Green Sukuk: a new instrument in islamic finance Indonesia as a model

الصكوك الخضراء: أداة جديدة في التمويل الإسلامي إندونيسيا نموذجا

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Abstract:

The aim of this paper is to explore and examine the green sukuk initiative, which seeks to support Indonesia's efforts to reduce greenhouse gas emissions in accordance with Islamic law principles. This study adopts a descriptive-analytical approach, relying on statistical data. The findings indicate that the issuance of green sukuk represents a significant milestone, combining an innovative financing mechanism with efforts to address climate change and strengthen Indonesia's economic resilience.

keyword: Islamic finance; sukuk; green sukuk; climate change.
JEL classification code : G21, C33, E44, Q54.

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1. Introduction :

In recent years, environmental preservation has attracted renewed attention from investors, as reflected in the rising interest in socially responsible investment (SRI) instruments. Among these, green sukuk—Shariah-compliant financial tools designed to support renewable energy and other environmentally sustainable projects—stand out as a significant and commendable initiative.

The Ministry of Finance of Indonesia has actively supported national efforts to incorporate climate change considerations into planning and budgeting systems. It has developed a budget-tagging mechanism to track government expenditures related to climate change, enabling more effective identification of green financing needs across sectors. In line with the rapid growth of the global green bond market and following the establishment of its Green Bond and Green Sukuk Framework, Indonesia successfully issued its first sovereign Global Green Sukuk in March 2018.

The issuance received strong appreciation from global investors and is recognized as the world's first sovereign green sukuk. It is also a source of pride that the deal was honored with the Asia Pacific Green/SRI Bond Deal of the Year award at the Sustainable and Responsible Capital Market Awards 2018.

This gives rise to the following concern:

What is the green sukuk? What is the reality of green sukuk market in Indonesia?

The problematic analysis under study requires validation of a set of hypotheses:

- There are no commonalities between sukuk and green bonds
- This issuance of Green Sukuk is a milestone; a combination of innovative financing mechanism.

The research in this field allowed us to see a good number of studies. Among these studies we mention:

- Asutay, M. (2018/12/18). Green Sukuk, Energy Poverty, and Climate Change: A Roadmap for Sub-Saharan Africa. The World Bank Group: Policy Research Working Paper.

This study is about the climate change challenge and the growth of the Islamic finance industry, together with the increase in socially

responsible investing, could position green sukuk as a key instrument for financing clean energy and resilient infrastructure projects as well as shorter-term energy efficiency projects. And the result that the expansion of a green sukuk market could promote environment-friendly projects and improve livelihoods, helping Islamic finance achieve its moral objectives. A roadmap shows how policy makers could create a green sukuk market in Sub-Saharan Africa.

- Houcem Smaoui, M. K. (November 2016). The Determinants of Sukuk Market Development, Qatar university. Emerging Markets Finance and Trade, qatar university .

The objective of this article is to empirically investigate the structural, financial, developmental, institutional, and macroeconomic determinants of Sukuk market development for a sample of 13 countries over the period 2001–2013. they employ the Generalized Method of Moments (GMM) procedure to tackle the problems of endogeneity of lagged dependent variable, heteroscedasticity, and serial correlation in the residuals. the results of this article suggest that a combination of structural, financial, and institutional factors seem to exert a significant effect on Sukuk markets. Indeed, larger economic size, higher proportion of Muslims in the population, better investment profile (IP), and lower corruption are associated with larger Sukuk markets, while higher interest rate spread is negatively related to Sukuk market development.

As for our study, it is similar to these studies in terms of the general topic, which is in the field of Islamic finance, and also by touching on the most important tools for this financing represented in Islamic bonds. As for the differences, they are by touching on a new type of Islamic financing tools that appeared in 2018, namely green sukuk, as well as by examining the first experience in green sukuk, which is the experience of Indonesia as a model, which issued the first green sukk in the Islamic financial market.

2. Concepts about sukuk:

In 1988, the Fiqh Academy of the OIC officially endorsed and documented the concept of Sukuk. This was later realized in practice in 1990, when Shell MDS issued the first domestic corporate Sukuk in Malaysia for RM 125 million. (Shaikh Salman, 1 November 2010, p. 5)

2.1. History of sukuk:

Sukuk, also known as sakk, is far from being a new creation of the Islamic finance sector; its origins trace back to the early Islamic era. In the 1st century Hijri, the Umayyad administration used sakk al-bada'i (goods certificates) to pay officials' salaries in both cash and kind.

Such practices indicate that sukuk al-bada'i had been widely embraced as tradable instruments in the Islamic world for centuries. In February 1988, at its fourth session in Jeddah, Saudi Arabia, the Islamic Fiqh Academy of the OIC laid the foundation for the modern sukuk market by issuing a statement on these instruments. Not long after, in 1990, Malaysia issued one of the earliest sukuk based on the bay bithaman ajil principle, amounting to $30 million.

Nonetheless, this issuance did not trigger widespread activity among other issuers or nations. The sukuk market only rose to prominence in 2001 as a key Islamic financing instrument for long-term investments, with the debut of international sukuk structured on ijarah principles. The Government of Bahrain led this global shift by issuing the first international sovereign ijarah sukuk in September 2001, followed closely by Malaysia's Kumpulan Guthrie with the first quasi-sovereign global sukuk. The sukuk market evolved with the issuance of a US$150 million ijarah sukuk, offering a five-year maturity and 6-month LIBOR plus 1.5%. In 2002, Malaysia issued US$600 million ijarah sukuk, listed on the Luxembourg Stock Exchange and rated by Standard & Poor's and Moody's, which was twice oversubscribed and successfully combined Islamic ijarah principles with conventional bond practices such as listings, ratings, dematerialized securities, and centralized clearing. This paved the way for other notable ijarah sukuk, including Qatar's US$700 million and Bahrain's US$250 million issuances in 2004. Initially based on bay bithaman ajil contracts focused on financial instruments, sukuk later shifted to ijarah structures tied to tangible assets like land and buildings, sold and leased back to generate returns. (Radzi, June 2018, p. 18)

2.2 Definition of Sukuk:

"Sukuk" is the plural of the Arabic word "Sakk," meaning a legal document, deed, or check. It represents contracts or rights under Shariah law. In essence, sukuk are Islamic financial instruments that

convey ownership of an asset, where holders share in the profits and risks of the business rather than earning a fixed return. (Houcem Smaoui, November 2016, p. 6)

AAOIFI, the Islamic organization for accounting, auditing, and financial regulation, defines sukuk as certificates of equal value that represent undivided ownership shares in tangible assets, usufructs, services, or the assets of specific projects or designated investment activities. (Shaikh Salman, 1 November 2010, p. 5)

Sukuk offer several benefits: they are tradable capital market instruments providing medium- to long-term fixed or variable returns, assessed by international rating agencies to guide investors on risk and return. They generate regular income during the investment period, allow for efficient settlement, and may appreciate in value. Additionally, sukuk are liquid and can be traded in the secondary market. (Zolfaghari, 2017, p. 6)

we can see that malysia the leader of sukuk issuances in the world with 62.5%, then saudi arabia with 9.7%...etc, and indonesia our case study come in the fourth place by 6.4% of global sukuk issuances.

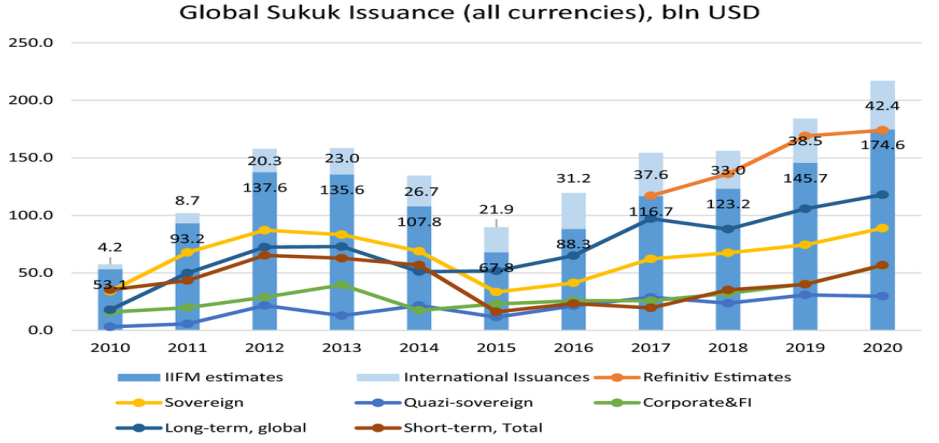
Sukuk issuance is expected to keep rising in 2026 after reaching $264.8 billion in 2025. This growth will be supported by lower interest rates that ease financing conditions in key Islamic finance markets, continued capital spending—especially in Saudi Arabia and the UAE—and weaker oil prices, which are likely to increase borrowing needs in oil-dependent economies. However, significant geopolitical tensions or major shifts in market conditions remain the main downside risks. Although a new standard from the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) may be introduced, it is unlikely to influence issuance in 2026.

In 2025, global sukuk issuance climbed to $264.8 billion from $234.9 billion in 2024, driven by strong economic growth in core Islamic finance countries, elevated funding needs, and favorable financing conditions due to declining global interest rates. The figures are higher than previous estimates because they now include a broader measure of local currency sukuk. Foreign currency issuances surpassed $100 billion—nearly double the 2021 level. Issuance remained concentrated in a few markets, particularly GCC countries and Malaysia, though interest from new issuers has started to emerge.

Looking ahead to 2026, issuance is projected to continue growing, assuming no major financial market disruptions or geopolitical shocks. Key supporting factors include lower oil prices, solid economic performance in major markets such as Saudi Arabia and the UAE, and accommodative monetary conditions. An expected average Brent oil price of $60 could increase fiscal pressure in oil-dependent countries, raising their funding requirements—partly met through sukuk. Additionally, a projected 50 basis-point rate cut by the Federal Reserve in the second half of 2026 should further support the market. While potential revisions to AAOIFI Standard 62 are being monitored, they are not expected to materially affect issuance next year.

Overall, 2025 was a strong year for the sukuk market, with issuance rising 12.7% year-on-year. Growth was driven mainly by Malaysia, Saudi Arabia, Türkiye, the UAE, and Bahrain, with foreign currency issuance accounting for over three-quarters of the increase. The market remains concentrated among a limited number of issuers, though gradual diversification is underway as new participants enter.

Fig.1: Global Sukuk Issuances 2010 - 2020



Source: Madina Kalimullina, M. Kabir Hassan, Default risk as a factor preventing companies from entering the sukuk market, Risk Management 24(4):1-29, July 2022.

2.3 Types of Sukuk:

The most common types of Sukuk issued around the globe are seven, which are explained below:

- **Musharakah Sukuk:**

A Musharakah contract is a partnership arrangement between two (or more) parties, whereby each partner contributes to the capital of the partnership in the form of either cash contributions or contributions in kind. The musharakah partners share the profits of the musharaka in pre-agreed proportions and share the losses of the musharaka in proportion to their initial capital investment. (Zolfaghari, 2017, p. 7)

- **Mudaraba Sukuk:**

Mudaraba Sukuk are investment Sukuk which represent the ownership of units of equal value in the equity of the Mudaraba. The Sukuk holders provide the capital for the Shariah compliant investment activity that is undertaken by the investment agent. The investment agent is paid an agreed fee out of any profits derived from the business activity.

- **Ijara Sukuk:**

‘‘These are Sukuk that represent ownership of equal shares in a rented real estate or the usufruct of the real estate. These Sukuk give their owners the right to own the real estate, receive the rent and dispose of their Sukuk in a manner that does not affect the right of the lessee, i.e. they are tradable. Holders of such Sukuk bear all cost of maintenance of and damage to the real estate”.

- **Murabha Sukuk:**

Murabha is “Transaction allowing the client (the investor) to buy property without having to subscribe to an interest-bearing loan? The equity contributor (for example a bank) the financier buys the property and then sells it to the investor on a deferred basis.

- **Salam Sukuk:**

Salam Sukuk is issued to raise Salam capital. The holder of slam Sukuk is the purchaser of the commodity from the issuer of the Sukuk, the seller at an agreed price paid at spot for the consideration of the commodity whose delivery will be made at agreed future dated.

- **Istisna Sukuk:**

Istisna Sukuk certificated issued to raise capital for the production of a specific asset. Holders are the owners of that asset which is to be produced or manufactured at future date.

- **Hybrid Sukuk:**

This type of Sukuk is structured by combining the principle of multiple Sukuk structures like Ijara, Mudaraba and Istisna which comprised by a pool of assets. Diversified pool of asset comprised on different structures of Sukuk provided more attractiveness to the investors in the market. (Haider, 2010, pp. 22-24)

3. Green sukuk:

The green Sukuk market is a great enabler for Islamic finance, but without greater harmonisation of Shari'ah regulations within and between jurisdictions there is a limit to what can be achieved.

3.1 Definition of green sukuk:

Green Sukuk are Shariah-compliant bonds that finance renewable energy and eco-friendly projects in line with Islamic environmental principles. Funds are allocated for project construction, refinancing, or green subsidies, backed by projected cash flows. They show strong growth potential, especially in Gulf countries where demand for clean energy and climate investments is increasing.

Green Sukuk funds can be allocated to assets certified under Climate Bond Standards, such as solar parks, biogas and wind energy projects, energy-efficiency initiatives, renewable infrastructure, electric vehicles and light rail systems, or government green subsidies.

Sukuk and green bonds share key features that help mobilize Islamic capital and support private-sector funding for environmental projects:

- **Project-specific financing:** Both instruments use an asset-based structure to ensure funds are directed to clearly defined purposes.
- **Ethical and socially responsible values:** Sukuk avoid industries such as gambling, weapons, pork, and alcohol, reflecting the ethical principles also emphasized in green bonds.

- **Environmental focus:** Both prioritize environmental protection, aligning with Shariah principles on preserving natural resources and ecosystems.
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3.2 Advantages of Green Sukuk:

One key benefit of green sukuk is their ability to support the growing demand for energy. As populations expand, the need for energy efficiency rises, driving greater financing and investment in projects that promote clean and sustainable energy solutions to meet societal needs.

In addition, green sukuk appeal strongly to Islamic investors because they comply with Shariah principles. They represent an ethical and socially responsible form of investment that not only helps protect the environment but also enables capital raising. At the same time, companies that issue green sukuk can enhance their corporate reputation by demonstrating commitment to sustainable development and clean energy initiatives.

Finally, Islamic finance is not solely focused on profit generation. The development of green sukuk reinforces the broader objectives of Maqasid al-Shariah by promoting social welfare, environmental stewardship, and balanced economic development. (Boonsiri, 2018)

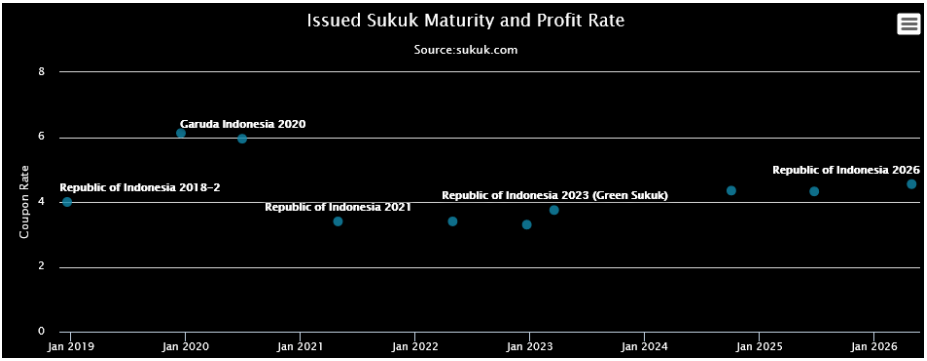
3.3 Challenges of Green Sukuk:

Despite their growth potential, green Sukuk face several challenges. Their small market size limits clear regulatory frameworks, and differing Shariah interpretations create compliance uncertainties. Investors may struggle to assess environmental impact alongside financial viability, reducing market attractiveness. Higher risks in green technology, concerns over returns, and limited liquidity further constrain participation. Greater awareness, education, and clearer assurances on fund use could help overcome these hurdles over time.

4. The Green sukuk in indonesia:

Green Sukuk is a Shariah-compliant bond fully allocated to financing or refinancing projects that address climate change and support biodiversity conservation.

Fig.2: indonesia's issued sukuk

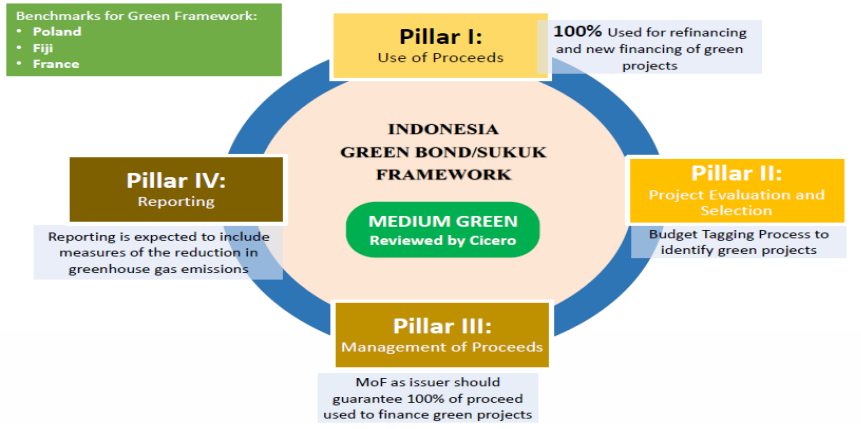


Source: www.sukuk.com .

4.1 Indonesia's Green Bond and Green Sukuk Framework:

Indonesia set up a Green Bond and Green Sukuk Framework, aligned with international principles and evaluated by CICERO, to identify eligible projects. With a "Medium Green" rating, it finances sustainable initiatives that help reduce carbon emissions over time, though not completely.

Fig.3: indonesia's green bond and green sukuk framework



Source: Suminto, 2018, p 12.

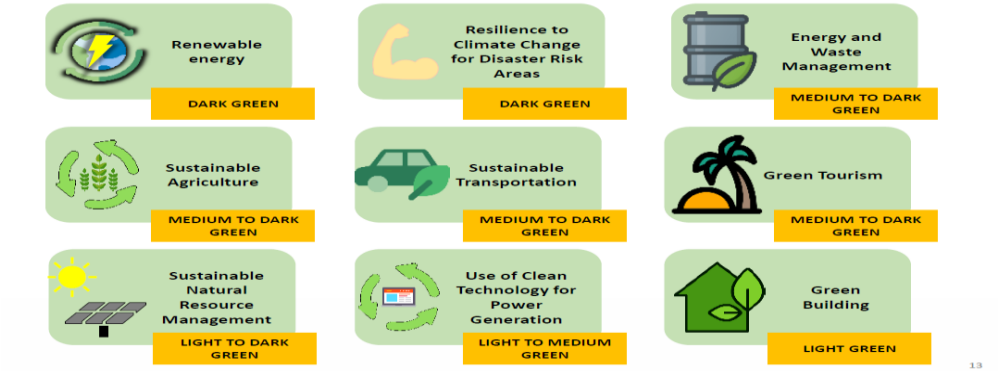
Green Sukuk funds nine approved green sectors, with projects selected by the Ministry of Finance. Environmental impacts are assessed by relevant ministries and confirmed by the Ministry of

Environment and Forestry to align with Indonesia's climate goals. (UNDP, 2018)

4.2 Eligible green sectors:

In line with the Green Bond Principles, all proceeds from each Green Bond or Green Sukuk are dedicated solely to financing or refinancing expenditures linked to "Eligible Green Projects." These projects support the shift toward a low-emission, climate-resilient economy, including efforts in climate mitigation, adaptation, and biodiversity, as defined by the framework's criteria and procedures.

Fig.4: eligible green sectors



Source: UNDP, 2018, p 13.

Eligible Green Projects must be classified under at least one of the following sectors: (UNDP, 2018)

- **Renewable Energy:** This sector focuses on generating and transmitting renewable energy—such as wind, solar, tidal, hydropower, biomass, and geothermal—and on developing related technologies like turbines and solar panels. It is considered "Dark Green."
- **Sustainable Management of Natural Resource:** This category covers sustainable natural resource management to reduce carbon loss or enhance carbon capture—such as reforestation or planting resilient species—and the conservation of habitats and biodiversity through responsible land, agriculture, forestry, and marine management. It ranges from light to dark green.

- **Energy Efficiency:** This category focuses on enhancing infrastructure energy efficiency to achieve at least 10% lower energy use than the national average, including R&D and implementation of technologies like LED lighting, advanced chillers, and energy-saving manufacturing systems. It is classified as light to medium green.
- **Green Tourism:** This sector focuses on developing sustainable tourism by following green principles, upgrading infrastructure for efficiency, and building resilience to climate change, classified as medium to dark green.
- **Resilience to Climate Change for Highly Vulnerable Areas and Sectors/Disaster Risk Reduction:** This category includes research and technological innovations that promote sustainability, covering areas such as food security, flood and drought management, and public health. It is classified as dark green.
- **Green Buildings:** This category focuses on constructing green buildings following Greenship standards by GBC Indonesia, covering site development, energy and water efficiency, material use, air quality, and overall building management. It is classified as light green.
- **Sustainable Transport:** This category involves creating clean transportation systems and upgrading transport networks to meet climate-resilient standards, rated medium to dark green.
- **Sustainable Agriculture:** This category promotes sustainable farming, climate-resilient seeds, energy-efficient practices, and agricultural insurance, rated medium to dark green.
- **Waste to Energy & Waste Management:** Enhancing waste management, converting waste into renewable energy, and restoring landfill sites.

4.3 The growth of green Sukuk in indonesia:

In March 2018, Indonesia issued the world's first sovereign Green Sukuk ($1.25B, 5-year) under Shari'a Wakala, backed by 51% state assets and 49% project assets. The issuance capitalized on market volatility and strong global demand, highlighting investor interest in green finance. (UNDP, 2018)

Indonesia has established itself as a global leader in sustainable, Shariah-compliant finance by pioneering the world's first $1.25 billion sovereign Green Sukuk in 2018. Guided by its Green and Sukuk Bond Framework, the country has since raised $7.7 billion through various Sukuk types—global, retail, and project-based—funding sectors such as sustainable transportation, climate resilience, water management, and renewable energy. Key success factors include strong partnerships, clear strategic policies aligned with international standards, and integration with monetary policy. These Green Sukuk support Indonesia's Paris Agreement commitments, advance its "Golden Indonesia 2045" vision, and are projected to generate an additional $30–50 billion toward Sustainable Development Goals by 2025.

The corporate Green Sukuk market in Indonesia faces challenges such as its limited size compared to Malaysia, the need for greater awareness and government incentives to encourage issuances, and risks of greenwashing that demand transparency and independent oversight. However, there are significant opportunities, including growing global investor interest in ESG-compliant investments, the potential to attract international capital by aligning Indonesia's framework with global standards, and the expansion of a young investor base, with millennials comprising 53.89% of individual Green Sukuk investors in 2022.s

4. Study Methodology :

5.

This study aims to explore the concept of Islamic green sukuk. Indonesia was chosen as the study sample because it is regarded as one of the pioneering issuers of this type of sukuk. In this paper, we utilized statistical data published by the Indonesian Ministry of Finance and conducted an analysis of that data. From this analysis, we derived key observations and recommendations. To assess the study's hypotheses and arrive at findings and suggestions, we employed the descriptive analytical method.

6. Study Results :

Through our study of green sukuk, we reached a set of results, the most important of them are:

- The Green Sukuk acts as a catalyst, paving the way for Islamic banking and finance to grow and expand globally, beyond just Islamic countries.
- The green Sukuk market is smaller than green bonds, but issuers follow strong reporting practices. USD Sukuk may benefit from greenium, while Malaysian ringgit Sukuk face lower returns and liquidity challenges due to local market conditions and declining foreign investment.
- Green Sukuk extend the dual focus of green bonds by incorporating faith-based alignment. Research suggests investors can be confident that these instruments fulfill both environmental and religious objectives. So far, green Sukuk have consistently exemplified best practices in allocating funds to climate and environmental projects.
- Indonesia's Green Sukuk is unique for being USD-denominated, unlike other sovereign green bonds. Exchange rates may affect performance, and some investors may prioritize profit over environmental impact, highlighting the importance of green investment quality.
- Indonesia's Green Sukuk highlights the opportunity to drive substantial public and private investment in climate resilience and adaptation, while contributing to carbon reduction.

When answering the problematic study, the study hypotheses were tested, which gave the following results:

- Sukuk and green bonds share several features that can be used to unlock Islamic capital markets and increase private investment in environmental initiatives: both are project-specific, rooted in ethical and socially responsible values, and inherently support environmental stewardship, reflecting Shariah principles of protecting air, water, land, and ecosystems. This confirms the incorrectness of the first hypothesis
- The Green Sukuk issuance is a landmark, highlighting government-private sector collaboration in climate action and economic resilience. Strong frameworks ensure transparency,

proper fund management, and credible impact reporting, paving the way for further innovative financing in Indonesia. Thus, the second hypothesis is confirmed.

7. Conclusion :

In summary, Indonesia acknowledges the urgent need to tackle climate change and acted by issuing its first Green Sukuk, which was oversubscribed, reflecting strong global demand. The issuance expands Indonesia's financial instruments while supporting national priorities, fulfilling Paris Agreement commitments, and advancing progress toward the Sustainable Development Goals.

Although green bonds account for only 2.5–3% of the global bond market, they are steadily expanding. Sustaining this growth is crucial, as investors increasingly consider the social and environmental impact of their investments. The Climate Bonds Initiative estimates that annual issuances need to reach $1 trillion to effectively support a low-carbon economy. Green bonds are set to play a central role in the shift toward a sustainable global economy, but continued development of legal and regulatory frameworks is essential as the market evolves.

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