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The Role of Islamic Green Finance in Accelerating the Green Economic Transition in Indonesia: A Comprehensive Analysis of Instruments, Regulations, and Ecological Justice

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Abstract
Climate change and the need for a transition to a green economy require the mobilization of large-scale financing, while Indonesia's conventional fiscal capacity has limitations in meeting the funding needs for mitigation and adaptation. In this context, Islamic Green Finance (IGF) holds strategic potential because it integrates the principles of environmental sustainability, social justice, and Sharia values. This study aims to comprehensively analyze the role of IGF in accelerating the green economic transition in Indonesia by examining the development of financing instruments, regulations, sectoral allocation mechanisms, and dimensions of ecological justice. The study employs a mixed-methods approach through a Systematic Literature Review (SLR) following the PRISMA 2020 protocol, conceptual bibliometric analysis, and a synthesis using the Analytic Network Process–Benefits, Opportunities, Costs, and Risks (ANP-BOCR) framework. The study's findings indicate that Indonesia's IGF ecosystem is developing through three main pillars: Sovereign Green Sukuk, sukuk-based corporate financing, and Islamic social finance instruments such as Cash Waqf-Linked Sukuk (CWLS) and Green Zakat. These instruments play a role in mobilizing capital for sustainable development while strengthening the dimensions of social inclusion and equity. However, the study also identified an allocation paradox, particularly the high concentration of Sovereign Green Sukuk in the sustainable transportation sector, while financing for the renewable energy and decarbonization sectors remains very limited. From an institutional perspective, the TKBI and its harmonization with the ASEAN Taxonomy for Sustainable Finance strengthen governance and mitigate the risk of greenwashing, while MUI Fatwa No. 86 of 2023 provides ethical and religious legitimacy for climate change mitigation efforts. These findings indicate that IGF has the potential to serve as a catalyst for Indonesia's green economic transition toward Net Zero Emissions by 2060; however, its effectiveness requires diversification of the sukuk portfolio, strengthening of Islamic blended finance, increased financing for renewable energy, and reinforcement of mechanisms for monitoring climate impact and climate justice.

Keyword **:** *Cash Waqf-Linked Sukuk; Climate Justice; Islamic Green Finance; Green Sukuk; Green Zakat; Green Economy.*

Abstrak
Perubahan iklim dan kebutuhan transisi menuju ekonomi hijau menuntut mobilisasi pembiayaan berskala besar, sementara kapasitas fiskal konvensional Indonesia memiliki keterbatasan dalam memenuhi kebutuhan pendanaan mitigasi dan adaptasi. Dalam konteks ini, Islamic Green Finance (IGF) memiliki potensi strategis karena mengintegrasikan prinsip keberlanjutan lingkungan, keadilan sosial, dan nilai-nilai syariah. Penelitian ini bertujuan menganalisis secara komprehensif

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peran IGF dalam mempercepat transisi ekonomi hijau di Indonesia dengan mengkaji perkembangan instrumen pembiayaan, regulasi, mekanisme alokasi sektoral, serta dimensi keadilan ekologis. Penelitian ini menggunakan pendekatan mixed methods melalui Systematic Literature Review (SLR) yang mengikuti protokol PRISMA 2020, analisis bibliometrik konseptual, serta sintesis menggunakan kerangka Analytic Network Process–Benefits, Opportunities, Costs, and Risks (ANP-BOCR). Hasil penelitian menunjukkan bahwa ekosistem IGF di Indonesia berkembang melalui tiga pilar utama, yaitu Sukuk Hijau Negara (Sovereign Green Sukuk), pembiayaan korporasi berbasis sukuk, dan instrumen keuangan sosial Islam seperti Cash Waqf-Linked Sukuk (CWLS) dan Zakat Hijau (Green Zakat). Instrumen-instrumen tersebut berperan dalam memobilisasi modal untuk pembangunan berkelanjutan sekaligus memperkuat dimensi inklusi sosial dan pemerataan. Namun, penelitian ini juga mengidentifikasi adanya paradoks alokasi, khususnya tingginya konsentrasi Sukuk Hijau Negara pada sektor transportasi berkelanjutan, sementara pembiayaan bagi sektor energi terbarukan dan dekarbonisasi masih sangat terbatas. Dari perspektif kelembagaan, Taksonomi untuk Keuangan Berkelanjutan Indonesia (TKBI) beserta harmonisasinya dengan ASEAN Taxonomy for Sustainable Finance memperkuat tata kelola dan memitigasi risiko greenwashing, sedangkan Fatwa MUI Nomor 86 Tahun 2023 memberikan legitimasi etis dan keagamaan bagi upaya mitigasi perubahan iklim. Temuan ini menunjukkan bahwa IGF berpotensi menjadi katalisator transisi ekonomi hijau Indonesia menuju Net Zero Emissions (NZE) pada tahun 2060; namun efektivitasnya memerlukan diversifikasi portofolio sukuk, penguatan Islamic blended finance, peningkatan pembiayaan energi terbarukan, serta penguatan mekanisme pemantauan dampak iklim dan keadilan iklim.

Kata Kunci **:** *Keuangan Hijau Islam; Sukuk Hijau; Cash Waqf-Linked Sukuk; Zakat Hijau; Ekonomi Hijau; Keadilan Iklim.*

1. Introduction

The current global climate crisis has radically transformed from a mere ecological issue into a systemic threat that disrupts macroeconomic stability, social resilience, and the sustainability of long-term development worldwide. According to monitoring by the European Union's *Copernicus Climate Change Service*, the average global temperature increase reached 1.52 degrees Celsius from February 2023 to January 2024, surpassing the critical threshold of 1.5 degrees Celsius set by *the Paris Agreement* relative to pre-levels. As an archipelagic nation with the world's second-longest coastline and a hotspot of tropical biodiversity, Indonesia is extremely vulnerable to weather anomalies, sea-level rise, and hydrometeorological disasters. Macroeconomic projections indicate that without comprehensive structural interventions, the impacts of climate change could significantly erode the national Gross Domestic Product (GDP) by between 0.66% and 3.45% (Prisandy & Widyaningrum, 2022).

In response to this existential urgency, the Indonesian government has taken progressive steps on the international governance stage by ratifying the Paris Agreement and consistently raising its mitigation ambitions. Through the *Enhanced Nationally Determined Contribution* (ENDC) document submitted to *the United Nations Framework Convention on Climate Change* (UNFCCC) in 2022, Indonesia has set a commitment to reduce greenhouse gas emissions by 31.89% through unconditional domestic capacity, and to scale this up to 43.2% with international financial support by 2030. This mitigation vision is reinforced by a strategic roadmap toward *Net Zero Emissions* (NZE) by 2060 at the latest (Rahmasari, 2024).

However, the transition to a *green economy* aligned with these ambitious targets requires the mobilization of capital on an unprecedented, massive scale. Based on *the Third Biennial Update*

Report (BUR) and data from the Ministry of Finance of the Republic of Indonesia, the estimated funding needs for climate mitigation actions in Indonesia exceed the capacity of traditional fiscal space.

Table 1. Estimated Funding Needs for Climate Mitigation in Indonesia by Priority Sector

Priority Mitigation Sectors	Estimated Funding Needs (Trillion Rupiah)	Estimated Funding Needs (Billions of USD)
Sustainable Energy and Transportation	3,500.00	245.99
Forestry and Land Use	309.01	21.86
Waste Management	185.27	12.99
Sustainable Agriculture	7.23	0.50
Industrial Processes and Product Use (IPPU)	0.93	0.07
Total Estimated Funding Requirements for Mitigation	**4,002.44**	**281.23**

Source: Data extracted from the Third Biennial Update Report and the Ministry of Finance.

Beyond the mitigation needs, which exceed Rp 4,000 trillion, climate adaptation strategies aimed at reducing the risk of infrastructure and economic losses require additional funding estimated to range from Rp 33.12 trillion to Rp 173.19 trillion, or the equivalent of USD 2.3 billion to USD 12.14 billion. Given that the fiscal capacity of the State Budget (APBN) has absolute limitations, conventional tax-based revenue instruments are no longer sufficient to close the funding gap, which is calculated to reach billions of dollars per year (Rahmasari, 2024). Although the government has designed a series of fiscal incentive packages such as *tax holidays* of up to 20 years for pioneering eco-friendly industries and VAT exemptions for strategic sectors these policies require leverage from the capital markets and banking sectors for the transition to proceed fundamentally (Stability & Heightened, n.d.).

Against this backdrop of a funding deficit, *Islamic Green Finance* emerges as a crucial and essential mechanism. Leveraging the sociological and demographic dividends of being the country with the world's largest Muslim population, the integration of financial instruments aligned with Islamic Sharia offers the advantages of social penetration, ethical legitimacy, and a highly unique *risk-sharing* architecture (Syarifuddin, 2022). The principles of Islamic economics centered on the prohibition of exploitation (*maysir*, *gharar*, *riba*), the equitable distribution of wealth, and the protection of environmental sustainability are inherently consistent with global sustainability governance and *the Sustainable Development Goals* (SDGs).

This research report aims to provide a comprehensive analysis of the structural framework, dynamics, regulatory evolution, and challenges facing Islamic green finance in Indonesia. The analysis in this report does not merely aggregate the volume of issuances of instruments such as *Sovereign Green Sukuk* or corporate sukuk, but rather unpacks the paradox of sectoral allocation observed in practice, explores the utility of Islamic philanthropic instruments (*Cash Waqf-Linked Sukuk* and *Green Zakat*), and critically examines the OJK's regulatory framework and the theological legitimacy derived from fatwas issued by Islamic scholars to project the direction for refining the national ecological transition.

2. Literature Review

2.1. The Coherence of Maqashid al-Shariah and the SDGs

The integration of Islamic economics and green economics is not a pragmatic financial construct, but rather a convergence of profound theological and ethical foundations. This paradigm positions humanity as *khalifah fil ardh* representatives or *stewards* on Earth who bear absolute responsibility for preserving and fostering the natural ecosystem (Arrazi, 2025). Contemporary academic discourse positions ecological protection (*hifz al-biah*) not as a separate, exogenous entity, but rather as organically intertwined with *the Maqashid al-Shariah*.

Based on the teachings of classical scholars such as Al-Ghazali and Al-Shatibi, the objectives of Sharia include the protection of religion (*hifz al-deen*), the protection of life (*hifz al-nafs*), the protection of reason (*hifz al-aql*), the protection of lineage (*hifz al-nasl*), and the protection of property (*hifz al-maal*). Environmental degradation, rising global temperatures, and extreme climate anomalies directly undermine food security, trigger clean water shortages, damage infrastructure, and spread deadly diseases. Therefore, structural negligence in fundamentally curbing the rate of carbon emissions is identified as a direct threat to the survival of life (*nafs*) and the existence of future generations (*nasl*). Low-carbon economic development, within this epistemological framework, is interpreted as a form of transcendental worship that carries Sharia legal implications in safeguarding the collective public interest (Firdaus & Fillah, 2024).

An empirical analysis based on decision modeling confirms this theological premise. A study applying the *Analytic Network Process* methodology which weighs the variables *of Benefits*, *Opportunities*, *Costs*, and *Risks* among a group of Islamic economics experts shows that the benefits of green economic transformation rank highest in preference (Arrazi, 2025). Variables related to mitigating and preventing damage to natural resources are evaluated as primary issues considered fully aligned with the objectives of Islamic law. Furthermore, these findings reveal institutional preferences in which Islamic asset management is considered ideal for bridging the short-term transition, while investment banking and corporations play a key role in providing heavy infrastructure (such as renewable power plants) that requires long-term capital architecture (Zahira & Boegiyati, 2026).

2.2. Ecological Theology and the Shaping of Pro-Environmental Behavior

In the context of a developing society with deep-rooted religiosity, such as Indonesia, scientific and economic approaches alone are often insufficient to trigger mass behavioral change. The literature on the sociology of religion highlights that the moral legitimacy of religious authority functions as an injunctive norm with high cultural penetration. The *Theory of Planned Behavior* (TPB) model, when applied to the field of environmental theology, confirms that environmental doctrine (*Fiqh al-Biah*) is capable of transforming attitudes into intentions, and subsequently into concrete ecological actions (*behavior*) (Holifurrahman & Sulistyowati, 2023).

The "Green Fatwa to Action" model posits that religious fatwas reinforce individuals' subjective norms by providing theological certainty that preserving nature is a religious obligation, while destroying it is a grave sin. However, the literature highlights the existence *of an "intention-behavior gap,"* where good intentions will not translate into concrete actions without the support of enabling infrastructure and operational funding. Therefore, *Islamic green finance* through the integration of zakat, waqf, and sukuk instruments serves as a financial catalyst that enables grassroots communities to manifest their religious devotion through measurable climate adaptation projects (Holifurrahman & Sulistyowati, 2023).

2.3. The Bibliometric Evolution of Green Finance Research

The discourse on Islamic green finance has seen exponential growth over the past decade. Bibliometric mapping classifies the literature into several overlapping thematic clusters: from Sharia foundations, to the integration of *blockchain* technology and digitalization, to sustainability governance frameworks (Adzimatinur et al., 2024). Previous research has focused more on the theoretical justification of the feasibility of ESG instruments from a Sharia perspective. However, the academic landscape is now shifting toward analytical evaluations of empirical evidence regarding emissions reduction, *greenwashing* mitigation, and the standardization of impact reporting reinforcing the position of the Islamic financial system not merely as a complement, but as the central pillar of inclusive development financing.

3. Materials and Methods

This comprehensive report was formulated using a *mixed-methods* approach based on *a Systematic Literature Review*, conceptual bibliometric analysis, and a synthesis of the ANP-BOCR decision-making framework. These methods were applied to ensure the objectivity, accountability, and accuracy of the data synthesis across various scientific disciplines.

3.1. *Systematic Literature Review* (SLR) following the PRISMA 2020 Protocol

This analytical paper adheres to the international gold standard guidelines, namely *the Preferred Reporting Items for Systematic Reviews and Meta-Analyses* (PRISMA) 2020 update (Kurniawan & Puspanikan, 2026). PRISMA 2020 provides 27 checklists and a four-phase flowchart that reduce bias in the process of collecting and screening both qualitative and quantitative data[15]. The implementation of PRISMA in this study includes the following structured stages:

1. **Identification Stage:** An extensive literature search was conducted across reputable academic databases (including Scopus, IEEE Xplore, Google Scholar, and the ACM Digital Library) by applying *Boolean operators* to the keywords: *Islamic Green Finance and Green Sukuk*, *Cash Waqf-Linked Sukuk*, *ASEAN Taxonomy*, and *Fiqh al-Biah*[15]. The identification process was also expanded to capture crucial *gray literature*, including regulatory documents from the Financial Services Authority (OJK), *the Allocation and Impact Report* from the Ministry of Finance, fatwas from the Indonesian Ulema Council

(MUI), and studies by civil society organizations such as WALHI (Kurniawan & Puspanikan, 2026).

2. **Screening Stage:** Thousands of initially identified literature sources were filtered both algorithmically and manually to exclude duplicates using reference management software. A preliminary selection was then made by reviewing titles and abstracts to eliminate manuscripts that did not substantially explore the intersection between environmental sustainability and Islamic financial instruments in Indonesia.
3. **Eligibility Stage:** The remaining articles underwent a *full-text* review. Eligibility criteria were tied to specific parameters: the literature must provide an analysis of instrument implementation, regulatory and governance challenges (*taxonomy*), sectoral allocation mechanisms, or the sociological impact of Islamic moral doctrine on climate adaptation behavior.
4. **Inclusion Stage:** Data from the selected literature is extracted into a thematic synthesis that forms the narrative framework of this report, presenting a comparative analysis ranging from government instruments to private-sector innovations and philanthropy.

3.2. Bibliometric Analysis and *Analytic Network Process* (ANP)

In support of the PRISMA approach, the bibliometric analysis technique was used to detect trends and shifts in research topic clusters (Fatima & Purwoko, 2024). The *co-occurrence* analysis provides visual evidence of how the variables "sukuk," "energy transition," and "SDGs" are beginning to converge academically within Indonesia's Islamic finance ecosystem. Furthermore, findings from the *Analytic Network Process* (ANP) framework based on *Benefits, Opportunities, Costs, and Risks* (ANP-BOCR) were incorporated into the report to justify Islamic economists' hierarchical preferences regarding the urgency of establishing a green investment bank to support the long-term *capital expenditures* (CAPEX) underpinning the energy transition.

4. Results and Discussion

The Islamic green finance ecosystem in Indonesia operates through the integration of three pillars of financing architecture: sovereign-based commercial capital market instruments, private corporate participation, and philanthropic instruments with a social justice dimension. This framework is governed by financial regulatory instruments and the legitimacy derived from religious moral epistemology.

4.1. Commercial Instruments: The Evolution of *Sovereign Green Sukuk* and the Paradox of Sectoral Allocation

Indonesia's dominance in green finance cannot be separated from the role *of Sovereign Green Sukuk*, which has served as a catalyst for the global market. The government has designed *the Republic of Indonesia Green Bond and Green Sukuk Framework* to provide absolute transparency to the investor base, categorizing nine *eligible* sectors that range from renewable

energy and sustainable transportation to climate resilience, energy efficiency, waste management, and circular agriculture.

Historical Evolution and Global Market Expansion. Indonesia's structural boldness was demonstrated in March 2018 when it issued the world's first global *Sovereign Green Sukuk* worth USD 1.25 billion with a 5-year tenor. This pioneering issuance sent a strong signal regarding the convergence of Sharia-compliant products within the *Environmental, Social, and Governance* (ESG) market. Expansion continues to be driven by a track record that reinforces the government's fiscal credibility.

Table 2. Issuance Track Record of Indonesia's Green Sukuk, 2018–2022

Year	Instrument Type	Issue Value	Term	Significance and Market Reception
2018	Global Green Sukuk	USD 1.25 billion	5 years	The world's first sovereign green sukuk issuance; yield of 3.75%.
2019	Global Green Sukuk	USD 750 million	5.5 years	Over-subscription of up to 3.8 times the target.
2020	Global Green Sukuk	USD 750 million	5 years	Remained *oversubscribed* by 7.37 times amid the pandemic turmoil.
2020	Retail Green Sukuk	Rp 5.4 trillion	2 years	First domestic retail market inclusion via ST007.
2021	Global Green Sukuk	USD 750 million	30 years	The first green sukuk with an ultra-long structural tenor (30 years).
2022	Global Green Sukuk	USD 1.5 billion	10 years	Bringing the total accumulated global market share to USD 6.9 billion.
2022	Project-Based Sukuk	Rp 6.73 trillion	7 years	Driving structured domestic *wholesale* financing through the PBSG0001 series.

Based on international reviews (such as the 2024 ICMA-IsDB-LSEG report), the total accumulated portfolio positions the Indonesian government as the largest global player or single *issuer* of sustainability sukuk, demonstrating that these instruments are not solely dependent on the domestic market but also possess cross-continental liquidity appeal.

A critical analysis of the allocation paradox that addresses the energy transition deficit, despite issuance figures setting spectacular records and contributing to a cumulative reduction of millions of metric tons of carbon dioxide emissions (Aminin & Khayati, 2025), a deconstructive analysis of the Ministry of Finance's *Green Sukuk Allocation and Impact Report* reveals a reality that presents profound empirical challenges. The government's sukuk financing portfolio faces a structural paradox: funding is hyper-concentrated in a single sector, while the fundamental sectors of decarbonization suffer from an acute deficit.

Table 3. Cumulative Allocation of Sovereign Green Sukuk Proceeds by Green Target Sector

Green Target Sectors	Cumulative Allocation Share (%)	Dominant Managing Institutions
Sustainable Transport	82.77%	Ministry of Transportation
Climate Change Resilience	16.50%	Ministry of Public Works and Public Housing

Green Target Sectors	Cumulative Allocation Share (%)	Dominant Managing Institutions
Sustainable Natural Resource Management	0.65%	Ministry of Environment and Forestry
Energy Efficiency	0.06%	Ministries related to Energy and Mineral Resources
Clean Water and Wastewater Management	0.003%	Ministry of Public Works and Housing

Source: Green Sukuk Allocation and Impact Report, Ministry of Finance of the Republic of Indonesia.

Data analysis reveals extreme asymmetry. Nearly 83% of total capital is channeled into the sustainable transportation sector, the majority of which is allocated for the construction of mega-infrastructure projects for the railway transportation system and urban logistics facilities (Rahmasari, 2024). The absolute dominance of the transportation sector is a logical outcome of the government bureaucracy's tendency to seek *"shovel-ready" projects* that have secured land, administrative clarity, and high political visibility.

However, on the other hand, allocating less than 1% of accumulated capital where energy efficiency stands at 0.06 to fund the decarbonization of the electricity infrastructure is a *blind spot* that risks delaying the achievement of Net Zero Emissions. Indonesia faces an annual investment need of USD 16.1 billion to accelerate the phased-out of coal-fired power plants and develop a renewable energy mix, such as solar panels, wind turbines, and geothermal power. The solar energy sector alone faces a funding gap of USD 4.6 billion per year. This gap reflects the failure of conventional-tenor government sukuk instruments to absorb the high-risk profile of renewable energy development, which is often plagued by long-term uncertainty regarding return on investment, land acquisition challenges, and reliance on a single *off-taker* (PT PLN).

4.2. Private-Sector Participation: BSI's Mudharabah Sukuk Banking Strategy

In response to the government's inability to absorb investments from medium-sized corporations, the Islamic banking sector has begun restructuring itself to enter the green economy niche. PT Bank Syariah Indonesia Tbk (BSI) is leading this effort by launching the largest private capital market instrument of its kind: the Bank Syariah Indonesia Sustainable Mudharabah Sukuk Continuous Public Offering Program I.

This corporate structure aims to raise a massive Rp 10 trillion. During the execution of Phase I in 2024, BSI successfully issued Rp 3 trillion worth of the traded electronically without physical certificates through the Indonesian Central Securities Depository (KSEI), with a minimum participation lot of Rp 5 million, securing participation not only from institutional investors but also from large-scale retail investors. Demonstrating its liquidity credibility, BSI successfully redeemed the maturing Series A bonds worth Rp 1.7 trillion in mid-2025. Maintaining its ESG momentum, BSI conducted the Phase II issuance in May–June 2025 with a target of Rp 5 trillion. Conceptually, the incorporation of the *Mudharabah* agreement distinguishes this sukuk from conventional fixed-rate bonds. The *risk and return sharing* mechanism is implemented through a margin calculation scheme based on the actual managed profit from the assets, whereby income distribution is conducted without an immediate zakat deduction, allowing investors to formulate their own

corporate zakat policies. Market confidence is secured through the commitment of the underwriter and the attainment of a credit rating from PEFINDO.

More fundamentally, the sustainability aspect is legally enshrined. The offering prospectus stipulates that the proceeds from the capital raising are strictly prohibited from flowing to entities that harm the environment; these funds are exclusively allocated to borrowers that meet the criteria for Environmentally-Oriented Business Activities (KUBL) or Socially-Oriented Business Activities (KUBS). These strict requirements ensure that every rupiah managed aligns with the Indonesian Sustainable Finance Taxonomy (TKBI), setting an important precedent that the banking industry can maximize profits while preventing an ecological crisis (Solutions, 2022).

4.3. Dimensions of Islamic Social Finance Philanthropy: Innovations in Cash Waqf and Green Zakat

The economic transition toward a low-emission model often risks marginalizing vulnerable socioeconomic groups, making the principle of a just *transition* essential. It is in this context that Islamic social finance (waqf and zakat) has proven its effectiveness in fostering structural stability, providing a productive and protective social safety net.

Historically, *waqf* in Indonesia has remained stagnant as a passive instrument consisting of land or physical buildings. A drastic transformation has been driven by the consensus on cash waqf (*waqf al-nuqud*), which enables the massive aggregation of liquid funds without eroding the value of the original principal (*corpus*). Through collaboration between the Ministry of Finance, Bank Indonesia, and the Indonesian Waqf Board, a hybrid philanthropy-investment instrument dubbed *the Cash Waqf Linked Sukuk* was launched (Siswantoro, 2023).

The operational design of CWLS represents a major achievement in social and financial engineering. The wakif deposits cash through a Sharia Financial Institution designated to receive cash waqf. The entire cumulative fund is not distributed as direct donations but is instead converted 100% to purchase units of the State Sukuk " . Because *it is sovereign-guaranteed*, the principal value of the waqf is free from the risk of default. The government periodically pays interest coupons into the BWI account (as *the Nazhir*), which are then distributed to fund health programs, education for the poor, and environmental infrastructure restoration. Academic studies project the explosive potential of CWLS; a simulation model shows that if CWLS is mainstreamed for post-climate disaster rehabilitation, it can tap into up to Rp 2.67 trillion in cash waqf to restore coastal infrastructure and drought-affected areas.

Green Zakat as an Ecological Shield. In addition to productive investments, purely charitable giving has also evolved. The National Zakat Agency (BAZNAS) and similar social institutions have transformed the traditional philosophy of zakat distribution into a preventive scheme through *Green Zakat*. Instead of providing temporary consumptive aid, zakat funds are invested in environmental sustainability projects that directly benefit *the mustahiq*. Implementation practices include supporting local farmers in transitioning to organic fertilizers that are resilient to weather changes, empowering fishermen through the rehabilitation of green belts (*mangroves*), and

investing in integrated waste processing machinery. This scheme breaks the cycle of ecological poverty (loss of livelihood due to environmental degradation) while embodying the *Maqashid* mandate to safeguard the property and lives of the underprivileged.

4.4. Institutional Foundation: National Regulatory Authorities and ASEAN Taxonomy Standards

This flow of green capital is protected by a strict regulatory framework designed to shield the capital market from "greenwashing" that is, false marketing claims that exploit environmentally friendly terminology without actual emission reduction actions.

The Financial Services Authority (OJK) has formulated legal guidelines through OJK Regulation (POJK) No. 60 of 2017 on Environmentally Conscious Debt Securities, which has been iteratively refined through the issuance of POJK No. 18 of 2023, integrating the values of sustainable bonds with the sukuk ecosystem (OJK, 2026). The implementation of these standards is realized through the release of the Indonesian Sustainable Finance Taxonomy (TKBI).

Adopting a "growing house" philosophy, the TKBI has been updated in line with global demands. While TKBI Version 1 (2024) focused solely on the energy sector transition, the OJK expanded the scope of regulation in early 2025 by releasing TKBI Version 2. This comprehensive revision introduces *Technical Screening Criteria* for three additional major economic pillars: residential construction, transportation logistics, and portions of the agricultural, land, and forestry management supply chains. Currently, the OJK has launched a massive training program within the banking industry and is drafting a public consultation document for TKBI Version 3 for the coming years (OJK, 2026).

The greatest significance of TKBI Version 2 is its success in achieving international interoperability by referencing the *ASEAN Taxonomy for Sustainable Finance (ATSF) Version 3* regional standard. Designed by *the ASEAN Taxonomy Board* (ATB), this regional framework operates using a multitiered traffic-light classification system. The assessment of sustainability compliance is divided into two options: *the Foundation Framework,* which is based on flexible qualitative inquiry principles, and *the Plus Standard,* which is based on quantitative metrics and scientific technical thresholds (Acmf, 2024). To obtain green certification in ASEAN, every industrial project must not only contribute to at least one of the four Environmental Objectives but also implement climate mitigation, climate adaptation, biodiversity protection, and resource resilience/circularity; furthermore, it must comply with three absolute Essential Criteria: *Do No Significant Harm*, Establish Transition Remediation Measures, and Comply with Social/Human Rights Aspects. The TKBI's hierarchical compliance with these ASEAN standards protects Indonesian issuers in the eyes of global institutional investors.

4.5. Ethical-Moral Legitimacy (MUI Fatwa) and WALHI's Sociological Critical Analysis

OJK regulations operate within the realm of positive law; however, to modify the behavior of millions of people, spiritual awareness must be engineered. The Indonesian Ulema Council (MUI) has historically codified environmental doctrine into the framework of positive Sharia law, or *Fiqh*

al-Biah. This portfolio of fatwas includes prohibitions on destructive practices such as illegal mining (Fatwa No. 22/2011), the hunting of endemic fauna (No. 04/2014), and the prohibition of disposing of food waste classified as *tabdzir* and a cause of methane gas (No. 41/2014).

This progressive religious stance reached its culmination in late 2023 with the enactment of MUI Fatwa No. 86 of 2023 on the Legal Rulings Regarding the Mitigation of Global Climate Change. This historic fatwa, regarded as the world's first climate guideline issued by a leading Islamic scholarly authority, definitively establishes that any activity including uncontrolled deforestation and massive greenhouse gas emissions that exacerbate the ecological crisis is haram (Holifurrahman & Sulistyowati, 2023). Referring to classical *fiqh* texts (*Sadd al-Dzari'ah* and *Dar'u al-Mafasid* by Al-Ghazali, as well as the fatwa on harm by Ali Haidar), this fatwa obligates Muslim individuals and corporations to simultaneously take adaptation measures, limit daily carbon footprints beyond subsistence needs, and actively engage in a just energy transition. Thus, climate mitigation is declared not merely a technocratic project of the United Nations, but an absolute religious obligation, whereby those who cause harm are threatened with punishment in the form of financial compensation according to *Islamic jurisprudence (fiqh)*.

WALHI's Dialectic and Critique of Climate Justice. Despite global appreciation for this groundbreaking fatwa, the grassroots civil society organization Wahana Lingkungan Hidup Indonesia (WALHI) has leveled a sharp sociopolitical critique to prevent a shift in structural responsibility. WALHI welcomes the issuance of this fatwa but criticizes the substance of the narrative regarding the control of .

According to a WALHI study, the use of “control” semantics reduces the climate crisis to a mere neutral event, which morally shifts the burden of control and adaptation onto indigenous communities, fishermen, or small-scale farmers. This obscures the fact that communities are the victims bearing the brunt of extreme weather, while the absolute perpetrators are multinational oil and coal extraction corporations.

Furthermore, criticism has been directed at the absence of the *climate justice* dimension in the fatwa text, specifically the lack of theological support for the international compensation mechanism the Loss and Damage Fund advocated by developing countries at the COP 27 Climate Summit in Egypt. WALHI argues that demanding marginalized coastal communities to simply adapt when their land is being overtaken by rising sea levels without including a mandatory call for economic and social compensation from carbon-emitting entities constitutes a fundamental flaw in reasoning that contradicts the principles of Islamic justice. This fundamental criticism from WALHI underscores the essential point that *fiqh* or the jurisprudence of future scholars must be used to hold powerful entities (corporatocracies) accountable, rather than merely regulating “green piety” at the grassroots level.

5. Conclusion and Suggestions

5.1. Conclusion

From a holistic perspective, this exclusive study concludes that the architecture of Islamic Green Finance has proven to no longer be merely a peripheral charitable supplement, but has instead emerged as the primary driver (catalyst) for accelerating sustainable development toward Indonesia's 2060 Net-Zero Emissions (NZE) target. The funding spectrum demonstrates a phenomenal level of efficacy in mobilizing massive capital across sociocultural boundaries. At the macro-international level, the aggregation of *Sovereign Green Sukuk* totaling USD 6.9 billion has solidified the government's dominance in the global sustainable investment market. In the real sector, the launch of sustainable *Corporate Mudharabah Sukuk* worth Rp 10 trillion by BSI has provided a liquidity injection to businesses based on KUBL and KUBS in accordance with the OJK's climate change mitigation mandate. These large-scale capital instruments are paired with the resilience of the micro-social economic foundation through the modernization of *Cash Waqf Linked Sukuk* (CWLS) and Green Zakat, designed to prevent marginalized communities from falling into the abyss of ecological poverty in the aftermath of disasters.

The depth of this material financial ecosystem is also anchored by safeguards on two fronts simultaneously: OJK regulations based on the Indonesian Sustainable Finance Taxonomy (TKBI) Version 2 which is interoperable with the ASEAN Standards (ATSF v3) to combat the phenomenon of "greenwashing," as well as on the theological and spiritual front. The ratification of the Legal Doctrine on Climate Control (MUI Fatwa No. 86 of 2023) erases the secular boundaries between nature conservation and religious obligations, thereby binding the morality of hundreds of millions of adherents to avoid destruction (*hifz al-biah*) as part of the integrity of their faith in the Creator's sharia.

However, behind the impressive issuance figures, Islamic green finance infrastructure is mired in a funding allocation paradox. The high proportion of *Sovereign Green Sukuk* allocations (nearly 83%) directed solely toward railway infrastructure and logistics transportation facilities signals the failure of the medium-term sukuk bond market to accommodate the risk profile of the energy sector. The minimal allocation of funds (less than 1%) to sectors essential for the renewable electricity transition (solar, wind, geothermal) represents an urgent crisis. Without radical structural intervention to finance *the phasing out of* coal-fired power plants and energy infrastructure—which requires a deficit of billions of dollars per year Indonesia's *Net Zero Emission* pledge will remain nothing more than a bureaucratic slogan on paper.

5.2. Suggestions and Recommendations

To restructure acute imbalances in the green finance architecture and secure the cross-decade sustainable development agenda, policymakers are urged to implement the following strategic recommendations:

1. **Recalibrate the National Sukuk and SOE Portfolios:** The Directorate General of Financing and Risk Management (DJPPR) of the Ministry of Finance, in collaboration with Bappenas, needs to proactively diversify sukuk flows. The government must not continue to rely solely on ready-to-build transportation projects. Energy SOEs (such as PLN and Pertamina) should be encouraged to issue very long-term corporate bonds (Green Sukuk) in international markets, with 100% of the proceeds dedicated to building solar panel and geothermal power plants.
2. **Institutionalizing Islamic Blended Finance:** To mitigate financial risks (derisking) in high-risk energy transition projects, the Monetary Authority and the Government need to enact specific legal frameworks that legalize blended finance. This scheme will combine zero-cost philanthropic funds (such as CWLS and *Green Zakat*) with capital injections from the JETP consortium and the state budget as *a first-loss guarantee*, thereby increasing the credit appeal for global commercial investors.
3. **Establishment of a Regional Hub through AIGEF:** In response to the release of the ASEAN Taxonomy v3, the Indonesian government, under the leadership of the OJK, was encouraged to initiate the establishment of *the ASEAN Islamic Green Economy Framework* (AIGEF) together with Malaysia and Brunei Darussalam. This harmonization aims to make Jakarta's regulations the sole reference standard for the issuance of ESG sukuk, in order to expand cross-border liquidity.
4. **Anti-Greenwashing Oversight of TKBI Audits:** The OJK must require reporting on sustainability impacts that is independently verified by an international accounting firm (*impact assurance*) for all Islamic banks issuing sustainability securities. Failure to meet climate science thresholds must be subject to sanctions, including revocation of qualifications, under POJK 18/2023 and TKBI Version 2.
5. **Advocating for Climate Justice in Islamic Law:** To accommodate the rational arguments of civil society (WALHI), the MUI Fatwa Commission must in the future develop further fiqh jurisprudence that not only curbs domestic deforestation, but also progressively formulate obligations for restitution (compensation) or moral retribution for corporations and countries that are massive emitters, affirming Indonesia's stance in advocating for *the Loss and Damage Fund* at the UN as a true embodiment of the enforcement of Islamic social justice.

Ethics Statement & Author Contributions (CRediT Statement)

Atina Hidayati: [author contribution roles to be completed by the author, e.g., Conceptualization, Methodology, Writing – original draft, Writing – review & editing]

Data Policy

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

References

Acmf, T. (2024). *ASEAN Taxonomy for Sustainable Finance Version 3: Technical Screening Criteria for Construction & Real Estate and Transportation & Storage Focus Sectors*. https://www.rajahtannasia.com/viewpoints/asean-taxonomy-for-sustainable-finance-version-3-technical-screening-criteria-for-construction-real-estate-and-transportation-storage-focus-sectors/

Adzimatinur, F., Olii, R., & Japal, D. F. T. (2024). The Evolution of Green Sukuk in Indonesia. *Proceedings of ICIEB 2024, FEBI UIN Sunan Kalijaga Yogyakarta*. https://doi.org/10.14421/icieb.2024.3.1.1486

Aminin, R. I., & Khayati, I. (2025). Analysis of the Role of Green Sukuk in Financing the Renewable Energy Sector in Indonesia to Support the Achievement of Net Zero Emissions. *Musyarakah: Journal of Sharia Economics (MJSE)*, *5*(02), 105–124. https://doi.org/10.24269/mjse.v5i2.12422

Arrazi, M. F. (2025). Maqasid al-Shariah and Sustainable Finance: Analyzing the Impact of Green Sukuk Allocation in Indonesia. *Muslim Business and Economics Review*, *4*(1), 89–107. https://doi.org/10.56529/mber.v4i1.431

Firdaus, S., & Fillah, S. L. N. (2024). Arsitektur Sistem Informasi Perbankan Syariah. *Cashless: Journal of Sharia Finance and Banking*, *2*(2), 33–40. https://doi.org/10.55757/cashless.v2i2.1131

Holifurrahman, H., & Sulistyowati, S. (2023). *MUI Fatwa No. 86 of 2023 and the Ecological Behavior of Muslims*. *2*(2), 86.

Kurniawan, F. C., & Puspanikan, S. K. (2026). Bibliometric Analysis and Systematic Literature Review of Barriers to Blockchain in Logistics in Developing Countries: An Indonesian Perspective. *Journal of Applied Industrial Technology and Management*, *5*(1), 174–182. https://doi.org/10.55826/jtmit.v5i1.1416

OJK. (2026). *OJK Holds Taxonomy Training for Indonesian Sustainable Finance (TKBI) Batch 2*.

Prisandy, R. F., & Widyaningrum, W. (2022). Green Bonds in Indonesia: The Challenges and Opportunities. In *Indonesia Post-Pandemic Outlook: Rethinking Health and Economics Post-COVID-19* (p. 19).

Rahmasari, A. D. (2024). *Green Sukuk as a Form of Indonesia's Commitment to*. DJPPR, Ministry of Finance. https://djppr.kemenkeu.go.id/greensukuksebagaibentukkomitmenindonesiauntukperubahaniklim

Siswantoro. (2023). Cash Waqf-Linked Sukuk and Renewable Energy: Potential, Model, Strategy. In *Renewable Energy: Policy and Strategy* (pp. 145–169). https://doi.org/10.55981/brin.900.c787

Solutions, I. (2022). *Paris Alignment of Power Sector Finance Flows in Indonesia: March*.

Stability, G., & Heightened, A. (n.d.). *June 2025*.

Syarifuddin, F. (2022). *Toward Green Economy Transformation Through Islamic Green Financing: Managing Risk and Fostering Sustainable Growth for the Real and Financial Sectors*. Bank Indonesia. https://publication-bi.org/repec/idn/wpaper/WP052022.pdf

Zahira, L. N., & Boegiyati, D. (2026). Analisis Diskonto dan Nilai Waktu Uang dalam Perspektif Keuangan Syariah. *Cashless: Journal of Sharia Finance and Banking*, *4*(1), 47–62. https://doi.org/10.55757/cashless.v4i1.1518