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Green Sukuk For Sustainable Development Goals in Indonesia: A Literature Study

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Abstrak

Realizing green economy requires extensive considerable funding, especially for renewable energy projects. This problem then encourages stakeholders to create financial instruments that focus on funding projects that are following the Sustainable Development Goals (SDGs). One of the financial instruments developed is green sukuk, an innovative form of environmentally friendly funding. The results showed that the green sector financed by sovereign green sukuk funds was following maqahid shariah in the al-kulliyah al-khamsah frame, namely guarding religion (hifdzu ad din), guarding the soul (hifdzu an Nafs), guarding reason (hifdzu aql), guarding offspring (hifdzu an nasl) and guarding property (hifdzu al Maal). The potential for green sukuk issuance can be seen from the increasing awareness of investors about the importance of environmental conservation. The involvement of influential entities such as the government and the United Nations in the development of green sukuk indicates the potential of this instrument. The challenges of issuing green sukuk include a higher risk profile because it involves high, new, and sophisticated technology. In addition, green sukuk is not a simple transaction because it involves a large number of funds, so that checks and balances are needed and proper monitoring. In order to achieve the Sustainable Development Goals, green sukuk can be used to conserve the environment and natural resources, save energy, promote the use of renewable energy and reduce the impact of greenhouse gas emissions.

Keywords: *Green Sukuk, Sustainable Development Goals (SDGs)*

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1. INTRODUCTION

Environmentally based economic growth or popular now as green economic growth has become a concern for countries in the world. The commitment to environmental-based economic development is contained in the 2015 Paris Agreement, which is an agreement to save and conserve natural resources and reduce the negative impacts of climate change. The realization of a green economy requires large funding, especially for renewable energy projects. This problem then encourages stakeholders to create financial instruments that focus on funding projects that are following the principles of Environment, Social, and Governance (ESG) and the achievement of Sustainable Development Goals (SDGs).

The concept of Sustainable Development Goals (SDGs) was ratified and introduced during the general assembly of the United Nations (UN) on September 25, 2015, in the United States. The SDGs include seventeen (17) goals and focus on development for countries around the world. For developed countries, the SDGs are used to reduce inequality and excessive consumption and production. As for developing countries, the SDGs are an effort to reduce poverty levels while improving the quality of health, education, protection of marine and forest ecosystems, sanitation, and availability of drinking water (Hoelman et al., 2015). Before the SDGs were formulated, countries in the world had agreed on the importance of financing (financing) as the key to the successful implementation of sustainable

development throughout the world, both developing and developed countries. This commitment is contained in the Addis Ababa Action Agenda (AAAA) issued in July 2015 at the United Nations Third International Conference on Financing for Development. This agenda was attended by 174 countries and private institutions such as development banks, United Nations organizations, economic commissions, and non-governmental organizations (United Nations, 2015).

One of the financial instruments developed is the green bond. Green bonds are securities issued by companies or governments to fund projects that are included in the eligible green category (ICMA, 2018). These bonds can be issued by the government and corporate entities, both financial and non-financial sector companies to obtain funding for environmentally friendly projects. Although it has the same financial characteristics as bonds in general, the issuance of green bonds must refer to certain certificates, such as green bond principles (GBP).

In addition to green bonds, green sukuk is another form of innovation from environmentally friendly funding. Based on the Accounting and Auditing Organization for Islamic Financial Institutions (AAIOFI) Sharia Standard, sukuk itself is defined as a certificate of ownership that has the same value and represents an undivided share of ownership of a tangible asset, usufruct value (asset benefits), and service (services), or ownership of assets from a particular project or investment activity. Similar to bonds, sukuk can also be issued by companies (corporate sukuk) and corporations (sovereign sukuk). There are two countries that have issued green sukuk are Malaysia and Indonesia.

Table 1. Issuance of Green Sukuk in the World

Issuer Name	Country	Issue Date	Currency	Amount Issued (USD Million)	Use of Proceeds
Tadau Energy Sdn Bhd	Malaysia	Jul-2017	MYR	58	Energy
Quantum Solar Park (Semenanjung) Sdn Bhd	Malaysia	Oct-2017	MYR	236	Energy
PNB Merdeka Ventures Sdn Bhd	Malaysia	Dec-2017	MYR	481	Buildings
Mudajaya Group Berhad (Sinar Kamiri Sdn Bhd)	Malaysia	Jan-2018	MYR	63	Energy
Indonesia Government	Indonesia	Mar-2018	USD	1,250	Green Projects
UiTM Solar Power Sdn Bhd	Malaysia	Apr-2018	MYR	57	Energy
Indonesia Government	Indonesia	Feb-2019	USD	750	Green Projects
Telekosang Hydro One Sdn Bhd	Malaysia	Jun-2019	MYR	115	Renewable Energy
Indonesia Government	Indonesia	Nov-2019	IDR	103	Green Projects

Sources: Bloomberg & Kementerian Keuangan RI

In Indonesia, the government through the Ministry of Finance has issued three series of green bond instruments with a green sukuk structure. Green sukuk are green bond instruments issued in accordance with Islamic Sharia principles. The first green sukuk were global sukuk issued in 2018 worth USD 1.25 billion. In November 2019, re-issued retail green sukuk through the ST-006 series. Specifically, this sukuk only targets sales to domestic retail investors in the territory of the Republic of Indonesia. The issuance managed to absorb IDR 1.4 trillion and was dominated by investors from the millennial circle (Ministry of Finance Republic of Indonesia, 2019).

In the context of usage, the proceeds from the issuance of green sukuk are exclusively used for financing or re-financing expenditures directly related to "Eligible Green Projects" or "Eligible Green Projects." The Green Project Criteria itself refers to the Green Bonds Principles, namely projects that promote the transition to low-emissions economic growth and climate resilience. The results of this publication will be used to finance projects in five sectors, namely resilience to climate change for disaster-prone areas, sustainable transportation, energy and waste management, sustainable agriculture, and renewable energy spread across various ministries or agencies (Ministry of Finance Republic of Indonesia, 2019). In this case, the government uses the green framework as a benchmark in allocating green sukuk financing to green projects that promote low-emissions transitions, growth in economic resilience, and climate. The nine sectors covered by the green framework are renewable energy, sustainable transportation, sustainable natural resource management, green tourism, sustainable agriculture, waste, and energy management, energy efficiency, and resilience to the impacts of climate change.

Based on the description above, the researcher feels it is important to conduct a literature search with a focus on the interaction of green sukuk issuance and sustainable development goals in Indonesia. This research will reveal how the interaction of green sukuk and sustainable development goals in Indonesia.

2. THEORITICAL

The Sustainable Development Goals (SDGs) have a commitment to improving the environment which is stated in 6 essential elements, namely: Planet, People, Dignity, Prosperity, Justice, and Partnership. These six elements are used to build conditions for a just and prosperous society, because logically there are many developments that damage the environment,

resulting in inequality in society, and resulting in poorer and hungry people (Pelaksanaan Pencapaian Tujuan Pembangunan Berkelanjutan, 2017). The SDGs aim to repair the impact of the damage that has occurred with the emphasis being achieved through inter-country and inter-sectoral partnerships.

Sustainable Development Goals (SDGs) are development that maintains sustainable improvement of the economic welfare of the community, a development that maintains the sustainability of community social life, a development that maintains environmental quality and development that ensures justice and the implementation of governance capable of maintaining improving the quality of life from one generation to the next. The TPB/SDGs are global and national commitments in an effort to improve the welfare of the community, covering 17 goals, namely: (1) No Poverty; (2) No Hunger; (3) Healthy and Prosperous Life; (4) Quality Education; (5) Gender Equality; (6) Clean Water and Proper Sanitation; (7) Clean and Affordable Energy; (8) Decent Work and Economic Growth; (9) Industry, Innovation, and Infrastructure; (10) Reducing Gaps; (11) Sustainable Cities and Settlements; (12) Responsible Consumption and Production; (13) Climate Change Management; (14) Ocean Ecosystems; (15) Mainland Ecosystems; (16) Peace, Justice and Strong Institutions; and (17) Partnerships to Achieve Goals (Risanti et al., 2021).

The background of the emergence of green financial instruments with sharia principles in Indonesia is due to two conditions. First, the Republic of Indonesia in the Paris Agreement has committed itself to efforts to reduce global greenhouse gas emissions through the National Determined Contribution (NDC) agreement. Second, there are similar instruments that have been implemented such as the initiation by the Malaysian Securities Commission (SC) in 2017 and known as Sustainable and Responsible Investment (SRI). Prior to SRI, there was already a Legendre Patrimoine company in France that published Orasis Sukuk which focused on the development of solar panel energy (Hamzah, 2015). These two conditions encourage Indonesia to create a similar instrument. So that in March 2018, sukuk was issued on the global market (Global Sukuk). The allocation to the environment of 1.25 billion US Dollars makes Indonesia "the world's first sovereign green sukuk".

The Green Bond Principles are guidelines in the criteria for projects that are eligible to be financed. The World Bank appointed the Center for International Climate and Environmental Research at the University of Oslo (CICERO) which is tasked with providing opinions and guidelines for selecting projects that comply with investment requirements in Green Bonds (Hariyanto, 2017). In Indonesia, CICERO as the “Second Opinion” evaluates the Green Bond and Green Sukuk Framework. The framework serves to explain climate change alleviation programs from project determination to impacts. Overall, this framework is divided into four components, namely:

a. Use of Proceeds, at this stage the issuance of each Green Bond or Green Sukuk can only be used on “Eligible Green Projects” which are divided into nine sectors,
b. Project Evaluation and Selection Process, at this stage a selection of nine sectors is carried out which is divided into two activities, namely the determination of mitigation or adaptation activities using the "Budget Tagging Process" system.
c. Yield Management, at this stage each Green Bond or Green Sukuk proceeds placed in the government's general account will be disbursed to the technical ministry
d. Reporting, at this stage the government publishes information regarding the use of Green Sukuk or Green Bonds containing (a) List of projects, (b) Amount of funding and (c) Estimated impact

3. METHODOLOGY

This study uses a literature study approach to answer the research objectives. The literature study conducted in this study is a form of research conducted by collecting journal articles with the same theme according to the research objective, namely the Islamic view of electronic money. This research was assisted by Publish or Perish software to compile relevant journal articles and then carry out the content analysis. The important point of content analysis is to find out the content and intent of a text. Content analysis is a research technique to produce an objective and systematic description of the content contained in the media under study (Zuchdi, 1993). Content analysis in this study is interpreted as a systematic technique to analyze the meaning of messages and how to express messages related to the

interaction of green sukuk issuance with sustainable development goals (SDGs).

The content analysis technique is carried out by carrying out three main stages, namely: 1) The data reduction stage, where the data obtained from journal articles is reduced, summarized, and selected the main things and focused on important things and arranged systematically according to the objectives. research so that the data becomes easier to understand and control. 2) The data display stage, which displays the information obtained as a result of data reduction that allows for conclusions to be drawn and data collection in accordance with the research objectives. 3) The conclusion or verification stage where the researcher looks for the meaning of the data collected and draws more basic conclusions in accordance with the research objectives (Moleong, 2006).

4. RESULTS AND DISCUSSION

4.1. Results

The researcher's literature search was carried out using Harzing's Publish or Perish (POP) application. The search results using the keyword "green sukuk" without being limited by the time span of the year, found there were 13 journal articles whose studies were related to green sukuk, where the journals were published in the period 2017-2021.

Based on the search results above, the researchers further grouped the articles based on the focus of their respective studies, after being grouped, the researchers then conducted content analysis on relevant journal articles in answering the objectives of this study. As for the results of the research, articles can be grouped into 3 categories, namely: (1) Articles that discuss green sukuk in the Maqashid Shariah Perspective, (2) Articles that focus their studies on the potential and challenges of green sukuk issuance, and (3) Articles discussing the use of green sukuk as an instrument of Sustainable Development Goals (SDGs).

The first category of articles discussing green sukuk in the maqashid shariah review starts from a journal article (Rohmah et al., 2020), which examines Indonesia's sovereign green sukuk in the Maqashid Shariah review. The author of this article states that green sukuk, especially in Indonesia, must pay attention to the objectives of implementing Sharia in practice. It is not only legal in Sharia, but must accommodate maslahah and its benefits for the Indonesian people as an actualization of the maqashid shariah concept. In this regard, based on the report of the Ministry of Finance on sovereign green sukuk and green sector financed by sovereign green sukuk funds, it was found that 5 (five) green sectors financed by sovereign green sukuk were in accordance with maqahid shariah in the frame of al-kulliyah al-kulliyah khamsah namely guarding religion (hifdzu ad din), guarding the soul (hifdzu an Nafs), guarding the mind (hifdzu aql), guarding offspring (hifdzu an nasl) and guarding property (hifdzu al Mal).

The green sector in question is the renewable energy sector; resilience of risk and disaster-prone areas/sectors; sustainable transportation; waste processing into energy and others; and sustainable agriculture. The five green sectors are a tangible manifestation of the government's steps to protect the environment (hifz al-bi'ah) in the midst of climate change in order to achieve sustainable development. Besides that, protecting the environment is included in the commands of Allah SWT contained in the Quran such as Q.S Al-Baqarah: 11, 22, 27, 60, 251, and others. Thus protecting the environment is part of practicing Islamic teachings that must be carried out by Muslims. The next article (Nehal, 2021), this article actually examines green sukuk as an alternative instrument for developing sustainable energy projects in Pakistan, but this article also emphasizes that green Islamic bonds are investments in environmental assets and renewable energy in accordance with Sharia law.

The next journal articles fall into the second category, namely those that focus their studies on the potential and challenges of issuing green sukuk. The article (Suherman et al., 2019), identified the potential of the green sukuk market of the Republic of Indonesia by using several indicators as a basis for determining the potential of the green sukuk market. The indicators used are:

Table 2 Indicators of Green Sukuk Market Potential

No.	Market Potential Indicators	Results
1	Projection of the issuance of Sovereign Sukuk 2019-2029	The projection results show that in 2029 the Government of Indonesia will issue Sovereign Sukuk amounting to Rp 419 trillion
2	Projection of Green Bond issuance 2019-2029	The projected result of green bond issuance in 2029 will increase to USD 339.38 million
3	Historical analogy based on green bond data	The development trend of green bond issuance in the world has become the primary model in

No.	Market Potential Indicators	Results
		identifying the green sukuk market
4	Historical analogy for the percentage of distribution of SNI investors	The demand for foreign investors has increased positively every year
5	Historical analogy for the domestic Sovereign Sukuk market	The total number of domestic Sukuk investors in 2018 reached 271,179 people
6	Contribution of green sukuk to development	In order to realize the commitment to climate change, green sukuk issued by the government have contributed 16.7 trillion

Based on the table above, it can be stated that: (1) The projected results of the issuance of state sukuk as shown in the table above do not rule out the possibility that several percent of them are green sukuk issuances globally. If you look at the case of Indonesian State Sukuk (SNI) or sukuk issued on the international market since 2016, the government of the Republic of Indonesia has always issued 2 types, namely SNI with a tenor of 5 years and 10 years. The green sukuk issued in 2018 is a type of SNI with a tenor of 5 years. If this is consistently carried out by the government of the Republic of Indonesia, in 2029 the green sukuk instrument will contribute more funds to sustainable development in Indonesia. (2) The significant increase in green bond issuance reflects the growing interest of investors in green bond instruments every year.

Therefore, it can be analogous to the green sukuk market in the world that in the future will experience the same thing because these two instruments have properties and characteristics that concentrate on alleviating the problem of climate change. It's just that in green sukuk, apart from having to follow the green framework, they are also required to comply with Sharia principles. (3) The distribution of green sukuk investors (5-year tenor SNI) issued globally in 2018 shows that Middle East investors are more interested than other regions with a percentage of 32%, followed by Asian regional investors at 25%, America at 15%, Indonesian investors by 10% and the European region by 10%. (4) Reviewing the domestic market conditions for the issuance of retail sukuk and savings sukuk with a total number of 271,179 investors, if it is analogous to the issuance of green sukuk, it will certainly become a potential green sukuk market in the domestic market. (5) The total value of projects financed using green sukuk in 2018 was IDR 16.75 trillion, the projects are spread across 5 sectors namely renewable energy, climate resilience for vulnerable areas and disaster risk reduction, sustainable transportation, waste into energy and management waste, and sustainable agriculture.

Another article that examines the potential of green sukuk (Tabassum et al., 2019), which explains several things that can become potential for green sukuk, namely: (1) The idea of maintaining the environment, protecting air, water and soil and the ecosystems that depend on them are essential in Sharia principles. (2) The asset-based sukuk structure and green bond complement each other because they provide investors with a high degree of certainty that the funds raised are only used for the specified purpose. Such clarity will attract greater investment in the market. (3) Investors are not limited to Muslim investors, because their main goal is to contribute to economic, social, and environmental benefits. (4) The United Nations Development Program (UNDP) has collaborated with Bank Indonesia to ensure the implementation of reporting so that investors know what their money is used for. (5) The involvement of influential entities such as the government and the United Nations in the development of green sukuk indicates the potential of this instrument that can be utilized to its full potential.

Yulia Anggraini in a study that examines the role of sukuk in strengthening Indonesia's position in the global Islamic financial market. This article shows that the issuance of green sukuk can be a means of developing an investor base because currently there are corporate and individual investors who are very concerned about environmental issues. Indonesia is listed as a pioneer in the issuance of green bonds in the Southeast Asia Region through the issuance of green sukuk worth US$1.25 billion in March 2018. This transaction is the world's first sovereign green sukuk issuance in the world (the world's first sovereign green sukuk). In addition to further strengthening Indonesia's position in the global Islamic financial market, the issuance of green sukuk is also a manifestation of Indonesia's commitment to the Paris Agreement which was ratified in 2016 in order to encourage Indonesia to become a lower carbon country and be resistant to climate change. The government's green sukuk recorded excess demand, therefore in the future green sukuk will be eligible to be issued again

because they are considered quite efficient (Anggraini, 2018).

The next article that describes the challenges of issuing green sukuk, begins with the article , this article states that there are 8 challenges faced by green sukuk. (1) Critical scholars are of the opinion that most Islamic financial instruments are just replicas of conventional finance and therefore the products are labeled as Shariah-compliant. (2) The green label only indicates that the results will create some environmental benefits, while the quality and amount of these benefits are uncertain. This poses a risk of violating one of the principles of Islamic finance, namely avoiding gharar transactions (uncertainty) because the results are not sufficiently measurable. With green sukuk, there is always a risk of violating the gharar as the greenish nuance is not defined as there is no standard by which to do so. (3) Appropriate regulatory frameworks can help Islamic Institutions capitalize on the increasing demand for socially responsible investments but the current structure of guidelines does not appear to be sufficient. This is due to the lack of involvement of Islamic scholars in developing a strong regulatory framework in the face of the rapidly growing dynamics of the green sukuk market. (4) To meet green bond specifications and at the same time comply with Islamic principles, the structure of a green sukuk may involve a lot of complexity. The complexity of the sukuk structure is another obstacle to the development of the sukuk market. (5) Increasing capital through sukuk requires careful consideration and due diligence on the underlying assets that will be used to increase financing through sukuk. (6) The secondary market for green sukuk is very small due to the small number of investors holding sukuk funds, while investors need a strong secondary market to meet investors' liquidity expectations. (7) The higher risk profile associated with green sukuk can be a threat because environmentally oriented projects are associated with advanced technology. (8) The tendency of variations in standardizing green bond criteria will create difficulties in the due diligence process for investors due to difficulties in identifying and comparing the level of environmental impacts between projects.

Safaraz Nehal studied green sukuk as an alternative instrument for developing sustainable energy projects in Pakistan also stated that there are 6 (six) challenges to green sukuk in the context of the Islamic capital market, namely: (1) Green sukuk are faced with a higher risk profile because they involve technology. a new and sophisticated high-end market, (2) Islamic capital market development in Pakistan needs to be carried out and green sukuk can be a viable alternative, (3) The secondary market is small, while investors need a strong secondary market to meet investors' liquidity expectations, (4) Not yet existence of a standard and verification system for measuring the performance of green sukuk, (5) Through green sukuk, cheap and sustainable energy can be made available to all consumers which will reduce poverty and reduce inequality to a higher level, (6) Green sukuk is not a simple transaction because it involves a large number of funds so that checks and balances are needed as well as proper tracking. The way the sukuk works must also be monitored (Nehal, 2021).

Furthermore, the third category is articles that discuss the use of green sukuk as an instrument for Sustainable Development Goals (SDGs). Beginning with the article by (Wibisono, 2021), who conducted a study on Green Sukuk as an Instrument to Achieve Sustainable Development Goals through Waste Management. This article states that waste management uses an Intermediate Treatment Facility approach (Waste Power Plant) with a financing instrument. green sukuk are able to support Indonesia to achieve the following Sustainable Development Goals: (1) The 12th SDGs target 5th, the national recycling rate with an indicator of the amount of waste heap recycled (reduced/processed). (2) The 8th SDGs in the 4th target, increasing the efficiency of global resources, as well as efforts to unlink economic growth from environmental degradation, in accordance with the 10-year Framework of Programs on Sustainable Consumption and Production until 2030 with indicators of the Sustainable Plan Consumption and Production. (3) The 7th SDGs goal in the 2nd target, substantially increase the share of renewable energy in the global energy mix by 2030 with indicators of the renewable energy mix and installed renewable electricity capacity.

The next paper (Abdullah & Nayan, 2020), this article aims to identify the contracts used for the issuance of green sukuk and the categories of development projects that can be funded from green sukuk in Malaysia. The Securities Commission (SC) introduced green sukuk issuance requirements and guidelines outlining how green sukuk products can be used to conserve the environment and natural resources, conserve energy, promote the use of renewable energy and reduce the impact of

greenhouse gas emissions. Project categories that are aligned with Sustainable and Responsible Investment (SRI) are:

Table 3 Project Categories in the Green Sukuk Plan

Natural Resources	Renewable Energy	Economic Development and Community	Waqh Asset
Use of sustainable land	New renewable or existing energy	Public/medical services	Property /asset development
Sustainable forestry or agricultural	Powerful power generation and transmission systems	Public education services (Eg: Sukuk Ihsan by Khazanah Nasional Bhd)	
Biodiversity preservation	Power generating system and efficient transmission of Energy efficiency resulting in the reduction of greenhouse gas emissions or energy consumption per unit output	Community services	
Recovery and redevelopment of contaminated sites		Urban revitalization	

Sumber: Mohamed Azam Adil (Royal Chulan KL, 11 April 2019)

Meanwhile, the contracts used for the issuance of green sukuk are:

Table 4 Contracts Used for Issuance of Green Sukuk

Company-Project	Contract Used
SRI Green Sukuk Tadau (Solar photovoltaic construction)	*Ijarah mawsufah fi al-zimmah*/Hybrid (*istisna'* (manufacturing sale) and *ijarah* (leasing)
BEWG (M) Sdn. Bhd. (Solar photovoltaic)	The *wakalah* sukuk
The Sarawak Green Hydro Sukuk	Sukuk *murabahah* contract. Sukuk Murabahah refers to an exchange contract based on a sale and purchase contract with fixed fees and profits. Murabaha Sukuk are usually used to buy goods by the public sector
Sukuk Ihsan (Khazanah Bhd)	*Wakalah bil Istithmar*

Based on the example of the sukuk above, it was found that green sukuk can be arranged through various contracts, depending on the type of project to be financed by the green sukuk. The impact of green sukuk will not only be felt by investors but will also benefit the general public, in the end, nature conservation will continue to be enjoyed by future generations.

Morea and Poggi in their article examine an innovative model of sustainable investment in the wind energy sector using green sukuk in Italy. This article presents an economic and financial analysis of wind energy sector investment by evaluating its profitability and bankability with the criteria of Net Present Value (NPV), Internal Rate of Return (IRR), WACC, Annual Debt Service Cover Ratio (ADSCR) and Annual Loan Life Cover Ratio (ALLCR). The results of the analysis show that the NPV level is negative and the ADSCR and ALLCR indicators are outside the expected range, investment recovery can be guaranteed only by reducing costs by building wind farms. The analysis was also carried out using conventional bank interest models on conventional bank loans compared to using green sukuk. In fact, in conventional finance scenarios, the cost threshold that would guarantee investment recovery yields negative returns, whereas in Islamic finance it produces better bankability indicators, reducing the gap between the current situation and profitable and bankable projects. Therefore, the financing model introduced is to use an Islamic financial instrument, namely the green sukuk. The most basic difference from this Islamic financial instrument is that it does not include interest, but commissions (2% of the sukuk investment in the case study). This model is presented as an alternative to financing renewable energy projects (Morea & Poggi, 2017).

Hariyani and Kusuma in their article aim to find the best alternative sukuk strategy to be applied in financing municipal waste management using the Analytic Network Process (ANP) with the Benefit, Opportunity, Cost, Risk (BOCR) analysis network. This article states that implementing green sukuk as a

financing for sustainable waste management in Indonesia has three benefits, namely: 1) Diversification of financing, 2) Reduction of waste, 3) Job opportunities. Meanwhile, the available opportunities are: 1) Alternative energy, 2) Sukuk liquidity will increase, 3) Increasing the role of Islamic finance. The potential costs include 1) Expensive technology, 2) large state property, 3) Increased burden on the state budget (APBN). Meanwhile, the risks include 1) Lack of community participation and awareness, 2) Lack of support from local government, and 3) Moral hazard and human error. The alternative strategy cluster includes: 1) Integrated sustainable waste management, 2) Increasing the role of stakeholders, 3) Sustainable financing. The priority in terms of benefits is diversification of financing. The priority of the opportunity is the existence of alternative energy sources, while the priority of the cost is the high cost in technology, management, and maintenance. Furthermore, the main priority of risk is the lack of community participation and public awareness. The last is the strategy cluster which becomes the main priority is integrated sustainable waste management (Hariyani et al., 2020).

Meilani and Muljaningsih in their article explain that the availability of energy is closely related to increasing the productivity of a country, as recorded in the history of the industrial revolution. However, without realizing it, primary energy, which became the main raw material for energy providers at that time, had a terrible impact for the following years. In 2015, a reference for development targets was established, namely the Sustainable Development Goals (SDGs) which cover the economy, social, and environment as a form of climate mitigation efforts. One of the targets to be achieved in the SDGs is the development of clean energy infrastructure. In Indonesia, the development of clean energy infrastructure has been carried out, especially in the water sector because there is at least 75,000MW of water energy potential that can be developed. However, several obstacles such as limited infrastructure and high investment costs are obstacles to the development of this energy. For this reason, an Islamic financial instrument is offered as a form of support for financing these environmentally friendly projects, namely the Green Sukuk (Meilani, 2017).

PT. Indonesia Power is the largest provider of electrical energy for the Java-Bali System, which also has two Hydroelectric Power Plants (PLTA) and is also planning to develop development in this sector. When viewed from the project side, the results of the analysis show that the Net Present Value (NPV), Internal Rate of Return IRR, and B/C Ratio are positive. This positive result means that the project can be declared capable or feasible because the benefits to be obtained are greater than the costs. When viewed from the type of project, the Hydroelectric Power Plant (PLTA) project will be developed by PT. Indonesia Power is included in the renewable energy development project. If the company issues a sukuk, the project will become the underlying or basis for the sukuk issuance. So that the project is included in the category of projects that can be funded by Green Sukuk.

4.2. Discussion

Green sukuk emerged as initiatives and innovations from developed countries where people are aware of high sustainable development, sustainable development not only prioritizes economic improvement but how economic activities can ensure the use of natural resources that are healthy and not excessive but get good results maximum. Thus, Islamic financial instruments have the opportunity to contribute to sustainable development. The principles of Islamic finance substantially have the concept of environmentally friendly sustainable development. The Qur'an opposes the forms of actions that cause mischief on earth (Surah 38:27-28, QS 30:41).

In Indonesia, the government through the Ministry of Finance has issued three series of green bond instruments with a green sukuk structure. Green sukuk are green bond instruments issued in accordance with Islamic Sharia principles that are in line with *maqahid shariah* in the *al-kulliyah al-khamsah* frame, namely guarding religion (*hifdzu ad din*), guarding the soul (*hifdzu an Nafs*), guarding reason (*hifdzu aql*), guarding offspring (*hifdzu an nasl*) and guarding property (*hifdzu al maal*). The green sector in question is the renewable energy sector; resilience of risk and disaster-prone areas/sectors; sustainable transportation; waste processing into energy and others; and sustainable agriculture. The five green sectors are a tangible manifestation of the government's steps to protect the environment (*hifz al-bi'ah*) in the midst of climate change in order to achieve sustainable development.

Green sukuk is very important to be used in Indonesia considering that this country is one of the countries with a high level of vulnerability to disasters. Natural disasters that often occur in Indonesia are hydrometeorological disasters, the increase of which is caused by an increase in climate change due to continuous development that does not pay attention to the environment. The increasing number of sustainable development that does not pay attention to the environment will affect climate change so that it will cause drought and flooding. And then it will have an impact on the economy.

In Indonesia, sustainable development issues are related to welfare, education and the environment, all of which require proper handling for sustainability for the entire Indonesian nation. Issues of social inequality, inadequate wages, overlapping with problems of low education, ultimately having an impact on environmental awarenes). Environmental problems are increasingly becoming a significant problem in Indonesia with a disaster occurrence rate of 80%, 17.4% of areas in DKI Jakarta are flooded, 3.9 million people experience drought disasters, 3-5% increase in the risk of disease outbreaks and the fact that 9,82% of the Indonesian population live below the poverty line due to the impact of the disaster (Ministry Finance of the Republic of Indonesia).

The Government of Indonesia, seriously shows its commitment to the implementation of sustainable development through Law number 16 of 2016 concerning Ratification of the Paris Agreement To The United Nations Framework Convention on Climate Change (Paris Agreement), with one of the benefits of increasing recognition of national commitments in reducing emissions from various sectors, forest conservation, increasing renewable energy and the participation of local communities and indigenous peoples in controlling climate change that Indonesia has been fighting for (Law Number 16 of 2016), with various mitigation, adaptation, and biodiversity strategies being carried out. Although this policy still leaves a number of problems, such as the problem of implementing renewable energy which has a high investment with a high-risk profile. The funding requirement for this commitment is approximately USD 81 billion (Ministry of the Finance Republic of Indonesia).

Answering these problems, the innovation of green sukuk adapted from green bonds is the solution. With the large funds raised from the sale of sukuk, the government or companies can finance projects related to renewable energy or other projects in accordance with the commitments to implement the Paris Agreement. It is hoped that these environmentally friendly projects can bring Indonesia to a more decent level of life for humanity which in turn improves the living standards of the Indonesian people through food security and a livable environment (Ministry of Finance Republic of Indonesia).

5. CONCLUSION

Realizing a green economy requires considerable funding, especially for renewable energy projects. This problem then encourages stakeholders to create financial instruments that focus on funding projects that are following the Sustainable Development Goals (SDGs). One of the financial instruments developed is green sukuk, an innovative form of environmentally friendly funding. The results showed that the green sector financed by sovereign green sukuk funds was following *maqahid shariah* in the *al-kulliyah al-khamsah* frame, namely guarding religion (*hifdzu ad din*), guarding the soul (*hifdzu an Nafs*), guarding reason (*hifdzu aql*), guarding offspring (*hifdzu an nasl*) and guarding property (*hifdzu al maal*). The green sector in question is the renewable energy sector; resilience of risk and disaster-prone areas/sectors; sustainable transportation; waste processing into energy and others; and sustainable agriculture. The five green sectors are a tangible manifestation of the government's steps to protect the environment (*hifz al-bi'ah*) amid climate change to achieve sustainable development. The potential for green sukuk issuance can be seen from the increasing awareness of investors about the importance of environmental conservation. The involvement of influential entities such as the government and the United Nations in the development of green sukuk indicates the potential of this instrument. The challenges of issuing green sukuk include a higher risk profile because it involves high, new, and sophisticated technology. In addition, green sukuk is not a simple transaction because it involves a large number of funds, so that checks and balances are needed and proper monitoring. In order to achieve the Sustainable Development Goals, green sukuk can be used to conserve the environment and natural resources, save energy, promote the use of renewable energy and reduce the impact of greenhouse gas emissions.

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