



# The Role of Green Sukuk in Maqasid Al-Shariah and SDGs: Evidence from Indonesia

*Khairunnisa Musari and Sutan Emir Hidayat*

## 1 BACKGROUND

Climate change poses a significant risk to the United Nations Sustainable Development Goals (SDGs). It is one of the most urgent global issues to be faced, both in developed and developing countries. Climate change has sprung up to the primacy of the development agenda as the intensity of rabid weather has increased globally, starting from higher water temperatures to severe droughts and the intensity of floods that have adverse impacts on human life, people's health, social, economic, and business activities. Certainly, climate change deepens poverty. It has already

---

K. Musari (✉)

Kiai Haji Achmad Siddiq State Islamic University (UIN KHAS), Jember  
Regency, Indonesia

e-mail: [khairunnisamusari@uinkhas.ac.id](mailto:khairunnisamusari@uinkhas.ac.id)

S. E. Hidayat

Gunadarma University and National Committee for Islamic Finance and  
Economy (KNEKS), Depok City, Indonesia

e-mail: [sutan.emir@kneks.go.id](mailto:sutan.emir@kneks.go.id)

© The Author(s), under exclusive license to Springer Nature Switzerland AG 2023

Z. H. Jumat et al. (eds.), *Islamic Finance, FinTech, and the Road  
to Sustainability*, Palgrave CIBFR Studies in Islamic Finance,

[https://doi.org/10.1007/978-3-031-13302-2\\_9](https://doi.org/10.1007/978-3-031-13302-2_9)

imposed a high charge on low-earning and undefended people, mainly in emerging economies.

The Securities Commission (SC) and the World Bank (2019) observed a new wave in the financial community participating in sustainable development and addressing climate change after the Paris Agreement on Climate Change in 2015. Nonetheless, there are funding issues for achieving the SDGs on top of the funding gap in combating climate change (Buana & Musari, 2020; Ministry of Finance of the Republic of Indonesia (MoF) and United Nations Development Programme (UNDP) Indonesia, 2018; United Nations Economic and Social Commission for Asia and the Pacific (UN ESCAP), 2014; Yu, 2016). In this regard, countries like Indonesia require prodigious financial assistance to bridge the financial gaps between their funding necessities and currently available financial sources. UN ESCAP (2019) emphasized how important it was for countries to work together to fill the investment gap in combating climate change by encouraging fiscal space and the private sector to get involved.

In order to tackle climate change and reduce greenhouse gas (GHG) emissions, one of the most widely used Islamic financial instruments is the green sukuk. Moghul and Safar-Aly (2014) mentioned that many prominent environmentalists highlight the potential role of religion, or at least philosophical approaches originating from religion, in addressing the environmental crisis. Islamic law, also known as shariah, contains a deeply established ethical framework for caring for the environment. Hence, the main objective behind the development of green sukuk is to address Shariah's concerns concerning safeguarding the environment, as stated by Alam et al. (2016).

The International Monetary Fund (IMF) pointed out in 2015 that sukuk could help bridge the funding gap for infrastructure projects. In addition, sukuk are seen as well-suited to infrastructure financing because of their risk-sharing features, making them suitable for filling financing gaps in emerging countries. Furthermore, Kahf (1997) cited that sukuk has the potential to act as a public sector financing instrument. Musari (2009) and Sriyana (2009) also mentioned the potential of sukuk for fiscal sustainability in the long term in managing public finances. Furthermore, Ismal and Musari (2009a, 2009b, 2009c) asserted that sukuk is a superior financing instrument to debt or loan. This is further proven by Ismal's (2010) study that viewed sukuk as an effective instrument for managing liquidity and portfolio. Similarly, the study by Musari

(2013a, 2013b) also found that sukuk has a significant positive influence on the independence of the state budget if it is used for industrial working capital and developing infrastructure as well as replacing foreign debt.

As an Islamic financial instrument, green sukuk must possess *maslahah* (*public interest*) that is in line with *maqasid Al-Shariah*, as they are the foundations of Islamic finance and the underlying principles and values for the preservation of the environment and society. The core of environmental development in Islamic economics is to reduce the environmental risks and increase the environmental benefits. Thus, this is an opportunity for Islamic finance to bridge the investment gap through green sukuk as an Islamic green financial instrument.

Indonesia's Sovereign Green Sukuk can provide valuable lessons concerning national collaboration among state institutions in addressing climate change. As the world's first sovereign green sukuk, Indonesia's Global Sovereign Green Sukuk can serve as a case study to learn its impacts on SDGs, including its relevance to *maqasid al-shariah*. Therefore, this study aims to address the topic of green sukuk by focusing on the following three sections: (1) Indonesia's Sovereign Green Sukuk as a national collaborative effort to tackle climate change; (2) the relevance of Indonesia's Sovereign Green Sukuk with *maqasid Al-Shariah*; and (3) the role of Indonesia's Sovereign Green Sukuk in achieving SDGs.

## 2 INDONESIA'S SOVEREIGN GREEN SUKUK

Indonesia is verily dedicated to fighting climate change, considering this country is most susceptible to climate-induced catastrophes. As part of the global community that is responsible for dealing with climate change in the world, Indonesia in 2016 ratified the Paris Agreement and submitted Nationally Determined Contributions (NDCs). This shows Indonesia's seriousness in taking part in the movement of low-carbon and climate-resilient.

In order to put the commitment into action, the government needs funding to fulfill its financial needs. However, Yu (n.d.) and Tamura and Yu (2015) mentioned that there is still no mechanism that oversees the coordination of how resources might be allocated and utilized effectively among government agencies. They further asserted that climate change should be fully integrated into national and sectoral development plans

and be channeled into the public financial management system, and therefore, developing countries need to develop robust national strategies for scaling up domestic climate finance.

The Indonesian Sovereign Green Sukuk is an exemplary national collaboration to face climate change. It employs the climate budget tagging mechanism results and channels investments toward and across green sectors. This is shown in Table 1, where Indonesian Green Bond and Green Sukuk Framework ensure green sectors have the most climate impacts.

The Indonesian Green Bond and Green Sukuk Framework have received a second opinion from the Centre for International Climate Research (CICERO), the foremost institute for interdisciplinary climate research in Norway, as external reviewers, and have been awarded Medium Green Shading. This shading contemplates the nations' ambitiousness for the climate and environment in making the transformation to a low-carbon society (CICERO, 2018). This shading also shows that

**Table 1** Indonesia's Green Bond & Green Sukuk framework

<i>Using the fund</i>	<i>Evaluating and selecting the project</i>	<i>Managing the fund by MoF</i>	<i>Reporting</i>
Eligible Green Projects must fall into one of the nine eligible sectors	MoF and Ministry of National Development Planning/National Development Planning Agency (Bappenas) do review and approval process	The Green Bond and Green Sukuk proceeds will be distributed to appointed account of relevant ministries for financing special projects as previously assigned. Allocation is organized by MoF <b>Related Ministries</b> The related ministries which manages the proceeds will track, monitor, and report to MoF, on the environmental benefits of the Eligible Green Projects	MoF will organize and issue a Green Bond and Green Sukuk annual report on the projects list, the proceeds allocated to such projects, and the estimation of beneficial impacts

Source Adapted from MoF and UNDP Indonesia (2018)

eligible listed projects, as a reflection of the policy's work in realizing the vision of the future in lowering carbon emissions, have not reached the target yet (MoF, 2019, 2020). According to the Framework, there are nine sectors which can be financed by Green Sukuk as shown in Table 2.

The Eligible Green Sectors refer to projects which promote the transition to a low-emission economy and climate resilient growth, including climate mitigation, adaptation, and biodiversity in accordance with the criteria and process set out in this Framework. To avoid confusion, MoF (2019) stated that the Eligible Green Sectors will be exempt from the following: (1) the expenditure and capacity of new fossil fuel-based electric power generation associated with the efficiency improvement of fossil fuel-based electric power generation; (2) high scale hydropower plants (capacity > 30 MW); and (3) nuclear and nuclear-related assets.

The government of Indonesia debuted its first green sukuk in March 2018 with a USD1.25 billion offering. Then, the government issued the second sukuk of its in February 2019, generating USD 750 million of funds. Additionally, in November 2019, the government issued Savings Retail Sukuk, the first retail green sukuk in the world. The three instruments are evidence of the government's serious commitment toward climate action. The two sovereign global green sukuk have a total value of USD 2 billion. Each issuance is comprised of 51% refinancing for existing projects and 49% financing for new projects. Table 3 provides an executive summary of Indonesia's Sovereign Global Green Sukuk for the period 2018–2021.

Overall, projected environmental benefits from the issuance of Indonesia's Sovereign Green Sukuk in 2018 reduced 5,776,497.49 tonnes of CO<sub>2</sub> emissions and 3,218,014.41 tonnes of CO<sub>2</sub> emissions in 2019 (MoF, 2020). As for allocation by activity, the cumulative Indonesia's Global Green Sukuk issuance between 2018 and 2020 was 57% for mitigation and 43% for adaptation. Accordingly, allocation by sector yielded 5% for Renewable Energy (Clean Energy), 11% for Energy Efficiency (Efficient Energy Use), 41% for Sustainable Transportation (Environmental-friendly Transportation), 36% for Climate Change Resiliency of Very High-Risk Sectors and Areas and Minimize Disaster Risk, as well as 6% for Waste-to-Energy (Energy-from-Waste/Energy Recovery) and Waste Management (MoF, 2021). These results represent the continuing efforts to support sectors with green growth and maintain Indonesia's integrity and dedication to creating a low carbon and climate-resilient economy.

**Table 2** The projects of eligible green sectors

<i>Eligible green sectors</i>	<i>Projects</i>
1. Renewable Energy (Clean Energy)	<ul style="list-style-type: none"> <li>• Renewable energy resources for generator and transmittal of energy, comprise: onshore and offshore wind, geothermal heat, biomass, rain, tides, waves, hydropower, tidal, and solar/sunlight</li> <li>• Finding products or technologies for generating renewable energy through research and development, comprise: solar panels and turbines</li> </ul>
2. Sustainability in Managing the Natural Resources	<ul style="list-style-type: none"> <li>• Sustainability in managing the natural resources, primarily to elude or minimize carbon loss/escalate carbon isolation through replanting of deteriorated land, utilize of flood/temperature/drought-resistant breeds, and/or the planting of new forest zones</li> <li>• Conservation of biodiversity and habitat through sustainability in managing the forestry/fisheries/agriculture and land-use change, pest management, and shelter of marine environments and coastal areas</li> </ul>
3. Energy Efficiency (Efficient Energy Use)	<ul style="list-style-type: none"> <li>• The improvement for the energy efficiency infrastructures which proceeds an energy consumption leastwise 10% under the national energy consumption average of an equivalent consumption leastwise 10% under the national energy consumption average equivalent</li> <li>• Finding products or technologies and their practice through research and development that lower the energy consumption of underlying asset, product, technology, or systems, including improved lighting technology, improved chillers, LED lights, and diminished power utilization in manufacture industry</li> </ul>
4. Green Tourism (Ecotourism/Sustainable Tourism)	<ul style="list-style-type: none"> <li>• Developing the resilience of tourism for climate change risk</li> <li>• Optimizing the supporting infrastructure to bear sustainable tourism, such as energy efficiency and/or water treatment</li> <li>• Developing the areas of new tourism in accordance with the Principles of Green Tourism</li> </ul>
5. Climate Change Resiliency for Very High Risk Sector and Areas / Minimize Disaster Risk	<ul style="list-style-type: none"> <li>• Managing the public health</li> <li>• A leading research on technology innovation with sustainability of benefits</li> <li>• Mitigating the flood risk</li> <li>• Securing the food system</li> <li>• Managing for drought</li> </ul>
6. Green Buildings (Green Construction/Sustainable Building)	Establishing green buildings refer to Greenship constructed by Green Building Council (GBC) Indonesia with six categories: material and resources cycle, development of appropriate site, energy conservation and efficiency, water conservation, environment and building management, and leisure air and air quality (water indoor comfort and health)
7. Sustainable Transportation (Environmentally Transportation)	<ul style="list-style-type: none"> <li>• Intensifying the transport network to have the highest resilience design standards of climate</li> <li>• Expanding the clean transportation system</li> </ul>

(continued)

**Table 2** (continued)

<i>Eligible green sectors</i>	<i>Projects</i>
8. Sustainable Agriculture (Sustainable Farming/ Sustainable System of Plant and Animal Production)	<ul style="list-style-type: none"> <li>• Expanding the sustainability of agriculture management and methods, as research and development on climate resilient germ, deficient pesticides, organic farming, and energy efficient in the agricultural sector</li> <li>• Developing a mechanism of subvention for agriculture insurance</li> </ul>
9. Waste-to-Energy (Energy-from-Waste/ Energy Recovery) & Waste Management	<ul style="list-style-type: none"> <li>• Rehabilitating the landfill areas</li> <li>• Rectifying the waste management</li> <li>• Converting waste toward a renewable energy resource</li> </ul>

Source Adapted from MoF and UNDP Indonesia (2018), MoF (2019, 2020)

**Table 3** Indonesia's Sovereign Global Green Sukuk (2018–2021)

Date	March 1, 2018	June 20, 2019	June 23, 2020	June 9, 2021	
Volume	USD 1.25 billion	USD 750 million	USD 750 million	USD 750 million	
Tenor	5 years	5.5 years	5 years	30 years	
Yield	3.75%	3.9%	2.3%	3.55%	
Allocation by Sector	Renewable Energy (Clean Energy)	8%	5%	0%	n.a
	Energy Efficiency (Efficient Energy Use)	8%	27%	0%	n.a
	Climate Change Resiliency for Very High Risk Sector and Areas /Minimize Disaster Risk	22%	11%	83%	n.a
	Sustainable Transportation (Environmentally Transportation)	55%	48%	7%	n.a
	Waste-to-Energy (Energy-from-Waste/ Energy Recovery) & Waste Management	7%	9%	11%	n.a

Source Adapted from MoF (2020, 2021)

### 3 GREEN SUKUK AND *MAQASID AL-SHARIAH*

SC and the World Bank (2019) reported that Islamic finance offers huge potential in promoting the agenda for climate change and the development of a green economy across numerous economic sectors. In principle, the greener the economy, the better climate change can be tackled. Also, it would need well-balanced economic development programs that work well with the core principles of Islamic finance, which are based on the values of *maqasid Al-Shariah*.

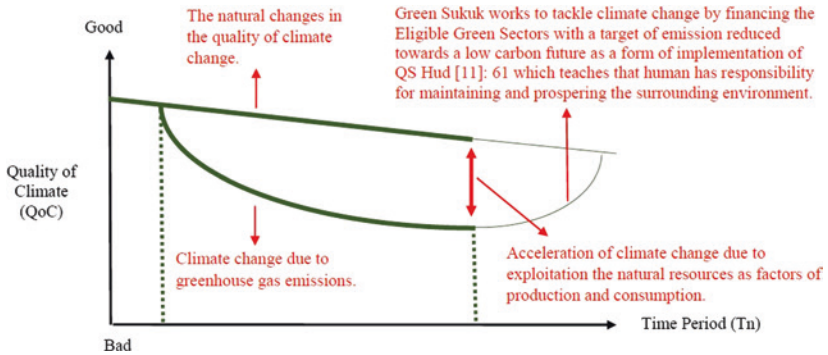
Regarding the existence of green sukuk as an Islamic green financing instrument, it is important to note that *maqasid Al-Shariah* must be the main objective, and therefore, the allocation and impact of green sukuk should be the manifestation of the *maqasid Al-Shariah*. Wahab and Naim (2020) argued that the consequences of ignoring *maqasid Al-Shariah* and *maslahah* would cause Islamic financial products to lose their intrinsic values and would become unacceptable in the global market.

Therefore, the approach to assessing the relevance of green sukuk in achieving *maqasid Al-Shariah* should be through the quality of allocation and impact of green sukuk. In general, the quality of allocation and impact of green sukuk is expected to improve environmental quality within the limits of regeneration and assimilation. Musari (2020c) wrote that the environment as a resource has limited regeneration and assimilation. If this limit is exceeded, natural resources will suffer damage because they are exploited as factors of production and consumption. Figure 1 shows how green sukuk as an Islamic financial instrument works to combat climate change.

Economic policies that favor short-term growth have triggered aggressive, exploitative, and expansionary patterns of production and consumption, resulting in a decline in the carrying capacity and function of the environment. One of which is the acceleration of climate change. In the Quran (2:29; 15:19—20; 16:14, 66; 42: 4; 67:15), Allah has mentioned that Allah is the owner of the earth and Allah created everything on earth, including the sea and livestock, which the earth is spread to and smoothed out for humans to move, eat, and fulfill all their needs of life. However, the Quran (11:61) also reminds us of the obligation of humans to maintain the environment and nature.

Various studies such as Rohmah et al. (2020), Utama et al. (2019), Maimunah (2018), Suryani (2017), Pratama (2015), Iswanto (2013),





**Fig. 1** Green Sukuk in tackling climate change (*Source* Adapted from Musari [2020c] and Musari and Zaroni [2021])

and Ghufron (2010) showed multiple encouraging examples for the five of *maqasid Al-Shariah* to be developed into new interpretations which reconstruct these universal principles to suit the times. One thing that needs to be echoed is environmental preservation (*hifz al-bi'ah*). It is important to note that the current environmental damage will threaten the sustainability of all living things. Earlier, Yafe (2006, 2007) also sounded the need to add *hifz al-bi'ah* in addition to the rules of *hifdzul an-nafs* (life preservation), *hifdzul al-aql* (life preservation), *hifdzul an-nasl* (progeny preservation), *hifdzul al-māl* (wealth preservation), and *hifdzul ad- 'din* (religion preservation).

The same thing was also conveyed by Al-Qardhawi's (2001, 2002) writings that state protecting the environment as *riayatu al-bi'ah* (preserving the environment) is the same as preserving the five objectives of *maqasid Al-Shariah*, as it provides *maslahah* (public interest) and prevents *mudharrab* (harms). Any behavior that leads to environmental destruction will threaten *an-nafs*, *al-aql*, *an-nasl*, *al-māl*, and *ad 'din* so that *riayatu al bi'ah* is in line with *maqasid Al-Shariah*.

Additionally, within *ushul fiqh* (principles of Islamic jurisprudence), there is an established shariah maxim that states, "*mā lā yatim al-wāğib ilā bibi fahūwa wāğib,*" which means that without which an obligatory command cannot be accomplished, it also becomes obligatory.

In order to ensure that all green sukuk project financings in Indonesia comply with *hifdzul al-bi'ah* or *riayatu al-bi'ah* and *maqasid*

*Al-Shariah*, several references need to be followed, namely Government Regulation of the Republic of Indonesia Number 56, year 2011 on Project Financing through the Issuance of Sovereign Shariah Securities and Decision of the National Shariah Council-Indonesian Ulema Council (DSN-MUI) Number 01/DSN-MUI/III/2012 on Criteria of Projects in accordance with Shariah Principles. In addition, referring to Suminto (Ed.) (2015), the two regulations also regulate all utilization of projects not for purposes related to implementation and/or their contribution to the activities of destructive and dangerous (harm) against morals and the environment (*al-bi'ah*).

Referring to the Eligible Green Sectors and the projects during 2018–2019, Table 4 sums up the relevance of Indonesia's Sovereign Green Sukuk with *maqasid Al-Shariah*. As such, the projects were financed by green sukuk and must manifest the allocation and proceeds of green sukuk, which is in accordance with the *maqasid Al-Shariah*.

Furthermore, Sodikun (2012) noted that there are approximately 94 verses of the Qur'an concerning the environment and the prohibition of causing damage to it. This shows the importance of nature and the environment in Islam, where it gives warnings to the people to preserve and safeguard the environment from any calamity. The preservation of the five of *maqasid Al-Shariah* requires Muslims to create a balance, harmony, and conformity in the order of life, including nature and the environment (*al-bi'ah*).

According to Sayadi (2012), there are chapters (*surah*) in the Qur'an that are named after animals, such as *al-Baqara* (The Cow), *al-An'aam* (The Cattle), *an-Nahl* (The Bee), *an-Naml* (The Ant), *al-'Ankaboot* (The Spider), *al'Aadiyaat* (The Courser), *al-Fil* (The Elephant), and names of plants such as *at-Tin* (The Fig), and other names such as *al-Hadid* (The Iron), *adh-Dhāriyat* (The Winnowing Winds), *an-Najm* (The Star), *ash-Shams* (The Sun), *al-Layl* (The Night), *al-Fajr* (The Dawn). One of the wisdom behind the names is to serve as a sign to humans to realize that their existence is tied to the natural environment, and they are obliged to preserve it.

As for the relevance of green sukuk in achieving *maqasid Al-Shariah*, it is noted by Çizakça (2007, 2011, 2014) that all innovations on Islamic financial products must meet at least three requirements:

1. The innovation must not represent *ribh*.
2. It must lead the risk sharing, not risk shifting.

**Table 4** Relevance of Green Sukuk in *maqasid Al-Shariah*

<i>Eligible green sectors</i>	<i>The characterize of project</i>	<i>Maqasid al-Shariah</i>
1. Renewable Energy (Clean Energy)	Generating and transmitting the energy from renewable energy sources	<ul style="list-style-type: none"> <li>• <i>Hifdzul al-bi'ab</i>, can be mentioned also as <i>ri'ayah al-bi'ab</i>, is to preserve nature and the environment</li> </ul>
2. Sustainability in Managing the Natural Resources	–	<ul style="list-style-type: none"> <li>• It is in accordance with <i>maqasid al shariah</i> and in line with the preservation of <i>din</i> (religion), <i>nafs</i> (self), <i>'aql</i> (intellect), <i>nasl</i> (progeny), and <i>māl</i> (wealth)</li> </ul>
3. Energy Efficiency (Efficient Energy Use)	Improving the energy efficiency of infrastructure	
4. Green Tourism (Ecotourism/Sustainable Tourism)	–	
5. Climate Change Resiliency for Very High Risk Sector and Areas/ Minimize Disaster Risk	Mitigating flood	
6. Green Buildings (Green Construction/Sustainable Building)	–	
7. Sustainable Transportation (Environmentally Transportation)	Developing the systems of clean transportation	
8. Sustainable Agriculture (Sustainable Farming/ Sustainable System of Plant and Animal Production)	–	
9. Waste-to-Energy (Energy-from-Waste/Energy Recovery) & Waste Management	Improving the management of waste	

Source MoF and UNDP Indonesia (2018), MoF (2020), Al-Qardhawi (2001, 2002), Yafie (2006, 2007), modified

3. It must be good to encourage the society toward the al-Ghazali and Shatibi Optimum.

By adopting Pareto's insight, it can be explained that any policy which contributes to one of *maqasid Al-Shariah* without undermining any of the other four would be desirable. Furthermore, each policy has to lead the society toward al-Ghazali and Shatibi Optimum. The al-Ghazali

and Shatibi Optimum would be reached when it is no longer possible to improve any components without undermining one of the *maqasid Al-Shariah*.

#### 4 GREEN SUKUK AND SDGs

Indonesia is among the leading countries in adopting the SDGs agenda. According to Musari (2022a, 2022b), Indonesia, as a major global economy in Asia, is engaging in financial inclusion as a strategy to achieve inclusive growth and SDGs. Through Islamic philanthropy, Indonesia has been recognized as the most generous country. In addition, through the various innovations that have developed in recent years, Indonesia is now seen as an emerging force in Islamic finance globally. The country has a great opportunity to eradicate poverty and achieve the SDGs through the untapped potential of Islamic finance and funding, which has now become a vital and innovative financing modality to close the funding gap for the SDGs as well as climate change.

Buana and Musari (2020) and Musari (2020a) mentioned that there must be a gradual change to pull money back into real economies through innovative financing, and Indonesia has realized this pathway, which among others is green sukuk. Despite being innovative in their own stature, the three greens (green economy, green financing, and green instruments) exclude certain sectors from their framework. This, as a result, can trigger new constructs, one of which is the blue economy, which in the future could take the form of Blue Sukuk and White Sukuk.

All in all, the role of green sukuk in achieving SDGs can be indicated by the allocation of Indonesia's Global Green Sukuk projects and their impacts on achieving the SDGs. Table 5 shows the financing and refinancing projects by Global Green Sukuk in 2018, their results, and their impacts on SDGs achievement in Indonesia.

Then, in 2019, the role of green sukuk in achieving SDGs in Indonesia can also be indicated by the allocation of Global Green Sukuk projects and their impacts on achieving the SDGs. Table 6 shows the financing and refinancing projects by Global Green Sukuk in 2019, their results, and their impacts to SDGs achievement in Indonesia.

Undoubtedly, Indonesia's Sovereign Green Sukuk can be a lesson as a national collaborative effort to tackle climate change through Islamic green financing. This instrument has paved the way for the enforcement of *hifdzul al-bi'ah/riayatu al-bi'ah* and *maqasid Al-Shariah* as

**Table 5** Projects of Global Green Sukuk 2018, its results and impacts to SDGs

<i>Sector</i>	<i>Projects' name</i>	<i>Brief description</i>	<i>Result</i>	<i>SDGs</i>
Renewable Energy (Clean Energy)	Developing the Infrastructure of New, Renewable Energy, and Energy Conservation	Developing infrastructures for new and renewable energy as well as energy conservation, by focusing off-grid areas to escalate the electrification ratio. Power plants are sourced from biofuel, micro-hydropower, mini-hydro, solar power, biogas communal, biogas power plant by Palm Oil Mill Effluents (POME)	Minimize GHG emissions by 2,122 tonnes CO2e per year; improves electrification ratio; 4,639 kW power generated; 60 m <sup>3</sup> biogas communal	7, 8, 9, 11, 13
	Developing the Minihydro Power Plants	Improving the electrification ratio in off-grid areas in Papua Provinces and replacing the existing diesel generators	Minimize GHG emissions by 101,483,080,670 tonnes CO2e per year; improves electrification ratio; 1,700 kW power	7, 8, 9, 11, 13
	Developing the Energy Infrastructure through Renewable Energy Usage Biofields Usage	Developing the renewable energy facilities and infrastructure to serve rural electrification in off-grid areas, especially in small islands and remote areas Constructing the infrastructure and facilities for biofuels storage to overcome the obstacles in the Biofuels Mandatory Program implementation and make sure the facile distribution along with all areas	Minimize GHG emissions by 13,044,474 tonnes CO2e per year; 8,180 kW power generated Minimize GHG emissions by 3,830,609 tonnes CO2e per year; distributing 2,571,569 kiloliter of biodiesel	7, 9, 13
	Developing the Infrastructure for NonElectricity Bioenergy	Constructing the communal biogas power plants to promote the renewable energy utilization to meet the energy needs of the community Constructing the biogas power plants by POME and seaweed	Minimize GHG emissions by 11,814 tonnes CO2e; 10 units of digester with biogas production of 36 m <sup>3</sup> /day Minimize GHG emissions by 57,666 tonnes CO2e per year; potential producing power	7, 13
	Developing the Infrastructure of Bioenergy Power Plant	Distributing the solar-powered LED lighting	Minimize GHG emissions by 127,048,262.4 tonnes CO2e per year; 172,996 unit solar saving lamp to restricted villages	7, 11, 13
Energy Efficiency (Efficient Energy Use)	Installing the Energy-Saving Solar Energy Lights in the Rural Area	Installing the intelligent public street lighting integrated with solar power plants	To be confirmed for minimizing GHG emission per year; 7,180 kW power generated	7, 8, 9, 11, 13
Energy Efficiency (Efficient Energy Use)	Installing the Device for Clean and Efficient Energy Technology	Installing the intelligent public street lighting integrated with solar power plants and retrofitting LED lights on existing public street lighting systems Provide the navigation facilities with solar photovoltaic-based, such as for fog signals, buoys, day beacons, and conventional lighthouses	Minimize GHG emissions by 2,325,611 tonnes CO2e per year	7, 11, 13
	Constructing the Aid of Navigation Facilities	Installing the equipment for road with solar photovoltaic-based, such as for warning lights system and public street lighting	Minimize GHG emissions by 141,800 tonnes CO2e per year; 2 flare towers; 18 flare buoys, and 111 beacon signs	7, 9, 13
	Procuring and Installing the Equipment for Road		Minimize GHG emissions by 615 tonnes CO2e per year; eliminate the use of conventional electricity	7, 11, 13

(continued)

**Table 5** (continued)

<i>Sector</i>	<i>Project's name</i>	<i>Brief description</i>	<i>Result</i>	<i>SDGs</i>
Waste-to-Energy (Energy-from-Waste/ Energy Recovery) & Waste Management	Improving the Management System of Municipal Solid Waste	Improving the decent basic infrastructure services by developing the final disposal sites with city area-scale	To be confirmed for minimizing GHG emission per year; 1,457,428 households received the benefit	7, 11, 13
Sustainable Transportation (Environmentally Transportation)	Constructing & Managing the Infrastructure & Supporting Facilities of Railways	Improving the decent basic infrastructure services by developing the final disposal sites with city, regional, and special area-scale Constructing the Trans Sumatra Railways from Aceh to Lampung Province Constructing the double-double track railway in Greater Jakarta	To be confirmed for minimizing GHG emission per year; 110,000 households received the benefit Minimize GHG emissions by 206,470 tonnes CO2e per year; to be confirmed for other results Minimize GHG emissions by 169,003.9 tonnes CO2e per year; to be confirmed for other results	7, 11, 13
	Operating the Double Track Railways in Java's North Path	Constructing 727 km double-track railway project transforms the existing single-track railway Jakarta-Surabaya	Minimize GHG emissions by 613,434 tonnes CO2e per year; reducing the fuel usage	8, 9, 11, 13
	Constructing the Trans Sumatra Railways	Constructing the Trans Sumatra line facilities and infrastructure as well as covering the development of new tracks and revitalisation of existing tracks, developing the new stations, and electric signals system	Minimize GHG emissions by 235,458 tonnes CO2e per year; shifting mode for logistics transportation	8, 9, 11, 13
	Developing the Urban Train in Greater Jakarta	Improving the facilities of passengers by raising the capacity of power supply; land acquisition; constructing the pedestrian bridges, flyovers, and underpasses of the urban railway network in Greater Jakarta	Minimize GHG emissions by 856,828 tonnes CO2e per year; shifting mode for passengers	8, 9, 11, 13
	Procuring for medium-size Bus Rapid Transit	Providing the 381 units of medium-sized buses under Bus Rapid Transit system	Minimize GHG emissions by 165,704 tonnes CO2e per year; minimize the crowded public transportation and also develop the feeder transportation	8, 9, 11, 13
Sustainable Transportation (Environmentally Transportation)	Procuring the Equipment for Road and Installing the ICT-based traffic control system	Installing the two packages of area traffic control system to secure a faciler traffic flows at intersection area	Minimize GHG emissions by 203,116 tonnes CO2e per year; the consumption of fuel is more efficient as fewer traffic jams and the controlled speed of vehicles	9, 11, 13
	Developing the pioneer sea transport	Modernizing the 100 vessels with the engines more energy efficient	Minimize GHG emissions by 5,868 tonnes CO2e per year; improving the connectivity of sea transportation and reduce the fuel consumption	7, 9, 11, 13

(continued)

**Table 5** (continued)

<i>Sector</i>	<i>Projects' name</i>	<i>Brief description</i>	<i>Result</i>	<i>SDGs</i>
Climate Change Resiliency for Very High Risk Sector and Areas / Minimize Disaster Risk	Constructing the surface irrigation networks authorized by the Central Government Constructing the Facilities for Flood Control	Developing and rehabilitating the dams and the networks of surface irrigation  With the increased rainfall intensification, some regions become more inclined to have flooding risk. This is added by the changes in land use and the narrowness of the river leads to higher run-off/stormwater	Fulfilling the need for irrigation water service for flowing the rice fields in 54,111.21 ha area  Setting the technical planning and environmental documents for constructing the 23 ha flood control; improving the flood infrastructure and facilities for 285 ha of area	3, 5, 6, 8, 10, 11  3, 5, 6, 8, 10, 11

*Source* Adapted from MoF (2019, 2020, 2021)

**Table 6** Projects of Global Green Sukuk 2019, its results, and impacts to SDGs

Sector	Projects' name	Brief description	Result	SDGs
Renewable Energy (Clean Energy)	Planning, Developing, and Supervising the Infrastructure of the New, Renewable Energy and Energy Conservation	Constructing infrastructures for new and renewable energy as well as energy conservation, by focusing on districts that are out of coverage of current electricity to escalate the electrification ratio. Power plants are sourced from solar and biogas	To be confirmed for minimizing GHG emission per year, and other results	7, 8, 9, 11, 13
		Constructing infrastructures for new and renewable energy, by focusing on districts that are out of coverage of current electricity to escalate the electrification ratio. Power plants are sourced from micro-hydropower, mini-hydro, and solar	Minimize GHG emissions by 134,872.41 tonnes CO <sub>2</sub> e per year; electricity for 15,607 households; 7,429 kW power generated; 48 m <sup>3</sup> biogas communal, 930 unit public street and battery	7, 8, 9, 11, 13
	Installing the Energy-Saving Solar Energy Lights in the Rural Area	Installing the energy saving solar-powered lamps in areas with limited or no electricity facilities. These lamps would improve accessibility to lighting for off-grid areas while reducing use of diesel generators	Minimize GHG emissions by 1,184,748 tonnes CO <sub>2</sub> e per year; 79,556 units installed; households with lighting	7, 11, 13
Sustainable Transportation (Environmentally Transportation)	Constructing & Managing the Infrastructure & Supporting Facilities of Railways in Sumatera	Financing the Trans Sumatra Railways construction from Aceh to Lampung Province	Minimize GHG emissions by 206,470 tonnes CO <sub>2</sub> e per year; streamlining the goods and passengers flow; shifting mode in logistics transport	8, 9, 11, 13
		Refinancing the Trans Sumatra Railways construction from Aceh to Lampung Province	Minimize GHG emissions by 235,438 tonnes CO <sub>2</sub> e per year; 343.2 km of railways, shifting mode in logistics and passenger transport	8, 9, 11, 13
	Constructing & Managing the Infrastructure & Supporting Facilities of Railways in Java Line and Java North Line	Constructing the double track railway project in the Trans Java railway's northern and southern sections	Minimize GHG emissions by 917,103 tonnes CO <sub>2</sub> e per year; accelerating train travel; streamlining the goods and passengers flow to minimize the consumption of fuel	8, 9, 11, 13
		Constructing the double track railway project in the Trans Java railway's northern section	Minimize GHG emissions by 613,434 tonnes CO <sub>2</sub> e per year; upgrading the 338.6 km of double-track railway, reduce the time for traveling; minimize the consumption of fuel	8, 9, 11, 13
	Developing the Urban Train in Greater Jakarta	Constructing the double-double track of the urban railway network in Greater Jakarta	Minimize GHG emissions by 856,828 tonnes CO <sub>2</sub> e per year; shifting mode to public transport	8, 9, 11, 13

(continued)



**Table 6** (continued)

<i>Sector</i>	<i>Projects' name</i>	<i>Brief description</i>	<i>Result</i>	<i>SDGs</i>
Waste-to-Energy (Energy-from-Waste/Energy Recovery) & Waste Management	Improving the Management System of Municipal Solid Waste	Financing the improvement of basic infrastructure services by developing the final disposal sites with city, regional, and special area-scale Refinancing the improvement of basic infrastructure services by developing the final disposal sites with city, regional, and special area-scale	To be confirmed for minimizing GHG emission per year; 150,701 households received the benefit  In order to achieve 48,000,000 tonnes target set; 2,036,660 households received the benefit	11, 13
Climate Change Resiliency for Very High Risk Sector and Areas / Minimize Disaster Risk	Constructing the Facilities for Flood Control	Constructing the retention ponds, check dam, canals of the flood, dikes, and river normalization and preservation to decrease the flooding risk due to the changes in land use and rainfall intensity	Controlling the sediment of 0.32 million cubic m; improving the facilities and infrastructure of flood area for 27,998.5 ha	3, 5, 6, 8, 10, 11
Energy Efficiency (Efficient Energy Use)	Installing the Facilities of Navigation	Constructing, rehabilitating, and replacing the aids of marine navigation as well as installing the solar cells for marine navigation aids	Minimize GHG emissions by 141,800 tonnes CO2e per year; 2,459 units constructed; improving the safety of marine transport	7, 9, 13
Energy Efficiency (Efficient Energy Use)	Improving the Services for Managing the Traffic of Land Transportation	Installing the equipment of road traffic as well as navigation aids for river and lake crossings with energy-saving sensors	Minimize GHG emissions by 203,116 tonnes CO2e per year; minimize traffic congestion and improve safety in river and lake crossings	7, 9, 13
Rehabilitating, & Maintaining the Infrastructures of Airports	Constructing, Rehabilitating, & Maintaining the Infrastructures of Airports	Installing the solar-powered street lights and plants to improve the energy efficiency of airports through renewable sources for electricity	Minimize GHG emissions by 10,478 tonnes CO2e per year; usage of renewable energy for lighting in airports	7, 9, 13

Source Adapted from MoF (2020, 2021)

well as also to achieving the SDGs. Green Sukuk also can be a gateway to finding innovative sustainable financing instruments to diversify risks through Islamic borrowing public. In the future, in line with a study by Morea and Paggio (2017), it is necessary to provide incentives for issuing sukuk to provide appropriate and sustainable investments to tackle climate change and GHG emissions. In addition, Musari (2020a, 2020d, 2022c) recommended the integration between perpetual cash *waqf* linked sukuk (CWLS) with green sukuk as a new socially responsible investment (SRI) alternative in the form of Perpetual Green CWLS. Perpetual Green CWLS is expected to link the real and financial sector as well as Islamic commercial and social finance by serving exponential benefits for tackling climate change. In addition, *esham* structured sukuk (Çizakça, 2011, 2014; Musari, 2019, 2021, 2022b) are also worth proposing to be developed as an alternative to sukuk.

## 5 CONCLUSION AND RECOMMENDATIONS

This chapter shows that Indonesia has addressed climate change as one of its national priorities. It is imperative to ensure that policy transformation, an enabling environment, and financial investment go hand in hand to support this national agenda. As an Islamic financial instrument, Green Sukuk can serve the enforcement tool for *hifdzul al-bi'ah/riayatu al-bi'ah* and *maqasid Al-Shariah*. Regarding the SDGs, the allocation and impact of Indonesia's Sovereign Green Sukuk have roles not only to support the achievement of SDGs for Climate Action (Goal 13) but also for Good Health and Well-Being (Goal 3), Gender Equality (Goal 5), Clean Water and Sanitation (Goal 6), Affordable and Clean Energy (Goal 7), Decent Work and Economic Growth (Goal 8), Industry, Innovation, and Infrastructure (Goal 9), Reduced Inequalities (Goal 10), Sustainable Cities and Communities (Goal 11), and Peace, Justice and Strong Institutions (Goal 16).

Several recommendations related to the issuances of Sovereign Green Sukuk in Indonesia are: **First**, sovereign green sukuk issuance is still irregular and relatively done in small size due to the limited number of available green projects in the country as the underlying assets to issue green sukuk. Therefore, the government needs to increase the number and size of green projects as part of the commitment to the Paris Agreement. **Second**, at the moment, it takes a longer time to issue green sukuk than regular sukuk due to the lack of standardized guidelines

on domestic green sukuk issuance. Preparation of the guidelines will speed up the issuance process and will also encourage corporations in Indonesia to issue green sukuk. **Third**, the government at the moment mainly focuses on attracting domestic investors to invest in all government securities, including green sukuk. As a result, a lot of potential global investors in green sukuk, especially in Europe, have not yet been well explored. Therefore, marketing green sukuk to those investors needs to be intensified. **Fourth**, as Islamic commercial finance, green sukuk can collaborate with Islamic social finance toward a new blended Islamic finance. CWLS and esham structured sukuk are worth a proposal for being integrated with green sukuk as an SRI instrument. **Fifth**, public involvement in tackling climate change is rational to fill the financing gap. Therefore, Islamic public borrowing must have attention and meet at least the three requirements: it does not represent *riba*, lead the risk-sharing, and encourage society toward the al-Ghazali and Shatibi Optimum. Hence, Perpetual Green CWLS can be an alternative scheme to be explored.

## REFERENCES

- Al-Qardhawi, Y. (2001). *Ri'ayatu al-bi'ah fi as-syari'ah al-islamiyah*. Kairo: Dar Asy-Syuruq.
- Al-Qardhawi, Y. (2002). *Islam agama ramah lingkungan*. Pustaka Al-Kautsar.
- Alam, N., Duygun, M., & Ariss, R. T. (2016). Green sukuk: An innovation in Islamic capital markets. In A. B. -Dorsman, Ö. Arslan-Ayaydin, & M. B. -Karan (Eds.), *Energy and finance* (pp. 167–186). Springer International Publishing.
- Buana, G. K., & Musari, K. (2020, December 28). A new sphere of sukuk: Linking pandemic to Paris agreement. *The World Financial Review, November-December Edition*, Islamic Finance, 59–61. <https://worldfinancial-review.com/a-new-sphere-of-sukuk-linking-the-pandemic-to-the-paris-agreement/>
- CICERO. (2018). 'Second opinion' on the republic of Indonesia's green bond and green sukuk framework. A report by Centre for International Climate Research (CICERO), January 23, Oslo.
- Çizakça, M. (2007). Democracy, economic development and maqasid al-shariah. *Review of Islamic Economics*, 11(1), 101–118.
- Çizakça, M. (2011). *Islamic capitalism and finance: Origins, evolution, and the future*. Edward Elgar Publishing.

- Çizakça, M. (2014). *Can there be innovation in islamic finance? Case study: Esham*. Paper to be presented at the 11th IFSB Summit, Knowledge Sharing Partner Session: “New Markets and Frontiers for Islamic Finance: Innovation and the Regulatory Perimeter”, to be convened on May 20th in Mauritius.
- Ghufroon, M. (2010). Fikih lingkungan. *Jurnal Al-Ulum Juni*, 10(1), 159–176.
- IMF. (2015, April). *Islamic finance: Opportunities, challenges, and policy options*. International Monetary Fund (IMF) Staff Discussion Note SDN/15/05, Washington.
- Ismal, R., & Musari, K. (2009a, April 1). Menggagas sukuk sebagai instrumen fiskal dan moneter. *Bisnis Indonesia Daily*. Opini, p. 4.
- Ismal, R., & Musari, K. (2009b, April). Sukuk, menuju instrumen fiskal dan moneter. *SHARING Magazine*, Edition 28 Year III, Wacana, p. 58.
- Ismal, R., & Musari, K. (2009c, March 23). Sukuk menjawab resesi. *Republika Daily Newspaper*, Ekonomia.
- Ismal, R. (2010, July). *The management of liquidity risk in Islamic banks: The case of Indonesia*. PhD (Doctoral) Theses, Durham Islamic Finance Program (DIFP) School of Government and International Affairs, Durham University, UK.
- Iswanto, A. (2013). Relasi manusia dengan lingkungan dalam al-Quran upaya membangun eco-theology. *SUHUF: Jurnal Kajian Al-Quran dan Kebudayaan*, 6(1), 1–18.
- Kahf, M. (1997). *Instruments of meeting budget deficit in Islamic economy* (Research Paper No. 42 1417 H). Islamic Research and Training Institute (IRTI)—Islamic Development Bank (IDB), Jeddah.
- Maimunah. (2018, June). Politik Islam perspektif maqashid syariah. *El-Maslahah Journal*, 8(1), 16–29.
- MoF. (2019). *Green sukuk, allocation and impact report—February 2019*. Ministry of Finance (MoF) Republic of Indonesia.
- MoF. (2020). *Green sukuk, allocation and impact report—March 2020*. Ministry of Finance (MoF) Republic of Indonesia.
- MoF. (2021). *Green sukuk, allocation and impact report—May 2021*. Jakarta: Ministry of Finance (MoF), Republic of Indonesia.
- MoF, & UNDP Indonesia. (2018). *Indonesia’s Green Bond & Green Sukuk initiative*. Ministry of Finance (MoF) Republic of Indonesia.
- Moghul, U. F., & Safar-Aly, S. H. K. (2014). Green sukuk: The introduction of Islam’s environmental ethics to contemporary islamic finance. *The Georgetown International Environmental Law Review*, 27(1), 1–60.
- 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. *International Journal of Energy Economics and Policy*, 7(2), 53–60.
- Musari, K. (2009, October 20). Penerbitan Sukuk Negara Berpotensi untuk Menjaga Kesenambungan Fiskal. *Kontan Daily*, Opini, p. 23.

- Musari, K. (2013a). *An analysis of the issuance of sovereign Sukuk and its impact on the autonomy of state financial and well-being of society in the kingdom of Bahrain and Malaysia and republic of Indonesia*. PhD (doctoral) theses, Postgraduate Program, Airlangga University.
- Musari, K. (2013b, June). Analysis of the influence of issuance of sovereign Sukuk to the autonomy of state financial and well-being of society in the kingdom of Bahrain and the republic of Indonesia. *Australian Journal of Islamic Banking and Finance (AJIBF)*, 2(1), 59–84.
- Musari, K. (2019, August 28–29). *Esham for fiscal sustainability, an alternative to Sukuk in Islamic finance perspective: Historical experience*. A paper was presented at Researcher Day 2019 “The 2019 International Conference on Fiscal Policy and Input-Output Modeling” at Auditorium of Fiscal Policy Agency Building, Ministry of Finance (MoF) of Republic of Indonesia, Jakarta.
- Musari, K. (2020a, January 7). Menakar peluang sukuk putih untuk SDGs. *Bisnis Indonesia Daily Newspaper*, Opini, p. 2.
- Musari, K. (2020b, June 14–20). *Cash Waqf linked Sukuk, a new blended finance of fiscal instrument for sustainable socio-economic development: Lesson learned from Indonesia*. A paper was presented at 12th International Conference on Islamic Economics and Finance (ICIEF) “Sustainable Development for Real Economy” with hosted by Istanbul Sabahattin Zaim University (IZU) and jointly organized by Islamic Research and Training Institute (IRTI)—Islamic Development Bank (IDB) and International Association of Islamic Economics (IAIE) with the collaboration of Statistical, Economic and Social Research and Training Centre for Islamic Countries (SESRIC) and Hamad Bin Khalifa University, Istanbul.
- Musari, K. (2020c, June 14–20). *Waste bank, a local wisdom of circular economy and Islamic Nanofinance in Indonesia*. A paper was presented at 12th International Conference on Islamic Economics and Finance (ICIEF) “Sustainable Development for Real Economy” with hosted by Istanbul Sabahattin Zaim University (IZU) and jointly organized by Islamic Research and Training Institute (IRTI)—Islamic Development Bank (IDB) and International Association of Islamic Economics (IAIE) with the collaboration of Statistical, Economic and Social Research and Training Centre for Islamic Countries (SESRIC) and Hamad Bin Khalifa University, Istanbul.
- Musari, K. (2020d, November 22). Paris agreement: Joe Biden, ekonomi syariah, dan adopsi hutan. *Portal Jember, Pikiran Rakyat Media Network*, Esai. <https://portaljember.pikiran-rakyat.com/opini/pr-16996041/paris-agreement-joe-biden-ekonomi-syariah-dan-adopsi-hutan>
- Musari, K. (2021, April). Esham, the origin of Sukuk for facing the crisis: Historical experience. *Iqtishoduna: Jurnal Ekonomi Islam*, 10(1), 45–58.
- Musari, K., & Zaroni. (2021). Reverse logistics in the age of digital transformation for circular economy and Halal logistics through the leadership of Asia.

- In P. Ordoñez de Pablos, Xi Zhang, & M. N. Almunawar (Eds.), *Handbook of research on disruptive innovation and digital transformation in Asia* (pp. 83–103). IGI Global.
- Musari, K. (2022a). P2P lending & philanthropy platform: A new face of asian digital financial inclusion (evidence from Indonesia). In M. N. Almunawar, Z. Islam, and P. Ordoñez de Pablos (Eds.), *Digital transformation management: Challenges and futures in the asian digital economy* (pp. 185-206). Routledge. <https://doi.org/10.4324/9781003224532>
- Musari, K. (2022b). A comparative study of Islamic fiscal instrument securitization in history to modern ages: Esham, sukuk, cash waqf linked sukuk (CWLS). In Ş. Akkaya and B. Ergüder (Eds.), *Handbook of research on challenges in public economics in the era of globalization* (pp. 397-418). IGI Global. <https://doi.org/10.4018/978-1-7998-9083-6.ch021>
- Musari, K. (2022c). Integrating green sukuk and cash waqf linked sukuk, the blended Islamic finance of fiscal instrument in Indonesia: A proposed model for fighting climate change. *International Journal of Islamic Khazanah*, 12(2), 133-144. <https://doi.org/10.15575/ijik.v12i2.17750>
- Pratama, L. K. A. (2015). *Lingkungan hidup dalam pandangan hukum Islam (perspektif maqashid al-syariah)*. Fakultas Syariah dan Hukum, UIN Alauddin, Makassar.
- Rohmah, R., Rohim, A., & Herianingrum, S. (2020, July). Sovereign green Sukuk Indonesia dalam tinjauan maqashid syariah. *Jurnal Penelitian IPTEKS*, 5(2), 259–269.
- Sayadi, W. (2012). Hablun minal 'alam: Memakmurkan lingkungan hidup. In LPLH&SDA MUI. *Kumpulan khutbah jum'at dan ied: Perlindungan dan pengelolaan lingkungan hidup dan sumber daya alam* (pp. 77–82). Environmental and Natural Resources Board The Indonesian Council of Ulama (LPLH&SDA MUI).
- SC & World Bank. (2019). *Islamic green finance development, ecosystem and prospects*. Securities Commission (SC) Malaysia.
- Sodikun. (2012). Jihad lingkungan. In LPLH&SDA MUI (Eds.), *Kumpulan khutbah jum'at dan ied: Perlindungan dan pengelolaan lingkungan hidup dan sumber daya alam* (pp. 147–152). Environmental and Natural Resources Board The Indonesian Council of Ulama (LPLH&SDA MUI)
- Sriyana, J. (2009, October 8–9). *Peranan sukuk negara terhadap peningkatan fiscal sustainability*. A paper was presented at Simposium Nasional IV Sistem Ekonomi Islam 2009 'Strengthening Institutions on Islamic Economic' at Universitas Islam Indonesia (UII) Yogyakarta, Yogyakarta.
- Suminto (Ed.). (2015). *Sukuk negara: Instrumen keuangan berbasis syaria* (2nd ed.). Directorate of Islamic Financing, Directorate General of Budget Financing and Risk Management, Ministry of Finance (MoF) of Republic of Indonesia.

- Suryani. (2017, November). Pengarusutamaan hifdh al-‘alam sebagai bagian dari maqāsid al-sharī’ah. *Al-Tabrir*, 17(2), 353–370.
- Tamura, K., & Yu, Y. (2015). Cycles for strengthening mitigation and support. In Institute for Global Environmental Strategies (IGES) (Eds.), *The Paris climate agreement and beyond: Linking short-term climate actions to long-term goals* (pp. 33–58). IGES.
- UN ESCAP. (2014, June 10–11). *Sustainable development financing: Perspectives from Asia and the Pacific*. A paper prepared by the United Nations (UN) The Economic and Social Commission for Asia and the Pacific (ESCAP) Secretariat for the Regional Outreach of the Intergovernmental Committee of Experts on Sustainable Development Financing for the Asia-Pacific Region, Jakarta.
- Escap, U. N. (2019). *Economic and social survey of Asia and the Pacific 2019: Ambitions beyond growth*. United Nations Publication.
- Utama, R. W. A., Muhtadi, R., Arifin, N. R., & Mawardi, I. (2019, November). Tinjauan maqashid syariah dan fiqh al-bi’ah dalam green economy. *Jurnal Ekonomi Islam*, 10(2), 242–259.
- Wahab, M. Z. H., & Naim, A. M. (2020). Sustainable and responsible investment: Concept and the commonalities with Islamic financial institutions. *Etikonomi*, 19(1), 141–154.
- Yafie, A. (2006). *Merintis fiqh lingkungan hidup*. Ufuk Press.
- Yafie, A. (2007, February 9). Menjaga alam wajib hukumnya. *Republika Daily Newspaper*, Interview. <https://www.republika.co.id/berita/q4uzc9430/saat-kh-alie-yafie-bicara-soal-fkih-lingkungan-hidup>
- Yu, Y. (2016, March 30–31). *Climate finance in and beyond the Paris agreement: Implementing climate finance commitments in Asia and the Pacific*. A Discussion Paper of Macroeconomic Policy and Financing for Development Division at First High-Level Follow-up Dialogue on Financing for Development in Asia and the Pacific, Incheon.
- Yu, Y. A. (n.d.). Climate finance gaps and challenges. *United Nations (UN) The Economic and Social Commission for Asia and the Pacific (ESCAP)*. <https://www.unescap.org/sites/default/files/Session%205.%20Climate%20finance%20gaps%20and%20challenges.pdf>