indonesian government received awards from various international institutions such as IFR Asia, Islamic Finance News, Finance Asia, Euromoney, The Asset Triple A, Climate Bond Initiative, and Cambridge IFA (Musari, 2022).

This paper aims to analyze the following research questions: (1) potential development of green sukuk in the global and domestic markets and their contribution and (2) the method of issuing green sukuk for financing green projects in Indonesia, supporting factors on issuing sukuk and their impacts on the development of the green sector projects in Indonesia.

2. Related Literature and Theory

2.1. Green finance

Green finance is environmental goods and services, such as water management and protection of biodiversity, which is oriented towards the prevention damage of environmental and climate damage such as energy efficiency (Gilchrist et al., 2021). It is also known as environmental finance or sustainable financing (Dasgupta, 2018). This integrates environmentally friendly behavior, finance, ecological ethics, and social responsibility of financial institutions in reducing environmental degradation and increasing investment in green technology, as well as preserving renewable energy as its essence (J. W. Lee, 2020; Huang & Zhang, 2021; Cai & Guo, 2021). Green finance researchers recommend that the government reform the financial bureaucracy to finance a green economy (Xiong & Sun, 2022).

Islamic green finance is inherently compatible with the principles of green finance channeling investments toward environmental benefits (Xiong & Sun, 2022; Saeed Meo & Karim, 2022; Vejaratnam et al., 2020; C. C. Lee & Lee, 2022). Islamic green finance fulfills people's needs within the boundaries of a sustainable and efficient economic system (Liu & Lai, 2021) and promotes green and sustainable economic extension beyond being the component of a financial system. It has ample instructions which emphasize the need to care for the environment and forms of life on earth while ensuring the proper use of natural resources (Obaidullah, 2018).

One of the Islamic instruments is green sukuk which is regarded as a new instrument focused on funding green infrastructure projects (Ramadhan & Wirnyansih, 2020). It supports infrastructure development and reduces carbon emissions. (Mohammed, 2022; Moid, 2017). It also emphasizes balancing green environmental development, sustaining natural resources, avoiding waste, and harmonizing development (EFE, 2021).

2.2. *Sukuk uniqueness*

Green sukuk has become a very attractive choice for governments, corporations, and the general public in international and domestic markets for several important reasons. First, sukuk fulfills sharia compliance, as a modern fiscal policy instrument. Second, sukuk provides benefits with minimal tax payments and maximum benefits. It has encouraged the parties involved to become green investors with considerations of double taxation avoidance. Third, flexibility enables investors to buy sukuk according to their preferences and needs. The fourth reason is the guarantee of security, as the state is the issuer alongside giant corporations. Sukuk has a high level of security amid rampant fraudulent investments that are detrimental to many people. Fifth, sukuk has a positive impact that encourages a multiplier effect on real sector growth (Fasa, 2016; DJPPR, 2022).

Additionally, Nasrullah found three other reasons for the importance of sukuk. First, the sukuk can minimize the risk of default because the sukuk has the value of the underlying assets. This will keep the Government in control in determining the face value of the sukuk. Second, the fluctuating interest expense on conventional bonds will not occur on sukuk because the yield value of sukuk is based on the agreed contract based on profit sharing or rent. Third, sukuk can minimize payment risks caused by foreign currency exchange rate risks, especially for Retail Sukuk and Savings Sukuk (Aassouli et al., 2018; Mubarrak, 2022).

Green sukuk can be a source of financing for sustainable waste management (Hariyani & Kusuma, 2020) and for renewable projects (Morea & Poggi, 2017). Green sukuk can also be used as investment financing for producing renewable energy sources (Shaikh, 2018; Ivan Rahmat Santoso, 2020; Endri et al., 2022).

2.3. *Sukuk issuance method*

Sukuk issuance methods (Study, 2020) insist on three different methods: book building, private placement, and auction methods. Book building is the activity of selling sukuk through selling agents where the seller collects purchase orders within a predetermined offering period for the issuance of SBSN (DJJR, 2022). It is regarded as a more efficient way to provide information to IPO investors (Smith, 2004). Second, private placement is the issuance of

securities to less than 50 people. It is the activity of issuing and selling SBSN by the government to individual parties both Indonesian or foreign joint venture companies associated with Bank Indonesia or deposit insurance institutions with the terms and conditions agreement. Third, auction, which is a method of issuing and selling securities followed by bidders by submitting competitive buying offers and/or non-competitive buying offers in a letter for a predetermined and announced bidding period through a system provided by the agent conducting the auction (Chinchwadkar & Seth, 2015).

2.4. *Green & sustainable development*

Sustainable development is defined as an “*activity that meets the needs of the present without compromising the ability of future generations to meet their own needs*” (Chandran, 2022). There are several other terms used interchangeably to refer to the same meaning of the sustainable development concept, sustainable green economy, and green infrastructures. The sustainable green economy is defined by individuals’ and institutions’ decisions on how to use and apply these Science and Technology Information developments (Vodicka & Ph, 2022; Modak et al., 2023). Green infrastructure/building is a structure designed in an eco-friendly and energy-efficient manner. Green infrastructure not only helps in using finite energy resources prudently but also reduces the carbon footprints of these buildings. It must have disaster resilience and energy efficiency features in addition to its green features (Fabiana Meijon Fadul, 2019). Green infrastructure/building is a structure designed in an eco-friendly and energy efficient manner. Green infrastructure does not only help in using finite energy resources prudently but also in reducing the carbon footprints of these buildings. It must have disaster resilience and energy efficiency features in addition to its green features. (Triantafyllidis & Tortora, 2022). The idea of implementing Sustainable Development Goals in business replaces the established practice with new approaches providing not only profit but also economic and social well-being (Kosovych, 2021).

SDGs have some key characteristics: (1) universality, meaning it applies to all countries; (2) leave no one behind, meaning that the activity has to prioritize those who are most disadvantaged; (3) Interconnectedness and indivisibility, meaning that the goals form an integrated set rather than a picklist or menu; (4) Inclusiveness, meaning that every member of society can play a part, and be provided with opportunities to do so, as is their right; and (5) Multi-stakeholder partnerships as a basis for activity.

Working to support them is a very effective way of supporting multiple agendas and achieving the harmony that is a goal of sustainable development. The future generations will have to pay unless we reduce our carbon footprint or switch to renewable fuel sources or other alternative fuel sources. In order to reduce greenhouse gases

emissions and make the European continent carbon neutral, the European Commission introduced the Green Deal strategy (Chandran, 2022; Spencer, 2021; Triantafyllidis & Tortora, 2022).

3. Research Methodology

This research uses a qualitative approach to analyze research objectives (Creswell, 2014), which aims to contribute insights into existing concepts (Hariyanto, 2012) that is sukuk, its development in the global and domestic market, and its impacts in the green and sustainable development in Indonesia.

3.1. Data Source

Data on sukuk issuance and development was obtained from various resources: literature research, in-depth interviews, focus group case studies, and online research. Literature research is the earliest method used before writing by collecting, classifying, reading, and studying a number of theories contained therein and citing them as a theoretical foundation in research.

An in-depth interview was conducted with the Director of Syariah Finance, Ministry of the Finance Republic of Indonesia in a two-way communication focusing on the sukuk, its development, and the sector impacted by sukuk issuance. The focus group discussion involved a group of 10-20 informants led through a discussion on sukuk topics. In this method, doctoral class students who attended the focused discussion in the Directorate of Sharia Financing of the Ministry of Finance. They discussed sukuk theme with informants (Director of Green Waqf, practitioners of Syariah banks in Indonesia). They wrote their idea in paper to be discussed profoundly. Online research was also conducted to obtain the data from the official website of the DJPPR Ministry of Finance of Indonesia, Bank Syariah Indonesia, Authority of financial service (OJK), and other sources. A number of international journals were collected and saved in a thematic folder in a Mendeley library.

3.2. Data analysis

The collected data was classified according to the research objectives. Then, it was narrated in the form of academic narration. The researcher first classified the literature by theme, reads, quotes, and includes it in the body of the text for further analysis and content expansion. An interactive model (Miles & Huberman, 1998) used in data analysis where each stage of data analysis can be carried out simultaneously. The display stage was carried out simultaneously with data reduction to set aside data that was not related to the research objectives. At the same time, data interpretation can be carried out in conjunction with other processes, including drawing conclusions.

4. Research Findings

4.1. Legal Basis for Sukuk Issuance

State sukuk issued by the government since 2008 is based on a very strong legal framework, namely the law that specifically regulates state sukuk, law number 19 of 2008 concerning State Sharia Securities (SBSN) or State Sukuk. The State Sukuk Law regulates the purpose of issuing state sukuk, the use of State Property as the basis for issuing state sukuk or SBSN Assets, the establishment of SBSN Issuing Companies and the authority of the Government delegated to the Minister of Finance to issue state sukuk. The State Sukuk Law also regulates the role of various parties in the issuance of SBSN, including Bank Indonesia as the SBSN administration agent and SBSN Auction Agent, the Ministry of National Development as a party that must approve the allocation of projects that can be financed with State Sukuk / SBSN and DSN-MUI to provide fatwa and sharia opinion.

The State Sukuk Law gives investors a confidence in the security of investing in State Sukuk as stated in article 9 paragraph (1), paragraph (2) and paragraph (3) which states that:

1. The approval of the House of Representatives as referred to in Article 8 paragraph (1) includes the payment of all obligations of the Fees and Nominal Value arising as a result of the issuance of the SBSN and State Property that will be used as SBSN Assets.
2. The Government is obligated to pay the Fees and Nominal Value of each SBSN, whether issued directly by the Government or SBSN Issuing Company, in accordance with the provisions in the SBSN issuance Acad.
3. Funds to pay the Fees and Nominal Value as referred to in paragraph (2) shall be provided in the State Budget every year until the obligation ends.

The regulations underlying the issuance of green state sukuk are as follows:

- a. SBSN Law, Number 19 of 2008 concerning State Sharia Securities (SBSN) or State Sukuk;
- b. Government Regulation Number 56 of 2008 concerning Issuing Companies of State Sharia Securities;
- c. Government Regulation No. 56 of 2011 on Project Financing through State Sharia Securities;
- d. Regulation of the Minister of Finance of the Republic of Indonesia Number 125/PMK.08/2018 on the Issuance and Sale of Retail Government Sharia Securities in the Domestic Primary Market;
- e. Regulation of the Minister of Finance of the Republic of Indonesia Number 129/PMK.08/2011 on the Use of Projects as the Basis for Issuing State Sharia Securities;
- f. Regulation of the Minister of Finance of the Republic of Indonesia Number 205/PMK.08/2017 on the Use of State Property as the Basis for Issuing State Sharia Securities as amended by Regulation of the Minister of Finance of the Republic of Indonesia Number 99/PMK.08/2021 on the Amendment to Regulation of

the Minister of Finance of the Republic of Indonesia Number 205/PMK.08/2017 on the Use of State Property as the Basis for Issuing State Sharia Securities;

- g. Sharia fatwas and opinions issued by the institution authorized to issue Sharia fatwas and opinions, in this case the DSN-MUI as stipulated in Article 25 of Law Number 19 of 2008 concerning SBSN, which reads: In the context of SBSN issuance, the Minister requests a fatwa or statement of SBSN conformity to sharia principles from an institution that has the authority to determine fatwas in the field of sharia.

4.2. Implementation of the State Sukuk Issuance

The inception of national sukuk issuance as a mean to cover budget deficits actually dates back many years before the enactment of the 2008 SBSN Law. The Indonesian government invited Indonesian, Malaysian and Middle Eastern scholars, national and international banking practitioners, as well as constitutional and civil law experts. The stakeholders commented on the opportunities for state-owned sukuk issuance in Indonesia from various aspects of their expertise. The various sources indicated that Indonesia has great potential to develop sukuk for several reasons, including the need for a financial product that can support infrastructure development in addition to closing the budget deficit.

According to the norm, the issuance of State Sukuk requires a legal basis as a legitimate policy. At that time the Sukuk government did not have a legal basis to issue state sukuk. At that time, Law Number 24 of 2002 on Government Securities (SUN Law) did not regulate securities issued in accordance with sharia principles. Several parts of the SUN law were proposed to be amended to suit the need for the issuance of state sukuk. However, this proposal ultimately failed, because in the end sukuk has many things that must be regulated. Therefore, if the SUN Law is changed, it is feared that the articles governing the issuance of State Sukuk will be more dominant than before and obscure the legal basis of SUN.

Finally, the Government was interested in drafting a Bill on the management of State Sukuk at the end of 2007. The Government understands that the characteristics of State Sukuk are different from conventional financial instruments. In drafting the Bill, the Government involved various parties to ensure that the Bill was passed without contradicting the positive laws that have been in force in Indonesia and in accordance with sharia principles.

Some things that require special arrangements and need to be accommodated in the Bill include:

- a. Use contracts (contracts) in accordance with sharia principles. The status of sukuk is different from bonds, where state sukuk is an investment tool and bonds are debt securities. As an investment tool, the readiness of the contract in the Sukuk transaction must be in accordance with Islamic sharia principles. Some

contracts that can be applied for Sukuk issuance are: *Ijarah*, *Murabahah*, *Istishna'*, *Musyarakah*, *Mudharabah*, and *Wakalah*.

- b. The use of State Property (BMN) is the basis for the establishment of State Sukuk. In sukuk issuance, the government requires a decision to issue an asset (the underlying object) whose system is determined by the type of structure or contract used. This arrangement aims to ensure the stability of the asset used to keep the underlying asset safe in ownership.
- c. Establishment of SBSN Issuing Company. In international practice, Sukuk issuance is usually done through a legal entity or a separate entity called a Special Purpose Vehicle (SPV) specifically designed to reissue State Sukuk. This SPV legal entity has not been regulated in positive law in Indonesia. In Indonesia, State-Owned Enterprises (BUMN) and Limited Liability Companies (PT) are forms of legal entities that have developed. But these two legal entities cannot be reconciled with the SPV format, therefore setting special needs in the Bill is necessary.
- d. Trustee. In international best practice, sukuk investors or sukuk holders usually require a party that can act on behalf of their interests called a trustee. In practice, the SPV usually also acts as Trustee for the benefit of sukuk holders. In practice, the SPV Trustee usually acts as the sukuk holder. As with SPVs, until now there is no Indonesian law governing such trusts, so this provision must be specifically regulated in the RUU1.

The implementation of the State Sukuk issuance policy as an instrument for financing the state budget deficit was carried out on August 26, 2008 with the issuance of the *Ijarah Fixed Rate (IFR) 001* series worth Rp2.71 trillion and the *IFR 002* series worth Rp1.98 trillion. This Sukuk uses an *Ijarah Sale and Lease Back* contract structure and uses underlying assets in the form of BMN consisting of land and buildings owned by the Government.

This Sukuk issuance involves various parties, among others: Selling Agents consisting of 5 banks and 8 securities companies, Bank Indonesia as the administration agent for Government Securities, the Indonesian Central Securities Depository (KSEI), and others. In line with the development and strategies implemented by the state budget, the issuance of government sukuk continues to increase from year to year. To compensate for the growing shortfall in the state budget, the government has developed various SBSN tools.

According to data from the Directorate General of Financing and Risk Management (DJPPR) of the Ministry of Finance, during the 13 years of State Sukuk development, the total accumulated issuance reached IDR 1,633.25 trillion. Of that amount, Retail Sukuk offered to individuals has reached IDR 204.61 trillion from 13 Retail Sukuk series. The number of Sukuk Retail investors reached 347,145 people spread across 34 provinces in Indonesia (<https://www.djppr.kemenkeu.go.id>).

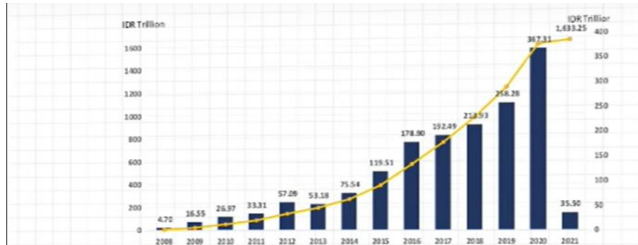


Fig. 1. The development of State Sukuk Value

Figure 1 shows that the issuance of state sukuk by the Government of Indonesia as a source of economic and infrastructure financing is very helpful in several ways. First, state sukuk is an innovation in Islamic financing that places the strategic role of sukuk as an instrument of fiscal policy in Islamic economics. Second, sukuk as a fiscal instrument with great potential continues to experience dynamics and wider expansion towards green sukuk issuance policies. Third, the fiscal instrument in the form of state (green) sukuk issued by the Indonesian government for the first time by Indonesia, the first creator in the Southeast Asian region, shows the position and great potential of the Islamic economy as an alternative source of financing in the midst of a budget deficit due to the large expenditure allocated for refocusing Covid 19. Fourth, Islamic economic instruments through state sukuk and green sukuk issued by the government as a source of green environmental financing have an important role in realizing an environmentally friendly global civilization. Fifth, Islamic economics through state sukuk and green sukuk places Indonesia as a role model in anticipating environmental crises, a pioneer at the forefront of realizing SDGs in the green eligible sectors.

4.3. Investor of Sukuk

The government has issued Green Retail Sukuk since 2019 with the Sukuk Savings series or ST 06, ST07, ST08 with a total of 39,064 individual investors with a nominal amount of 10.57T. The number of investors is dominated by millennial investors amounting to 51.07% of all investors, followed by the baby boomer generation. Data released by the Directorate General of Financing and Risk Management (DJPPR) of the Ministry of Finance shows that the interest of millennials and generation Z in investing in Retail Sukuk/sukuk is increasing.

Table 1 shows the percentage distribution of sukuk investors based on generations and sukuk series (SR13-SR17). There are several parties who become sukuk investors. Firstly, Traditional Generation with the percentage participation which tends to decrease from SR13 to SR17, ranging from 2.5% to 1.3%. It indicates that the traditional generation may be less interested or less involved in sukuk investment over time. Secondly, Baby Boomer Generation. Although the percentage participation of the baby boomer generation decreases from SR13 to SR17, it remains relatively high, indicating that this generation still

constitutes a significant portion of sukuk investors. Their participation percentage ranges from 19.0% to 26.7%. Thirdly, Generation X. The percentage participation of Generation X remains relatively stable or slightly increases from SR13 to SR17, but it stays around 30-35%. It means that they were relatively consistent involvement of this generation in sukuk investment. Fourthly, Generation Y/Millennial. The percentage participation of Generation Y/Millennial shows a significant increase from SR13 to SR17, from 36.6% to 46.8%. It means that they have high interest and involvement in sukuk investment are increasing over time. Overall, there is a shift in the composition of sukuk investor generations from SR13 to SR17, with a significant increase in the participation of Generation Y/Millennials and a decrease in the participation of the Traditional and Baby Boomer generations. This reflects demographic changes and investment preferences over time.

Table 1. SBSN Investor Generation (Directorate General of Financing and Risk Management of the Ministry of Finance, 2022)

Generation	Seri SR/Percentage%				
	SR13	SR14	SR15	SR16	SR17
Traditional	2,5	2,1	2	1,9	1,3
BabyBoomer	26,7	25,8	24,9	23,2	19
X	33,5	34,8	35,3	32,2	30,9
Y/Millennial	36,6	36,4	36	41,3	46,8

Table 1 also shows that the sales of the ST-004, ST-005, and ST-006 Savings Sukuk in 2019 were dominated by the millennial generation (Aditiya, Kelvin, Sari, Fadhilatunisa, 2022). In fact, the number of investors in the sale of the SR-012 Retail Sukuk series was 9,743 investors, dominated by the millennial generation, with 3,856 new investors or 39.58% of the total new investors. The Director of Government Securities (SUN) DJPPR Ministry of Finance, Deni Ridwan (2020) stated that the sales data for the Indonesian Retail Bonds (ORI) series ORI-017 received an injection of new investors from generation Z. A significant increase is seen in the comparison between the ORI-016 series from 0, 22% to 1% in the ORI-017 series (Aditiya et al, 2022).

4.4. Global Market

The government has issued green sukuk in the global market since 2018 and became the first US dollar-denominated sovereign green sukuk issuer in the world. Indonesia also routinely issues global sovereign green sukuk every year starting from a tenor or period of 5 years to 30 years. The distribution of investors in the issuance of green sukuk by the government of the Republic of Indonesia is shown in Table 2.

The data geographically demonstrates the range of distribution of sukuk issued by the Indonesian government in the global market including Middle East and Malaysia,

United States, Europe, Asia, and Indonesia. Each country shows fluctuating interest in sukuk. In 2022, for example, the Asian region dominates at 33% followed by Middle East and Malaysia in second place at 26%. While the United State occupies the third position at 15%.

Table 2. The distribution of investors in the issuance of green sukuk by the government of the Republic of Indonesia (Directorate General of Financing and Risk Management of the Ministry of Finance, 2022)

Year	2018	2019	2020	2021	2022
Islamic (Middle East and Malaysia)	32%	29%	32%	33%	26%
United State	18%	23%	12%	7%	21%
Europe	15%	16%	11%	10%	15%
Asia (Excluding Indonesia)	25%	22%	40%	34%	33%
Indonesia	10%	10%	5%	16%	5%

Based on the data, the government has made extra efforts to deal with contemporary problems such as climate change, carbon emissions, and others through sukuk issuance in two different markets; the global market which is called sovereign green sukuk dan the domestic market. This global sukuk was successfully issued with a value of US\$ 3.5 billion from 2018 to 2021. Since 2018, the Government has issued green sukuk with a value of US\$ 1.25 billion in the domestic market. The yield on the sukuk is 3.75% with a tenor of 5 years. In 2019, the government issued green sukuk worth US\$ 750 million with the highest yield from 2018 to 2021, namely 3.9% with a tenor of 5.5 years. In 2020, the government issued green sukuk worth US\$ 750 million with a yield of 2.3% and 5,5-years tenor that received a good response from green investors, marked by an increase in the amount from around 29% (2018 and 2019) to 34% (2020).

The government re-issued green sukuk worth US\$ 750 million with a yield of 3.55% in June 2021 with a tenor of 30 years as the longest duration in the world. Even so, the level of green investor confidence in green sukuk was very positive, marked by being oversubscribed, which prompted the government to report green sukuk issued and impact report green sukuk.

The results of the issuance of sukuk are used in addition to the climate change mitigation and adaptation sector also covering the development of the blue economy and positive social outcomes. This means that the potential for sukuk as an Islamic financial instrument has a multi-track function; resolution of climate change impacts or green focus, and social focus as discussed by researchers (Rarasati et al., 2014); (Study, 2020); (Suwanan et al., 2021); (Narayan et al., 2022); (Sobol, 2015); (Aassouli et al., 2018); (Hariyanto, 2020); (Endri & Buana, 2022); (Ali, 2019); (Zheng et al., 2021); (Endri & Buana, 2022); (Raeni et al., 2019).

On the other hand, proceeds from the sale of green sukuk are used to refinance several projects, including the 2016 project of 51% and new project financing in 2018 of 49%. This means that green sukuk plays a strategic role in facilitating incomplete development resulting in refinancing, and contributes to the expansion of new project financing as well. The refinancing project is a mitigation action project, financing for the development of 121 renewable energy facilities and infrastructure such as solar power plants, micro hydro and mini hydro power plants, and the construction of environmentally friendly power plants has an impact on reducing 13,044,474-tons of CO₂e. (Green Sukuk-ADB Bu Dir_14Jun2022 Ver 3, n.d.).

These findings are in line with findings from other studies such as Kumar (2022), Pandas (2018), Billah (2021), (Ramadan & Wirnyansih (2020), Siswantoro & Surya (2021), Ebi (2021), Aassouli et al. (2018), (Suwanan et al. (2021), (Mohammed (2022), Moids (2017), and Samir (2019) that concludes that Sukuk has great potentials to become a source of financing for green development projects in Indonesia. The impact report on green sukuk found that there were 23 APBN green projects, 727 double-track developments across the north, 121 construction units for solar, mini-hydro, and micro-hydro power plants, as well as 3.4 million families benefiting from the waste treatment system.

5. Conclusion

This study has the following conclusions: First, the issuance of sukuk as an instrument of Islamic fiscal policy is carried out by the government as an alternative instrument to cover the limited state budget (APBN), which tends to be allocated more for other development sectors. Second, sukuk has been designed so that its issuance has a clear basic foundation and does not conflict with laws and regulations and sharia principles. As an investment tool, the readiness of the contract in the Sukuk transaction must be in accordance with Islamic sharia principles. Some contracts that can be applied for Sukuk issuance are: *Ijarah*, *Murabahah*, *Istishna'*, *Musyarakah*, *Mudharabah*, and *Wakalah*. On this basis, the issuance of sukuk has received positive market responses both in the domestic and global markets. Third, sukuk contributes widely in various sectors of sustainable development in Indonesia.

References

- Aassouli, D., Asutay, M., Mohieldin, M., & Nwokike, T. C. (2018). Green Sukuk, Energy Poverty, and Climate Change: A Roadmap for Sub-Saharan Africa. *Green Sukuk, Energy Poverty, and Climate Change: A Roadmap for Sub-Saharan Africa, December*. <https://doi.org/10.1596/1813-9450-8680>
- Billah, M. M. (2021). *Islamic wealth and the SDGs: Global strategies for socio-economic Impact*.
- Cai, R., & Guo, J. (2021). Finance for the environment: A

- scientometrics analysis of green finance. *Mathematics*, 9(13). <https://doi.org/10.3390/math9131537>
- Chandran, S. (2022). *Going green for sustainable development of libraries*. May.
- Chinchwadkar, R., & Seth, R. (2015). *Effect of Book Building and Auctions on the Exit Choice between IPO and Acquisition*. August. <https://doi.org/10.4236/tel.2015.54054>
- Dasgupta, P. (2018). *Global Population Size and the United Nations ' Sustainable Development Goals*. 1(April), 11–16.
- DJPPR. (2022). *Buletin SSN I: Merawat Harapan dan Memupuk Optimisme Pasca Pandemi*. 2(1), 1–158.
- EFE, A. (2021). İslam Perspektifinden Sürdürülebilir Kalkınma. *Yönetim Ekonomi Edebiyat İslami ve Politik Bilimler Dergisi*, July. <https://doi.org/10.24013/jomelips.777888>
- Endri, E., & Buana, U. M. (2022). *Corporate green Sukuk issuance for sustainable financing in Indonesia “ Corporate green Sukuk issuance for sustainable financing in Indonesia .”* 13(October). [https://doi.org/10.21511/ee.13\(1\).2022.04](https://doi.org/10.21511/ee.13(1).2022.04)
- Endri, E., Hania, B. T., Endri, E., & Hania, B. T. (2022). *Corporate green Sukuk issuance for sustainable financing in Indonesia*. [https://doi.org/10.21511/ee.13\(1\).2022.04](https://doi.org/10.21511/ee.13(1).2022.04)
- Fabiana Meijon Fadul. (2019). 濟無No Title No Title No Title.
- Fasa, M. I. (2016). Sukuk : Teori Dan Implementasi. *Li Falah: Jurnal Studi Ekonomi Dan Bisnis Islam*, 1(1), 80. <https://doi.org/10.31332/lifalah.v1i1.476>
- Gilchrist, D., Yu, J., & Zhong, R. (2021). The limits of green finance: A survey of literature in the context of green bonds and green loans. *Sustainability (Switzerland)*, 13(2). <https://doi.org/10.3390/su13020478>
- Hariyani, H. F., & Kusuma, H. (2020). *Green Sukuk -Based Project on Sustainable Waste Management in Indonesia*. 12(2), 165–178.
- Hariyanto, S. (2012). Penelitian Kualitatif: Metode Penelitian Kualitatif. *Jurnal EQUILIBRIUM*, 5(January), 1–7. <https://doi.org/10.13140/RG.2.2.31432.85767>
- Huang, H., & Zhang, J. (2021). Research on the environmental effect of green finance policy based on the analysis of pilot zones for green finance reform and innovations. *Sustainability (Switzerland)*, 13(7). <https://doi.org/10.3390/su13073754>
- Ivan Rahmat Santoso. (2020). Green Sukuk and Sustainable Economic Development Goals: Mitigating Climate Change in Indonesia. *Global Journal Al-Thaqafah*, 10(1), 18–26. <https://doi.org/10.7187/gjat072020-3>
- Kosovych, B. (2021). Entrepreneurship in Implementation of Sustainable Development Goals. *Intellect XXI*, 1, 2021. <https://doi.org/10.32782/2415-8801/2021-1.7>
- Kumar, S. (2022). *GREEN FINANCING INITIATIVE IN INDIA: CURRENT STATE AND PATH GREEN FINANCING INITIATIVE IN INDIA: CURRENT STATE AND PATH FORWARD*. May.
- Lee, C. C., & Lee, C. C. (2022). How does green finance affect green total factor productivity? Evidence from China. *Energy Economics*, 107. <https://doi.org/10.1016/j.eneco.2022.105863>
- Lee, J. W. (2020). Green finance and sustainable development goals: The case of China. *Journal of Asian Finance, Economics and Business*, 7(7). <https://doi.org/10.13106/jafeb.2020.vol7.no7.577>
- Liu, F. H. M., & Lai, K. P. Y. (2021). Ecologies of green finance: Green sukuk and development of green Islamic finance in Malaysia. *Environment and Planning A*, 53(8), 1896–1914. <https://doi.org/10.1177/0308518X211038349>
- Modak, S., Mondal, T., & Panda, S. (2023). *Cooperatives and the United Nations ' Sustainable Development Goals*. 29–39.
- Mohammed, M. M. (2022). *Opportunity for Islamic Finance in Blockchain Solutions for Climate Change : A Case Study of DCarbonX Model*. October. <https://doi.org/10.33001/M0110202218/105>
- Moid, D. S. (2017). Greening financial markets: country experiences, challenges and opportunities. *NMIMS Journal of Economics and Public Policy*, II(November), 29–42.
- Morea, D., & Poggi, L. A. (2017). *An Innovative Model for the Sustainability of Investments in the Wind Energy Sector : The Use of Green Sukuk in an Italian Case Study*. 7(2), 53–60.
- Mubarrak, H. (2022). *RETAIL GREEN SUKUK IN INDONESIA : TOWARD A MAQASHID APPROACH Development Bank (IDB) expressed concern about issuing green sukuk among its member countries during the United Nations Global Warming Conference (COP 21) in Paris . Recently , the IDB has f. 11(1), 208–228*. <https://doi.org/10.22373/share.v11i1.12460>
- Musari, K. (2022). *Green Sukuk , Dari Indonesia Untuk Dunia*. January.
- Narayan, P. K., Rizvi, S. A. R., & Sakti, A. (2022). Did green debt instruments aid diversification during the COVID-19 pandemic? *Financial Innovation*, 8(1). <https://doi.org/10.1186/s40854-021-00331-4>
- Obaidullah, M. (2018). Managing Climate Change: The Role of Islamic Finance. *SSRN Electronic Journal*, January. <https://doi.org/10.2139/ssrn.3303687>
- Raeni, Thomson, I., & Sundström, A. (2019). Boundary Objects: Sustaining Impact of Green Sukuk Life Cycle to Address Climate Change Issue. In *Blending Islamic Finance and Impact Investing for The SDGs* (Issue December).
- Ramadhan, I. A., & Wirdayaningsih. (2020). *Green Sukuk Issuance as an Investment Instrument for Sustainable Development*. 413(Icolgis 2019), 95–98. <https://doi.org/10.2991/assehr.k.200306.189>
- Rarasati, A. D., Trigunaryah, B., & Too, E. (2014). The opportunity for implementing islamic project financing to the Indonesian infrastructure development. *Contemporary Studies in Economic and*

- Financial Analysis*, 95(August), 103–116. [https://doi.org/10.1108/S1569-3759\(2014\)0000095015](https://doi.org/10.1108/S1569-3759(2014)0000095015)
- Renewable Energy and Environment in the Context of Sustainability.pdf*. (n.d.).
- Risanti, M. A., Alwyni, F. A., & Nadya, P. S. (2020). Peran Green Sukuk dalam Mewujudkan Pembangunan yang Berkelanjutan. *Prosiding Konferensi Nasional Ekonomi Manajemen Dan Akuntansi (KNEMA)*, 1177, 1–13. <https://jurnal.umj.ac.id/index.php/KNEMA/article/view/9072>
- Saeed Meo, M., & Karim, M. Z. A. (2022). The role of green finance in reducing CO2 emissions: An empirical analysis. *Borsa Istanbul Review*, 22(1). <https://doi.org/10.1016/j.bir.2021.03.002>
- Samir, N. (2019). 'Green sukuk' may support equality in development *Adidas : Beyond craze for dad sneakers. August*.
- Shaikh, Z. (2018). Towards Sustainable Development: A Review of Green Technologies. *Trends in Renewable Energy*, 4(1), 1–14. <https://doi.org/10.17737/tre.2018.4.1.0044>
- Siswanto, D. (2018). Performance of Indonesian green sukuk (islamic bond): A sovereign bond comparison analysis, climate change concerns? *IOP Conference Series: Earth and Environmental Science*, 200(1), 0–6. <https://doi.org/10.1088/1755-1315/200/1/012056>
- Siswanto, D., & Surya, H. V. (2021). Indonesian Green Sukuk (Islamic Bond) of climate change: A revisited analysis. *IOP Conference Series: Earth and Environmental Science*, 716(1). <https://doi.org/10.1088/1755-1315/716/1/012044>
- Sobol, I. (2015). Islamic Banking in the European Union Countries. *European Integration Studies*, 0(9). <https://doi.org/10.5755/j01.eis.0.9.12806>
- Spencer, J. (2021). The sustainable development goals. *Design for Global Challenges and Goals, November*, 12–25. <https://doi.org/10.4324/9781003099680-3>
- Study, A. C. (2020). *Analisis Peluang dan Ancaman Produk Pasar Modal : Studi Kasus Sukuk di Indonesia Analysis on Opportunities and Threats of Capital Market Products : Analisis Peluang dan Ancaman Produk Pasar Modal : Studi Kasus Sukuk di Indonesia Analysis on Opportunities . July*.
- Triantafyllidis, S., & Tortora, M. (2022). Sport and the United Nations sustainable development goals. *Sport and Sustainable Development, November*, 54–71. <https://doi.org/10.4324/9781003128953-4>
- Vejaratnam, N., Mohamad, Z. F., & Chenayah, S. (2020). A systematic review of barriers impeding the implementation of government green procurement. In *Journal of Public Procurement* (Vol. 20, Issue 4). <https://doi.org/10.1108/JOPP-02-2020-0013>
- Vodicka, J., & Ph, D. (2022). *Green Deal and the Transport Sector Green Deal and the Transport Sector. February*.
- Xiong, Q., & Sun, D. (2022). Influence analysis of green finance development impact on carbon emissions: an exploratory study based on fsQCA. *Environmental Science and Pollution Research*. <https://doi.org/10.1007/s11356-021-18351-z>
- Zheng, G. W., Siddik, A. B., Masukujjaman, M., & Fatema, N. (2021). Factors affecting the sustainability performance of financial institutions in Bangladesh: The role of green finance. *Sustainability (Switzerland)*, 13(18). <https://doi.org/10.3390/su131810165>