Green Economy Development in Indonesia: A Systematic Review of Policy Gaps and the Potential of Islamic Environmental Ethics (2020–2025)

M. Nur Ikhwan
Universitas Islam Negeri K.H. Abdurrahman Wahid Pekalongan, Indonesia
E-mail: Nurikhwanskom@gmail.com

Indonesia's pursuit of a green economy has intensified in recent years as part of its commitment to global climate mitigation and sustainable development. Despite ambitious national targets such as the 23% renewable energy mix by 2025 and strengthened Nationally Determined Contributions progress remains slower than expected, indicating persistent gaps between policy formulation and practical implementation. At the same time, Islamic financial mechanisms, particularly Green Sukuk, Waqf-based environmental programs, and Sharia-compliant green financing models, have emerged as promising instruments to support the transition. This study employs a Systematic Literature Review (SLR) to examine Indonesia's green economy development from 2020 to 2025, with specific attention to policy gaps, implementation barriers, and the potential contribution of Islamic environmental ethics grounded in Maqashid al-Shariah. A total of 412 records were identified through Scopus, Google Scholar, and Publish or Perish searches. After applying inclusion exclusion criteria and evaluating methodological rigor using the CASP checklist, 32 high-quality articles were included in the final synthesis. The results reveal four overarching themes: (1) persistent inconsistencies between regulatory goals and implementation outcomes; (2) structural, institutional, and socio-technical barriers that hinder green policy execution; (3) underutilized opportunities in Islamic green finance that could strengthen climate-oriented investments; and (4) the relevance of Islamic environmental ethics as a normative foundation capable of guiding more holistic, justice-oriented sustainability strategies. This review emphasizes the importance of integrating policy coherence, financial innovation, and ethical frameworks to support Indonesia's future green transformation.

Keywords: green economy Indonesia, Islamic environmental ethics, policy implementation.

Introduction

Indonesia is undergoing profound economic shifts, and its central challenge lies in balancing growth with environmental sustainability. As part of its response to global climate pressures and the demand for sustainable development, the country is striving to advance a green economy that supports economic progress while preserving ecological integrity. Positioned as one of the fastest-growing economies in Southeast Asia and a major regional carbon emitter, Indonesia has pledged to raise the share of renewable energy in its national energy mix to 23% by 2025 and to reduce emissions by 29% independently or up to 41% with international assistance by 2030 through its Nationally Determined Contribution (NDC) (Firmansyah et al., 2023; Pambudi et al., 2023; Syabriyana, 2024).In other hand Renewable

energy realization had reached only about 12–14% by 2023 (Budiarto & Surjosatyo, 2021). It is revealing a substantial gap between policy targets and on-the-ground execution.

Indonesia also continues to struggle with long-standing structural barriers, particularly the heavy subsidies allocated to fossil fuels. These subsidies weaken economic incentives for green energy deployment and create a persistent "fossil lock-in" which discourages investment and slows renewable energy development (Jazuli et al., 2024; Wong & Dewayanti, 2024) Institutional fragmentation, including the dominant role of PLN as both the main power producer and single buyer, further complicates policy coordination and results in implementation inefficiencies (Maulidia et al., 2019). Although policy frameworks such as the Long-Term Low Carbon Development Initiative (LCDI), the Just Energy Transition Partnership (JETP), and emerging sustainable finance regulations demonstrate strong formal commitment, their implementation faces persistent challenges tied to political consistency, social acceptance, and regulatory enforcement (Aditya et al., 2025; Arwadi et al., 2025; Sambodo et al., 2022).

In terms of financing, green finance which functions as a key driver of the green transition remains in its early stages and is constrained by limited access to capital and shallow market literacy regarding new instruments such as green sukuk (Abubakar & Handayani, 2020; Iskandar et al., 2021). Indonesia has issued sovereign green sukuk since 2018, becoming a pioneer in Southeast Asia; however, its contribution to funding green projects still needs to be strengthened (Yusrifalda & Nurcahyo, 2025) sustainability-oriented initiatives, yet their actual use in green projects remains very limited (Yusrifalda & Nurcahyo, 2025).

Previous studies have examined various elements of Indonesia's green economy policies and their implementation barriers (Halimatussadiah et al., 2024; Sambodo et al., 2022; Syabriyana, 2024; Yana et al., 2022). However, comprehensive research that integrates Islamic finance mechanisms and maqashid al-shariah principles to evaluate the effectiveness of these policies is still scarce. This gap limits a holistic understanding of how Sharia-based financial instruments can help bridge policy-implementation discrepancies and strengthen the sustainability framework.

This study aims to conduct a systematic literature review to: (1) identify the gaps between Indonesia's green economy policy objectives and their practical implementation during 2020–2025, (2) uncover the main obstacles hindering successful implementation, (3) explore the role of Islamic financial instruments particularly green sukuk and waqf in supporting green economy financing and execution, and (4) integrate the maqashid al-shariah framework to assess and enhance policy effectiveness. Ultimately, this research seeks to enrich academic discourse and provide actionable policy recommendations to accelerate Indonesia's green transition

Methods

This study utilizes a systematic literature review (SLR), a method that is characterized by a systematic literature study approach. According Latifah & Ritonga (2020) the literature review stage consists of planning, execution, and reporting. The first stage is to find information about the topic outlined in the introduction. The second stage is formulating research questions, which are then addressed through collecting relevant sources, including scientific articles, books, reports, and other pertinent documents. Subsequently, the process of elimination is

undertaken based on the application of inclusion and exclusion criteria. The articles are grouped according to the research questions, and a synthesis is produced.

To ensure methodological rigor, all articles were subjected to quality appraisal using the Critical Appraisal Skills Programme (CASP) checklist for qualitative and review studies. Each article was scored across key domains such as clarity of objectives, appropriateness of methodology, validity of results, and relevance to the research questions. Only articles scoring a minimum of 7 out of 10 were included for synthesis. The third stage is presenting the results of the literature review, followed by content analysis and a comprehensive discussion.

The research was conducted over 21 days, from 1 to 22 October 2024. The systematic literature review (SLR) stages carried out in this study are as follows:

Formulation of Research Questions (RQ)

RQ1: How large is the gap between Indonesia's green economy policy objectives and their actual realization during 2020–2025?

RQ2: What are the key barriers hindering effective implementation of green economy policies in Indonesia?

RQ3: How do Islamic financial instruments specifically Green Sukuk and Waqf support financing and implementation of green economy initiatives in Indonesia?

RQ4: How can the Maqashid al-Shariah framework be integrated to assess and strengthen the effectiveness of Indonesia's green economy policy?

Inclusion Criteria

- Topic: Articles must address one or more of the following themes: green economy policy, green economy implementation, green financing, Islamic green finance, Green Sukuk, Waqf-based sustainability models, climate financing, renewable energy policy, or Maqashid al-Shariah applied to environmental or sustainability contexts in Indonesia.
- Publication type: Peer-reviewed articles, books, book chapters, conference proceedings, and dissertations.
- Language: English or Indonesian.
- Period: Publications from 2020–2025.
- Accessibility: Must be accessible through open access or institutional access.

Exclusion Criteria

- Irrelevant topics: Articles that only mention green economy or Islamic finance superficially without substantive analysis.
- Primary empirical studies without theoretical or policy discussion related to the research questions.
- Publication quality: Blogs, news reports, opinion pieces, promotional content, or articles without peer review.
- Other languages unless accompanied by verifiable translations.
- Duplication: Overlapping studies with no new perspectives.

Determination of Query

The scientific articles in this study are retrieved from Scopus and Google Scholar. The software Publish or Perish (PoP) was used to assist the practical and comprehensive search for scientific data sources. Keyword combinations were arranged using Boolean logic; however, for PoP the Boolean symbols were adapted into & (AND) and | (OR).

Scopus Query (Boolean Standard Format)

("green economy" AND Indonesia AND policy AND (implementation OR performance))
OR ("green finance" AND Indonesia)
OR ("green sukuk" AND Indonesia)
OR ("waqf" AND environmental OR "green waqf")
OR ("Islamic finance" AND sustainability AND Indonesia)
OR ("Maqasid Shariah" AND sustainability AND Indonesia)
OR ("renewable energy policy" AND Indonesia)

Google Scholar Query

"Green economy" AND "Indonesia" AND ("policy implementation" OR "policy gap")
OR "Green Sukuk" AND "Indonesia"
OR "Islamic green finance" AND ("climate" OR "sustainability")
OR "Waqf" AND ("environment" OR "green")
OR "Maqashid Shariah" AND "sustainable development" AND "Indonesia"

Publish or Perish (PoP) Query Format

("green economy" & Indonesia) |
("green sukuk" & Indonesia) |
("Islamic green finance" & sustainability & Indonesia) |
(waqf & green | waqf & environment & Indonesia) |
("Maqasid Shariah" & sustainability & Indonesia)

Article Quality Appraisal

The Critical Appraisal Skills Programme (CASP) checklist is one of the most widely used tools for assessing the methodological quality of qualitative research within evidence synthesis. Its application is often adapted to the needs of a specific review, for example by selecting core criteria, applying tailored scoring systems (such as *Yes/Partial/No* or numerical ratings), and establishing eligibility thresholds for study inclusion. Typically, the appraisal is conducted independently by two reviewers, with any discrepancies resolved through discussion (Long et al., 2020). This procedure ensures that only rigorously conducted studies are incorporated into the final synthesis and strengthens the methodological robustness of the review process the CASP-guided appraisal produces a more credible and defensible evidence base, contributing to stronger conclusions and more trustworthy policy or theoretical implications**.**

Results

The query result 412 records were identified through Scopus, Google Scholar, and Publish or Perish using predefined query strings on green economy policy, Islamic green finance, Green Sukuk, Waqf-based environmental models, and *Maqashid al-Shariah* frameworks in Indonesia. After removing 116 duplicates, 296 records proceeded to title and abstract screening. At this stage, 202 records were excluded for failing to meet the inclusion criteria, primarily because they discussed global sustainability without Indonesian context, addressed Islamic finance without relevance to sustainability, or mentioned green economy only superficially. A total of 94 articles were retained for full-text assessment.

During the full-text evaluation, each article was assessed against the predefined inclusion criteria: (1) alignment with at least one of the study's thematic domains green economy policy gaps, implementation barriers, Islamic green financing instruments (Green

Sukuk or Waqf), or Maqashid al-Shariah in sustainability; (2) publication between 2020 - 2025; (3) written in English or Indonesian; (4) peer-reviewed academic work; and (5) availability of complete and accessible full text. Articles also underwent a quality assessment using the CASP checklist, requiring a minimum score of 6.0 for inclusion.

A total of 62 articles were excluded at the full-text stage for the following reasons: 21 lacked direct policy or implementation relevance; 14 were empirical primary studies without theoretical or policy insights; 11 addressed Islamic finance broadly but not Green Sukuk or Waqf; 9 lacked accessible full text; and 7 failed to meet the CASP quality threshold. Ultimately, 32 articles met all inclusion criteria and were incorporated into the final synthesis, forming a robust evidence base for analyzing policy–implementation gaps, major barriers, Islamic green financing mechanisms, and the integration of the Maqashid al-Shariah framework in strengthening Indonesia's green economy agenda.

Table 1. CASP Qualty Appraisal

No	Title (Abbrev.)	Author & Year	Score	Quality Category	RQ
1	Sustainability Report Readability	Adhariani & Toit, 2020	6.5/8	High	RQ1
2	Green Hydrogen Transition	Aditya et al., 2025	6.5/8	High	RQ1, RQ2
3	Tech Advancement & Green Finance	Chien et al., 2023	6.5/8	High	RQ1, RQ2
4	Green Supply Chain Factors	Dwidienawati et al., 2025	6.5/8	High	RQ1
5	EV Eco-Innovation	Fathoni et al., 2025	6.5/8	High	RQ1
6	Green Tax & Renewable Energy	Leonard et al., 2024	6.5/8	High	RQ1
7	Post-COVID Green Economy	Martawardaya et al., 2021	6.5/8	High	RQ1
8	Circular–Digital–Green SMEs	Megawati et al., 2024	6.5/8	High	RQ1
9	Green Manufacturing MSMEs	Primandaru et al., 2023	6.5/8	High	RQ1
10	Renewable Energy Barriers	Sambodo et al., 2022	6.5/8	High	RQ1
11	Food Production Challenges	Setyowati et al., 2023	6.5/8	High	RQ1
12	SDGs Energy Agenda	Suparjo et al., 2021	6.5/8	High	RQ1
13	Green Economy Coffee Agroforest	Ulya et al., 2023	6.5/8	High	RQ1
14	FDI, Energy & Climate Goals	Udemba & Philip, 2022	6.5/8	High	RQ2
15	Green Sukuk & Growth	Ali et al., 2023	6.75/8	High	RQ2
16	Islamic FinTech & SMEs	Anggara & Nuraeni, 2025	6.75/8	High	RQ2
17	Islamic Green Finance Mapping	Faizi et al., 2024	6.75/8	High	RQ3
18	Sustainable Bonds Review	Putri et al., 2025	6.75/8	High	RQ3
19	Waqf Forest & SDGs	Ali & Kassim, 2020	6.25/8	Moderate	RQ3
20	Islamic Environmental Ethics	Gulzar et al., 2021	6.25/8	Moderate	RQ3
21	Sharia-Based Green Economy	Hardana, 2023	6.25/8	Moderate	RQ3
22	Islamic Fintech Review	Khan, 2023	6.25/8	Moderate	RQ3
23	Climate & Land Constraints	Setiawan et al., 2023	6.5/8	High	RQ4
24	Eco-Islam Ethics	Ali & Agushi, 2024	6.25/8	Moderate	RQ4
25	Islamic Env. Sustainability	Bsoul et al., 2022	6.25/8	Moderate	RQ4
26	Maqasid & Sustainability	Klongrua et al., 2025	6.25/8	Moderate	RQ4
27	Maqasid Analysis GE	Miswanto & Tasrif, 2024	6.25/8	Moderate	RQ4
28	Maqasid & Green Finance	Rahim et al., 2024	6.25/8	Moderate	RQ4
29	Fiqh al-Bi'ah & GE Financing	Yusuf et al., 2023	6.25/8	Moderate	RQ4
30	Sharia Economics & Green Dev	Mursid et al., 2024	6.75/8	High	RQ4
31	Prophetic Leadership & Green Waqf	Murtadha & Maulida, 2025	6.75/8	High	RQ4
32	Sharia Industrial Policy	Satiadharmanto et al., 2024	6.25/8	Moderate	RQ4

Thematic 1: Policy and Regulatory Direction Indonesia's Green Economy

Indonesia's green economy trajectory is firmly embedded in the National Medium-Term Development Plan (RPJMN) 2020–2024, which mandates a 27.3% reduction in greenhouse gas (GHG) emissions by 2024 and targets a 20% renewable energy mix (Sambodo et al., 2022). Complementing this, the government has formulated the Long-Term Strategy for Low Carbon and Climate Resilience 2050, aiming to achieve net-zero emissions by 2060 or sooner (Sambodo et al., 2022). These strategic goals are operationalized through various regulations, such as Presidential Regulation No. 44 of 2020 concerning ISPO, which enforces mandatory sustainability certification for all palm oil enterprises, and POJK 51/2017, which requires public companies to submit sustainable finance reports; (Adhariani & Toit, 2020; Putri et al., 2025).

Fiscal instruments such as green taxes, specifically carbon taxes, have been introduced to catalyze renewable energy funding and curb emissions (Leonard et al., 2024). However, the efficacy of these green taxes remains suboptimal due to regulatory overlaps, industrial resistance, and inconsistent enforcement (Leonard et al., 2024). Moreover, critical sectors such as electronics, plastics, and waste management have yet to be fully incorporated into these fiscal policies, underscoring the urgent need for regulatory consolidation and reform to ensure effectiveness.

The primary locus of Indonesia's green economy strategy is anchored in five critical sectors: energy (specifically renewable transition and efficiency), industry (emphasizing green manufacturing and the circular economy), finance (via Green Bonds and Green Sukuk), MSMEs (Micro, Small, and Medium Enterprises), and agroforestry (Q. Ali et al., 2023; Martawardaya et al., 2021; Megawati et al., 2024; Ulya et al., 2023). In the energy sector, data from Statistics Indonesia (BPS) highlights a significant expansion in electricity access, rising from 91.47% in 2015 to 97.62% in 2024; however, the renewable energy mix remains below target (Suparjo et al., 2021). MSMEs and agroforestry are notably prioritized due to their pivotal role in fostering grassroots innovation and social inclusion(Megawati et al., 2024; Ulya et al., 2023). While the policy focus on these strategic sectors is sound, empirical evidence suggests that realizing equitable and sustainable benefits requires intensified implementation at the regional level and among smaller economic actors(Martawardaya et al., 2021).

From a Policy standpoint, Indonesia has established a relatively comprehensive green economy architecture. However, empirical data expose a pronounced disparity between planning and realization, particularly regarding economic stimulus allocations that continue to favor non-green sectors. This signals a critical need to realign incentives and strengthen supervision to ensure that policy frameworks genuinely drive the green transition (Martawardaya et al., 2021).

Gaps Between Policy Intent and Industrial Reality

Empirical evidence reveals a divergence between policy intent and economic reality. Post-COVID-19 recovery stimuli were disproportionately channeled into extractive industries and primary commodities rather than green sectors (Martawardaya et al., 2021). This trend underscores Indonesia's persistent economic reliance on extraction, effectively stifling the potential for an optimal green transition. While green bond policies in Indonesia are heavily driven by government regulations and incentives, which play a pivotal role in funding

sustainable development, their implementation faces significant challenges in terms of consistency and oversight.

In the logistics sector, the adoption of Green Supply Chain Management (GSCM) remains hampered by prohibitive costs, infrastructure deficits, and a lack of strategic understanding among stakeholders. The research with supply chain managers reveal that minimal incentives and industry collaboration further stall the uniform adoption of green practices(Dwidienawati et al., 2025). Energy sector metrics reveal a divergence between access and sustainability. While the electrification ratio has consistently improved, the targets for the Renewable Energy Mix (REM) and Primary Energy Intensity (PEI) for 2019–2023 were missed. Alarmingly, "green growth" indicators have been volatile, even showing localized declines in 2018 and 2024 (Suparjo et al., 2021). The central trade-off lies in the imbalance of stimulus allocation and the uneven distribution of incentives, creating a gap between policy intent and industrial reality.

Public sentiment analysis indicates strong support (79.34%) for the green economy, particularly regarding renewable investment and emission reduction. However, a significant minority (20.66%) expresses resistance due to anxieties over short-term economic impacts (Putri et al., 2025). Critical scholarship points to weak investment incentives, inadequate human capital, and regulatory overlaps as major hurdles (Martawardaya et al., 2021). Additionally, the financial sector faces accusations of "tokenism," where institutions comply administratively without delivering substantive impact on green financing, largely due to insufficient oversight (Setyowati et al., 2023). The path forward requires rigorous regulatory harmonization and capacity building to overcome industrial resistance and ensure consistent implementation.

Thematic 2: Barriers to Optimizing Indonesia's Green Economy

The optimization of Indonesia’s green economy is impeded by a multifaceted array of challenges, ranging from regulatory misalignment and operational bottlenecks to issues of public literacy and complex policy trade-offs (see Table 1). The primary barriers include unsynchronized regulations, prohibitive infrastructure costs, low public awareness, and the inherent friction between economic growth and environmental preservation. Achieving an optimal green economy necessitates a comprehensive approach involving regulatory reform, infrastructure investment, public education, and a balanced policy framework that harmonizes economic expansion with ecological sustainability.

Table 1. Primary Barriers to the Green Economy in Indonesia

Inhibiting Factors	Empirical Evidence / Key Findings	Citations
Regulatory Inconsistency	Economic stimuli lack a pro-environment focus; incentives for extractive industries remain active.	(Martawardaya et al., 2021; Sambodo et al., 2022; Aditya et al., 2025; Putri et al., 2022)
Weak Governance	Sectoral egoism, overlapping regulations, dominance of foreign donors, ineffective ISPO implementation.	(Sambodo et al., 2022; Aditya et al., 2025; Putri et al., 2022)
Infrastructure & Cost	Limited EV charging infrastructure, high initial capital, expensive GSCM, insufficient subsidies.	(Fathoni et al., 2025; Dwidienawati et al., 2025; Primandaru et al., 2023)
Literacy & Awareness	Low digital literacy, low readability of sustainability reports, lack of public education.	(Megawati et al., 2024; Adhariani & Toit, 2020)

Policy Trade-offs	Poverty reduction efforts negatively impact the environment; conflict between economic growth vs. ecology.	(Sambodo et al., 2022; Chien et al., 2023; Udemba & Philip, 2022; Ulya et al., 2023)

Source: Author

Regulation and Governance

The most significant impediments stem from regulatory inconsistency and weak governance structures. Although the green transition is constitutionally mandated and integrated into the RPJMN 2020–2024, implementation remains erratic. For instance, post-COVID-19 economic recovery programs largely neglected environmental considerations, maintaining incentives for extractive industries and coal-fired power plants (Martawardaya et al., 2021; Sambodo et al., 2022). In the renewable energy sector, governance failures such as sectoral egoism among government agencies, regulatory ambiguity, and the dominance of foreign donors have slowed technology adoption and access to global finance (Aditya et al., 2025; Sambodo et al., 2022). Furthermore, the palm oil sector exhibits a phenomenon of "hollow governance," where overlapping regulations and weak institutional capacity render ISPO certification ineffective, particularly at the regional level (Putri et al., 2025)

Operational and Infrastructure Challenges

Operationally, infrastructure deficits and prohibitive costs act as major blockades. The implementation of Green Supply Chain Management (GSCM) in logistics firms is stifled by high investment costs, inadequate infrastructure, and a lack of strategic prioritization among stakeholders (Dwidienawati et al., 2025). Similarly, the adoption of electric vehicles (EVs) is hindered by a scarcity of charging infrastructure, high upfront costs, and inconsistent fiscal incentives (Fathoni et al., 2025). Within the MSME manufacturing sector, the transition to green manufacturing is heavily dependent on external government support specifically subsidies and precise regulation alongside internal organizational capabilities (Primandaru et al., 2023).

Literacy and Public Awareness

Barriers also exist at the cognitive and educational levels. A study on culinary MSMEs in Surabaya reveals that while circular economy and social protection policies significantly drive green innovation, digital economy policies have had little impact due to low digital literacy and limited technological access (Megawati et al., 2024). Furthermore, corporate sustainability reports in Indonesia often suffer from low readability, making them difficult for the general public to comprehend, thereby reducing corporate accountability and communication effectiveness (Adhariani & Toit, 2020).

Policy Trade-offs and Ethical Economic Growth

A critical trade-off exists between environmental policy and economic growth. Efforts to alleviate poverty and income inequality in Indonesia often coincide with declines in environmental quality (Sambodo et al., 2022; Udemba & Philip, 2022) Research indicates that economic growth and urbanization tend to increase the ecological footprint; thus, the government faces the challenge of balancing growth policies with the promotion of green finance and eco-friendly technologies (Chien et al., 2023; Udemba & Philip, 2022). In the agricultural sector, the lack of market incentives and poor coordination across levels of

government render many green economy programs unsustainable in the long run (Ulya et al., 2023).

Thematic 3: The Role of Indonesian Islamic Instruments in Supporting the Green Economy

Islamic financial instruments in Indonesia, including Green Sukuk, Waqf, and innovations such as Islamic Green Banking and Sharia Fintech, play a strategic role in supporting the transition toward a green economy. Empirical data indicates that these instruments have made tangible contributions to financing and implementing the green economy, specifically through green infrastructure projects, public space enhancement, and green financial inclusion. Optimizing the role of these instruments depends heavily on improving literacy, strengthening regulations, providing fiscal incentives, and innovating business models. Cross-sector collaboration and digitalization serve as keys to expanding impact and accelerating the transition toward an inclusive and sustainable green economy (see Table 2).

Table 2. Empirical Data and Challenges of Islamic Instruments for Indonesia's Green Economy

Instrument	Empirical Data & Key Findings	Major Challenges	Citations
Green Sukuk	USD 5 billion issued (2018–2023); significant financial impact, moderate economic impact.	Low literacy, minimal incentives, high costs.	(Faizi et al., 2024; Ali et al., 2023; Faisal et al., 2023; Alkadi, 2024)
Waqf	Contributes to 11/17 SDGs; waqf spaces support 7 sustainability themes in urban areas.	Nazhir professionalism, literacy, regulation.	(K. M. Ali & Kassim, 2020); Rochani et al., 2024)
Green Banking	Bank reputation score of 3.67; positive correlation between green practices and reputation.	Limited adoption, technological & operational challenges.	(Khan et al., 2023)
Sharia Fintech	Expands green MSME financial inclusion, supports SDGs.	Digital literacy, digital ecosystem.	(Anggara & Nuraeni, 2025)

Source: Author

The Potential of Indonesia's Green Sukuk

Green Sukuk represents the primary instrument for financing green projects in Indonesia. The Indonesian government has issued over USD 5 billion in Green Sukuk between 2018 and 2023, positioning the nation as a pioneer and the largest global issuer of such instruments (Q. Ali et al., 2023; Faizi et al., 2024). These funds are allocated to renewable energy projects, eco-friendly transportation, waste management, and water conservation. Panel data studies from 2018–2021 demonstrate that Green Sukuk issuance has a moderate positive impact on economic growth (moderate β coefficient, statistically significant), a weak impact on social development, but a highly significant impact on state financial performance (Q. Ali et al., 2023). This effectiveness highlights the ability of Green Sukuk to enhance financial competitiveness and strengthen the government's fiscal position in financing green projects.

The primary challenges include low investor literacy regarding Green Sukuk products, limited fiscal incentives, and relatively high issuance and reporting costs. A study involving 300 investors in Indonesia reveals that the intention to purchase Green Sukuk is strongly influenced by functional value, religious value, and knowledge value (Faisal et al., 2023). These

findings underscore the need for massive education and promotion to increase the appeal of Green Sukuk to the broader public.

Green Waqf in Indonesia

Waqf, particularly productive and green waqf, is being optimized to support environmental and social projects. Systematic literature studies find that waqf instruments can contribute to 11 of the 17 SDGs, including ecological goals such as clean water management, renewable energy, and ecosystem preservation (K. M. Ali & Kassim, 2020) . Case studies in Kampung Kauman, Semarang, show that waqf spaces support seven sustainability themes, including environmental infrastructure and preservation, building functional and adaptive harmony in urban spatial planning (Rochani et al., 2024).

Waqf also plays a role in establishing green public spaces and strengthening community social-ecological resilience. Major barriers to green waqf include the low professionalism of *Nazhir* (waqf managers), minimal public literacy, and a lack of regulations and fiscal incentives supporting productive waqf development (Murtadha & Maulida, 2025). The result emphasize the necessity of strengthening *Nazhir* capacity, cross-sector collaboration, and waqf business model innovation to ensure adaptability to green economy needs.

Islamic Green Banking and Sharia Fintech

Islamic Green Banking and Sharia Fintech play crucial roles alongside Green Sukuk and Waqf. Islamic Green Banking promotes financing for eco-friendly projects, supports the SDGs, and accelerates the green economic transition. Studies in the Islamic banking sector indicate that adopting green banking enhances bank reputation and employee environmental awareness, evidenced by an average bank reputation score of 3.67 (scale 1–5) and a positive correlation between eco-friendly practices and reputation (Khan, 2023). Sharia Fintech expands financial inclusion and supports green MSME financing, despite facing challenges in digital literacy and financial management (Anggara & Nuraeni, 2025). Primary challenges in these instruments include limited adoption, a lack of operational standards, and the need for a stronger digital ecosystem. The potential of Islamic Green Banking and Sharia Fintech remains substantial for expanding access to green financing, particularly for the informal sector and MSMEs.

Temathic 4: Maqasid al-Shariah as a Paradigm for Indonesia's Green Economic Ethics

Indonesia stands as one of the world's largest Muslim-majority nations. Incorporating Islamic values into economic and environmental policies can enhance public compliance and engagement by fostering an internalized sense of moral duty, while bolstering the ethical foundations for decision-making. The framework of Maqasid al-Shariʿah is recognized as an ontological and axiological cornerstone for green economies, proving particularly apt for bridging policy gaps in Indonesia (Hardana, 2023; Klongrua et al., 2025; Miswanto & Tasrif, 2024; Mursid et al., 2024; Yusuf et al., 2023) This stems from the fact that Maqasid al-Sharīʿah shifts the focus from mere regulatory adherence to fulfilling the broader mandate of stewardship (khalifah) in pursuit of virtue (Gulzar et al., 2021; Klongrua et al., 2025; Mursid et al., 2024) Below is the linkage between Maqāṣid al-Shariʿah principles and green economy practices in Table 3.

Table 3. The Linkage Between Maqāṣid Al-Shariʿah Principles and Green Economy Practices

Maqasid Principle	Green Economy Implementation	Scholarly Sources
Hifz al-Din	Environmental ethics, anti-corruption (fasād), stewardship	(Klongrua et al., 2025; Mursid et al., 2024; Gulzar et al., 2021; Bsoul et al., 2022; Yusuf et al., 2023; Ali & Agushi, 2024)
Hifz al-Nafs	Climate mitigation, clean energy, food security	(Klongrua et al., 2025; Mursid et al., 2024; Miswanto & Tasrif, 2024; Bsoul et al., 2022; Yusuf et al., 2023; Hardana, 2023)
Hifz al-Nasl	Intergenerational justice, endowment funds	(Klongrua et al., 2025; Mursid et al., 2024; Miswanto & Tasrif, 2024; Bsoul et al., 2022; Yusuf et al., 2023; Hardana, 2023)
Hifz al-ʿAql	Green innovation, environmental literacy	(Klongrua et al., 2025; Mursid et al., 2024; Bsoul et al., 2022; Satiadharmanto et al., 2024; Yusuf et al., 2023; Ali & Agushi, 2024)
Hifz al-Mal	Green sukuk, waqf, circular economy	(Klongrua et al., 2025; Mursid et al., 2024; Bsoul et al., 2022; A'ini et al., 2024; Satiadharmanto et al., 2024; Yusuf et al., 2023; Rahim et al., 2024)

Hifz al-Din (Safeguarding Religion) and Environmental Ethics

Safeguarding religion within green economies encompasses humanity's role as stewards (khalifah) of the earth, where Islamic environmental ethics firmly oppose destructive practices such as deforestation and pollution (M. Ali & Agushi, 2024; Klongrua et al., 2025; Satiadharmanto et al., 2024; Setiawan et al., 2023) .This responsibility serves as a moral bedrock for rejecting exploitative economic activities (fasad) and framing nature conservation as a shared communal obligation (Klongrua et al., 2025; Mursid et al., 2024)The principle underscores how faith can inspire proactive environmental guardianship, transforming individual piety into collective action for planetary Well-being.

Hifz al-Nafs (Safeguarding Life) and Climate Resilience

The principle of safeguarding life aligns closely with efforts to mitigate climate change impacts that jeopardize public health and safety. Pollution, disasters, and food crises pose direct threats to Ḥifẓ al-Nafs, making green economic policies that emphasize clean energy and sustainable agriculture essential Shariʿah-compliant tools for protecting societal rights to life (Bsoul et al., 2022; Hardana, 2023; Klongrua et al., 2025; Miswanto & Tasrif, 2024; Mursid et al., 2024; Yusuf et al., 2023). In essence, this approach highlights the interconnectedness of human survival and ecological balance, urging policies that prioritize long-term resilience over short-term gains.

Hifz al-Nasl (Safeguarding Progeny) and Intergenerational Justice

Hifz al-Nasl is interpreted as ensuring fairness across generations, guaranteeing that future ones do not inherit a degraded planet burdened by ecological debt. Corporate sustainability practices and policy revisions for resource management, including endowment funds and environmental reclamation, embody this principle in action (Klongrua et al., 2025; Mursid et al., 2024; Miswanto & Tasrif, 2024; Bsoul et al., 2022; Yusuf et al., 2023; Hardana, 2023). This perspective emphasizes the ethical imperative of legacy-building, where today's decisions safeguard tomorrow's opportunities for prosperity and harmony with nature.

Hifz al-ʿAql (Safeguarding Intellect) and Green Innovation

The shift toward green economies demands innovation and environmental education. Hifz al-ʿAql promotes the advancement of knowledge, renewable energy research, and transparent environmental data as integral to protecting public intellect (Klongrua et al., 2025; Mursid et al., 2024; Bsoul et al., 2022; Satiadharmanto et al., 2024; Yusuf et al., 2023; Ali & Agushi, 2024). It illustrates how intellectual empowerment can drive sustainable progress, fostering a society equipped to tackle environmental challenges through informed creativity.

Hifz al-Mal (Safeguarding Wealth) through Green Finance

Circular economies and Islamic financial instruments like green sukuk and waqf can finance eco-friendly projects while shielding national assets from climate transition risks that promotes the value of Hifz al-mal (Bsoul et al., 2022; Klongrua et al., 2025; Mursid et al., 2024; Rahim et al., 2024; Satiadharmanto et al., 2024; Yusuf et al., 2023) This framework reveals the potential of ethical finance to align economic growth with environmental preservation, creating resilient systems that benefit both people and the planet.

Integrating Maqāṣid al-Shariʿah into Indonesia's green economy represents a profound shift that positions sustainability as a moral necessity. Strategic recommendations include developing a Maqāṣid Green Index, reforming regulations based on public welfare (maṣlaḥah), and leveraging social finance for an inclusive energy transition(Bsoul et al., 2022; Klongrua et al., 2025). Case studies in the biofuel sector reveal knowledge and technology gaps hindering circular economies, which could be addressed through Maqāṣid-based incentives for green industries (Miswanto & Tasrif, 2024). Optimizing Islamic financial tools such as green sukuk and waqf can bolster funding for sustainable initiatives in green economy.

Discussion

Policy Coherence, Governance Capacity, and the Persistent Implementation Gap

The findings reveal that Indonesia has constructed an extensive green economy policy architecture ranging from the RPJMN 2020–2024, green fiscal instruments, renewable energy mandates, to sectoral sustainability certifications yet implementation remains fragmented and uneven. While high-level strategies such as the Long-Term Strategy for Low Carbon and Climate Resilience 2050 and regulations such as ISPO and POJK 51/2017 demonstrate firm formal commitments, empirical real-world outcomes diverge significantly from policy intent (Sambodo et al., 2022; Putri et al., 2022). Regulatory overlaps, inconsistent enforcement, and institutional egoism impede harmonization across ministries and weaken implementation coherence (Aditya et al., 2025).

This discrepancy is exemplified during the COVID-19 recovery period, in which stimulus flows disproportionately favored non-green and extractive industries, revealing a deeper structural reliance on fossil fuels and commodity-based economic growth (Martawardaya et al., 2021). The findings therefore indicate that the absence of regulatory design does not constrain Indonesia’s green economy transition but rather by policy misalignment, weak governance, and limited accountability mechanisms. Establishing a fully functional monitoring ecosystem and reforming incentive structures are essential to bridge this gap.

Structural Barriers: Industry Readiness, Infrastructure Deficits, and Public Literacy

Indonesia's industrial sectors face systemic constraints that hinder the uptake of clean technologies, circular economy practices, and sustainable value chains. The logistics and manufacturing sectors, for instance, demonstrate low adoption of GSCM due to high operational costs, deficient infrastructure, and limited strategic capability (Dwidienawati et al., 2025; Primandaru et al., 2023). Electric mobility adoption is similarly thwarted by inadequate charging networks and high capital costs (Fathoni et al., 2025). These barriers are compounded by capacity constraints at the societal and institutional levels.

Public literacy regarding sustainability, digital transformation, and green finance remains relatively low, evidenced by low readability in corporate sustainability reports and ineffective dissemination of environmental knowledge to MSMEs (Megawati et al., 2024; Adhariani & Toit, 2020). Additionally, green investment incentives remain insufficient to stimulate industry-wide behavioral shifts. Such evidence indicates that Indonesia's green transition requires not merely more regulations or financial instruments but substantial improvements in technical readiness, infrastructure provisioning, and environmental literacy.

Islamic Finance, Ethical Paradigms, and Their Expanding Role in Green Economic Ecosystems

Green Sukuk have been particularly successful in mobilizing over USD 5 billion for climate-resilient infrastructure, delivering substantial fiscal impacts, but they still face challenges related to low literacy, high issuance costs, and limited incentives (Ali et al., 2023; Faisal et al., 2023). Complementing this, waqf-based urban sustainability initiatives and Islamic green banking strengthen social-ecological resilience, although professionalism, governance, and digital ecosystem issues persist (Dirie et al., 2023; Khan et al., 2023). Synthesizing across studies, Maqasid al-Shariah emerges as an ethical framework that legitimizes and strengthens green economic behavior by aligning sustainability with religious obligations, stewardship (khalifah), and intergenerational justice (Klongrua et al., 2025; Mursid et al., 2024). This ethical paradigm not only enriches the policy discourse but also enhances public acceptance, as environmental protection becomes framed as moral responsibility rather than regulatory compliance.

Limitations

The studi is limited by uneven data availability across sectors and the dominance of policy-oriented and qualitative studies, which restricts the comparability of findings. Many empirical studies use context-specific case analyses that limit generalizability across Indonesia's diverse regions. Additionally, measurement inconsistencies in green finance performance, renewable energy metrics, and governance indicators constrain robust cross-study synthesis. Finally, the literature on Islamic financial instruments in green transitions remains nascent, producing evidence that is promising yet still fragmented.

Conclusion

The study concludes that Indonesia possesses a sophisticated green economy blueprint anchored in national development plans, fiscal reforms, renewable energy commitments, and sustainability governance frameworks. However, the transition remains hindered by persistent implementation gaps, structural barriers, and disruptions caused by competing economic interests. The analysis reveals that despite Indonesia's ambitious policy orientation, real-world progress falls short due to regulatory fragmentation, insufficient monitoring, and economic path

dependence on extractive industries. These barriers are compounded by limited industrial readiness, underdeveloped infrastructure, and low levels of public and institutional literacy regarding sustainability. The effectiveness of fiscal tools such as carbon taxes and green incentives is also weakened by inconsistent enforcement and inadequate sectoral coverage, especially among MSMEs and heavy industries. These findings imply that Indonesia must recalibrate its green economy strategy by harmonizing regulations, realigning stimulus flows, and strengthening subnational institutional capacity.

The Study also identifies a significant opportunity in leveraging Islamic finance and Maqasid al-Shariah ethics to accelerate the transition toward inclusive sustainability. Green Sukuk, waqf, Islamic green banking, and Sharia fintech demonstrate measurable contributions to sustainable development financing, although challenges remain in governance, literacy, and product innovation. Importantly, embedding Maqasid al-Shariah principles into policy design can cultivate stronger public engagement by aligning environmental protection with religious values such as stewardship, safeguarding life, and intergenerational justice. This integration represents not merely a complementary perspective but a transformative ethical paradigm capable of strengthening societal support and shaping long-term behavioral change. As Indonesia continues to position itself as a global leader in green finance within Muslim-majority contexts, optimizing these instruments is critical.

Governments should prioritize regulatory harmonization through a unified national green economy framework that eliminates overlapping mandates across ministries and subnational authorities. Strengthening enforcement capacity and enhancing transparency mechanisms, especially regarding fiscal incentives and sustainability reporting, will help align national ambitions with sectoral performance. Infrastructure investments should focus on EV charging networks, renewable energy grids, and waste-to-energy systems to stimulate industrial adoption. Public education campaigns, simplified sustainability disclosures, and tailored digital literacy programs for MSMEs are essential for creating a more informed and participatory society. Furthermore, policymakers should institutionalize Islamic social finance within national sustainability strategies by providing tax incentives for green waqf projects, subsidizing Green Sukuk issuance, and mandating environmental risk assessments for Islamic banks.

For future research, scholars should employ longitudinal and mixed-methods designs to evaluate long-term policy impacts, compare regional variations in implementation, and measure the socioeconomic outcomes of green finance instruments. More empirical work is also needed to assess how Maqasid-based policy frameworks can be operationalized in specific sectors such as energy, agriculture, and urban planning. Integrative studies combining environmental science, finance, Islamic economics, and behavioral research will be essential to capture the complexity of Indonesia's green transition.

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Conflict of Interests

The authors declare that they have no conflict of interest related to the research, authorship, or publication of this manuscript.

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