



# Green Waqf: A Pathway to Achieving Climate Action and Sustainable Development Goals (SDGs)

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## Abstract

This study maps the intellectual landscape of Green Waqf research and identifies its dominant themes and future directions for climate action and sustainable development. Employing a thematic literature review across major academic databases, the research synthesizes scholarly publications to examine the evolution and governance challenges of Green Waqf scholarship. The findings reveal four thematic clusters: waqf asset management, Islamic finance instruments, environmental sustainability, and institutional governance. Green Waqf scholarship has evolved from fragmented conceptual discussions toward more empirically grounded research, yet significant gaps persist in empirical validation and governance frameworks. The study argues that Green Waqf represents a promising yet institutionally contested pathway for integrating Islamic philanthropy into climate action, constrained by regulatory fragmentation, limited professional capacity, transparency deficits, and inadequate policy integration. The findings offer policy-relevant insights for strengthening Islamic philanthropy's role in climate action and sustainable development.

## INTRODUCTION

Climate change has become one of the most urgent global challenges because of its wide-ranging impacts on the environment, economy, and human well-being. Rising global temperatures have increased the frequency of extreme weather events, accelerated sea-level rise, reduced biodiversity, and threatened food security and livelihoods across many regions (Harahap et al., 2023). According to the Intergovernmental Panel on Climate Change (IPCC), limiting global warming to 1.5°C requires significant reductions in greenhouse gas emissions.

To respond to this challenge, the international community has introduced various initiatives, including the Paris Agreement and the Sustainable Development Goals (SDGs), particularly SDG 13 (Climate Action) and SDG 15 (Life on Land) (Rusydia & Khalifah, 2024). However, many developing countries continue to face a large financing gap in implementing their Nationally Determined Contribution, while existing public and private funding remains insufficient

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(Rusydia et al., 2024). This situation has encouraged researchers and policymakers to explore alternative funding sources, including Islamic philanthropic instruments such as waqf (Huda et al., 2023). Because of its long history of supporting public welfare, waqf has the potential to become an important source of financing for environmental sustainability and climate action (Misbah et al., 2022; Uluyol et al., 2021).

Among Muslim-majority countries, Indonesia offers a unique context for developing Green Waqf because it possesses extensive waqf assets and considerable cash waqf potential (Huda et al., 2025). Historically, waqf has financed public facilities such as mosques, schools, hospitals, water systems, and other community services (Koehler, 2015; Shatzmiller, 2001). Today, many scholars argue that waqf can also address contemporary social, economic, and environmental challenges (Abdullah, 2020). This idea has given rise to the concept of Green Waqf, which refers to the use of waqf assets to support environmental conservation while creating social and economic benefits (Azwar, 2023; Mohamed & Akande, 2025). Green Waqf also reflects efforts to align Islamic philanthropy with global sustainability goals (Saputra, 2025). Despite this potential, its implementation remains limited because most waqf assets are still managed in traditional forms and have not been integrated into national environmental or green development policies (Rusydia et al., 2022). As a result, questions remain regarding how Islamic legal principles, governance systems, and socio-economic conditions influence the successful implementation of Green Waqf (Widiastuti et al., 2025).

Previous studies on waqf and environmental sustainability can be grouped into three main areas. The first examines the historical role of waqf in protecting natural resources, including forests, water sources, and agricultural land in pre-modern Muslim societies (Koehler, 2015; Shatzmiller, 2001). Although these studies demonstrate that environmental stewardship has long been part of Islamic philanthropy, they mainly provide historical descriptions and offer limited discussion of current environmental issues (Singer, 2018). The second area focuses on the relationship between waqf and the Sustainable Development Goals (Harahap et al., 2023; Rusydia & Khalifah, 2024). These studies argue that the principles of social justice, sustainability, and intergenerational welfare embodied in *maqāṣid al-sharī'ah* provide a strong foundation for integrating waqf into sustainable development and climate action (Adinugraha et al., 2023; Lamido & Haneef, 2021). However, most of this literature remains conceptual and offers limited empirical evidence regarding implementation (Huda et al., 2023). The third area discusses innovative Green Waqf instruments, such as cash waqf, waqf-linked sukuk, renewable energy projects, and digital crowdfunding platforms (Musari, 2022; Rusydia et al., 2024; Siswanto, 2023). While these studies highlight new financing opportunities, they primarily emphasize financial innovation and pay less attention to legal, governance, and institutional issues that influence long-term success (Mohamed & Akande, 2025; Uluyol et al., 2021).

Although interest in Green Waqf continues to grow, several important research gaps remain. Existing studies are scattered across historical, normative, financial, and environmental perspectives, making it difficult to obtain a comprehensive understanding of the field (Kashi et al., 2025; Misbah et al., 2022). Institutional and governance issues, including regulatory frameworks, administrative capacity, stakeholder participation, and coordination among religious institutions, governments, and financial actors, have received relatively little

attention despite their importance for successful implementation (Adinugraha et al., 2023; Huda et al., 2025; Widiastuti et al., 2025). In addition, the interaction between Islamic legal principles, public policy, community participation, and financial innovation remains insufficiently explored (Rusydia et al., 2022).

To address these gaps, this study employs a thematic literature review to systematically map the development of Green Waqf research and identify its major themes and future research directions (Aldeen, 2021; Kashi et al., 2025). Unlike previous studies that mainly discuss Green Waqf from historical, conceptual, or financial perspectives, this review provides an integrated understanding of the field by examining the relationships among environmental sustainability, waqf asset management, Islamic financial instruments, and institutional governance. The analysis identifies four major thematic clusters that shape the Green Waqf literature and demonstrates that Green Waqf represents a promising yet institutionally challenging approach to integrating Islamic philanthropy into climate action and sustainable development (Ma & Sukmana, 2025; Misbah et al., 2022; Rusydia et al., 2024). The findings are expected to contribute to future research while offering practical insights for policymakers and waqf institutions seeking to strengthen the role of Islamic philanthropy in achieving the Sustainable Development Goals (Huda et al., 2023; Rusydia & Khalifah, 2024).

## METHODS

This study employs a qualitative research design with a thematic literature review approach to examine Green Waqf in modern socio-economic and environmental contexts (Snyder, 2019). This approach is selected for its capacity to collect, evaluate, and synthesize secondary data from scholarly sources, enabling in-depth exploration of conceptual, institutional, and governance dimensions without primary fieldwork (Braun & Clarke, 2006). The method allows critical engagement with theoretical debates and empirical findings on Green Waqf, cash waqf, waqf-linked sukuk, and environmental sustainability in Muslim-majority countries, with particular focus on Indonesia. The data collection begins with systematic searches across Scopus, Google Scholar, and ScienceDirect using keywords such as “Green Waqf,” “cash waqf,” “waqf-linked sukuk,” “environmental sustainability,” and “Islamic social finance” (Ridley, 2012). The search is limited to peer-reviewed journal articles, academic books, and institutional reports published between 2005 and 2025, while still incorporating seminal works (Snyder, 2019). The literature selection follows systematic stages, as detailed in table 1.

**Table 1. Literature Screening and Selection Process**

Stage	Activity	Number of Sources
Stage 1: Initial Identification	Database search in Scopus, Google Scholar, and ScienceDirect using selected keywords	±450
Stage 2: Duplicate Removal	Removal of sources appearing in more than one database	±350
Stage 3: Title & Abstract Screening	Evaluation based on thematic relevance, academic credibility, and theoretical/empirical contribution	±180
Stage 4: Full-Text Assessment	Full-text reading to ensure alignment with research scope and methodological quality	±95

Stage 5: In-Depth Analysis	Sources meeting all inclusion criteria and thematically analyzed	64
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*Note: The screening process follows systematic literature review protocols (Snyder, 2019; Ridley, 2012). Inclusion criteria: (1) thematic relevance to Green Waqf, cash waqf, or environmental sustainability; (2) academic credibility (Scopus-indexed or reputable publishers); (3) publication period 2005–2025; (4) full-text availability in English or Indonesian*

Following selection, the study employs thematic analysis to identify, categorize, and interpret recurring patterns in the literature (Braun & Clarke, 2006). The process involves familiarization with texts, coding of key concepts related to Green Waqf governance and institutional challenges, and grouping codes into broader themes such as institutional governance, financial innovation, environmental sustainability, and regulatory frameworks (Braun & Clarke, 2021; Engkizar et al., 2024, 2025, 2026; Hafizah et al., 2025; Putri et al., 2025). To ensure validity, the study applies theoretical triangulation by combining multiple frameworks and cross-referencing sources. The researcher also conducts systematic re-checking through reflective discussion and consultation with additional literature. The final stage synthesizes these themes into a coherent narrative addressing the research questions while revealing gaps in the literature (Snyder, 2019). This methodology provides a nuanced understanding of Green Waqf as a strategic instrument for climate action in Muslim-majority context. The study acknowledges limitations, including reliance on secondary data and potential publication bias, suggesting future research incorporate primary fieldwork and cross-country comparative analyses.

## RESULT AND DISCUSSION

### Evolution and Intellectual Structure of Green Waqf Studies: Publication Trends, Disciplinary Distribution, and Scholarly Foundations

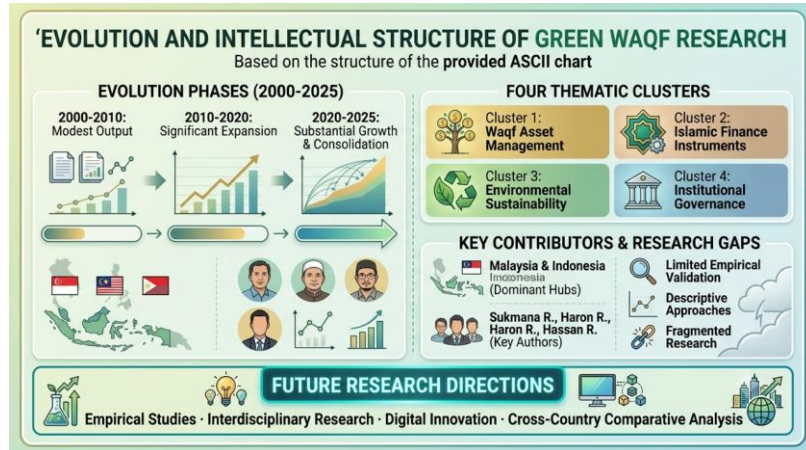
The evolution of Green Waqf as a distinct field of academic inquiry reflects a broader transformation in how Islamic social finance has been conceptualized to address contemporary environmental challenges. Historically, waqf research was predominantly concerned with classical Islamic legal frameworks and the traditional management of endowment assets for religious and social welfare purposes. However, the growing urgency of climate change, the adoption of the Sustainable Development Goals (SDGs) in 2015, and the increasing integration of Islamic finance with global sustainability agendas have catalyzed a significant shift in research focus toward the intersection of waqf and environmental sustainability (Aldeen, 2021; Misbah et al., 2022). This intellectual evolution represents a fundamental reconceptualization of waqf as a dynamic and adaptive instrument capable of mobilizing resources for climate action, ecosystem protection, and the transition to a low-carbon economy (Mohamed & Akande, 2025; Rusydiana et al., 2024). The transformation of waqf scholarship from a narrow legal-religious focus to a broad interdisciplinary field encompassing environmental governance, financial innovation, and institutional analysis reflects the growing recognition of Islamic philanthropy's potential to address global challenges.

A comprehensive analysis of Green Waqf research reveals a clear trajectory of academic development from the early 2000s to the present, characterized by distinct phases of growth, diversification, and consolidation (Kashi et al., 2025). The initial phase, spanning approximately 2000 to 2010, was marked by modest scholarly output, with waqf research largely confined to traditional Islamic finance and legal

studies. During this period, academic discourse was dominated by descriptive accounts of waqf practices and normative discussions of Islamic charitable obligations, with limited engagement with environmental issues. However, the period between 2010 and 2020 witnessed a significant expansion in research volume and thematic breadth, driven by increasing awareness of the SDGs, the development of innovative Islamic financial instruments, and growing recognition of waqf's potential to address socio-economic inequalities (Huda et al., 2025; Ma & Sukmana, 2025). This phase was characterized by a marked increase in publications, the emergence of new research clusters, and the integration of waqf studies with development economics, environmental governance, and institutional analysis. The year 2018 marked a critical juncture, with a substantial increase in publication output and the consolidation of leading journals and authors (Aldeen, 2021). The Journal of Islamic Accounting and Business Research emerged as the most prolific source, followed by the ISRA International Journal of Islamic Finance, reflecting the growing prominence of waqf research within mainstream Islamic finance discourse (Misbah et al., 2022; Rusydiana et al., 2022).

The distribution of Green Waqf research across academic disciplines reveals a predominantly interdisciplinary character, with significant contributions from economics, management, finance, law, and environmental studies. However, the field remains heavily concentrated within economics and social sciences, with limited engagement from natural sciences, engineering, and climate science (Rusydiana et al., 2022). This disciplinary imbalance suggests a need for greater cross-sectoral collaboration and the integration of technical expertise in climate modeling, environmental impact assessment, and sustainable technology development (Widiastuti et al., 2025). The emergence of green sukuk, cash waqf for renewable energy projects, and digital platforms for environmental crowdfunding has created new opportunities for interdisciplinary research that bridges Islamic law, finance, environmental science, and technology innovation (Saputra, 2025). The intellectual structure of Green Waqf scholarship is shaped by four key disciplinary clusters that reflect different aspects of the field (Kashi et al., 2025).

The first cluster focuses on waqf asset management and optimization, examining how endowment assets can be efficiently managed to generate sustainable revenue for environmental projects, drawing on concepts from institutional economics and resource management. The second cluster centers on Islamic finance instruments and innovation, exploring the integration of waqf with sukuk, cash waqf, and other financial tools to mobilize resources for climate action (Rusydiana et al., 2024). The third cluster addresses environmental sustainability directly, investigating how waqf can contribute to ecosystem protection, renewable energy development, and sustainable infrastructure (Mohamed & Akande, 2025). The fourth cluster examines institutional governance and regulatory frameworks, analyzing the role of state institutions, waqf authorities, and civil society organizations in enabling effective Green Waqf implementation (Widiastuti et al., 2025). To provide a comprehensive visual overview of the evolution, thematic structure, and key dimensions of Green Waqf research, figure 1 synthesizes the field's development phases, thematic clusters, key contributors, research gaps, and future directions.



**Fig 1. Evolution and Intellectual Structure of Green Waqf Research**

Figure 1 presents a simplified visual synthesis of the evolution and intellectual structure of Green Waqf research. The figure is organized into four interconnected sections. The upper section illustrates three phases of academic development: modest output during 2000–2010, significant expansion during 2010–2020, and substantial growth and consolidation from 2020 to the present. The middle section identifies four thematic clusters that structure the field: waqf asset management, Islamic finance instruments, environmental sustainability, and institutional governance. These clusters represent the multidimensional nature of Green Waqf as an emerging field. The lower sections highlight key contributors and research gaps, with Malaysia and Indonesia as dominant academic hubs and leading authors such as Sukmana R., Haron R., and Hassan R. significantly influencing the field. Persistent research gaps include limited empirical validation, dominance of descriptive approaches, and fragmented case-study oriented research. Finally, the figure outlines future research directions, including empirical studies, interdisciplinary research, digital innovation, and cross-country comparative analysis.

The growth of Green Waqf research has been strongly influenced by Malaysia and Indonesia as dominant academic hubs, reflecting their strategic integration of waqf into national development (Huda et al., 2025; Kashi et al., 2025). Key authors such as Sukmana have significantly influenced the field through their contributions to waqf governance and Islamic finance innovation (Aldeen, 2021). The keyword patterns reveal “waqf” as the dominant term, frequently appearing with “sustainable development,” “Islamic finance,” and “SDGs,” while “digitalization,” “blockchain,” and “fintech” indicate emerging scholarly interest in technological innovation (Saputra, 2025). Despite significant progress, the field remains constrained by limited empirical validation, descriptive approaches, and fragmented research (Mohamed & Akande, 2025; Widiastuti et al., 2025). Addressing these gaps is essential for unlocking the full potential of Green Waqf as a strategic instrument for climate action and sustainable development. In conclusion, the evolution and intellectual structure of Green Waqf studies reflect a dynamic and rapidly expanding field that has transitioned from fragmented conceptual discussions to more organized and empirically grounded research, with significant gaps remaining in empirical validation, interdisciplinary integration, and comprehensive conceptual frameworks.

## Thematic Clusters and Research Frontiers of Green Waqf: Identifying Dominant Themes and Emerging Research Frontiers

The intellectual landscape of Green Waqf research is structured by four thematic clusters: i) waqf asset management and optimization, ii) Islamic finance instruments and innovation, iii) environmental sustainability and climate action, and iv) institutional governance and regulatory frameworks (Kashi et al., 2025). These clusters are interconnected and collectively represent the multidimensional nature of Green Waqf as an emerging field bridging Islamic philanthropy, environmental governance, and sustainable development. This analysis examines each cluster, explores their interconnections, identifies research frontiers, and maps conceptual gaps that constrain theoretical and practical development.

The first cluster focuses on waqf asset management and optimization, examining how endowment assets can be efficiently managed to generate sustainable revenue for environmental and social projects. Digitization and standardized platforms, such as the Waqf Information System (SIWAK) and digital waqf platforms, enhance transparency, access, and governance of waqf assets, enabling more productive allocation and monitoring (Aisyah & Muiz, 2022). The role of waqf in supporting the Sustainable Development Goals (SDGs) is increasingly framed through *maqāṣid al-sharī'ah* and public welfare, reinforcing asset optimization as a pathway to sustainable development (Azwar, 2023; Hisyam & Marwini, 2024). Asset optimization underpins Islamic finance instruments by providing credible, well-managed pools for sukuk and cash waqf investments, while also supporting environmental governance when assets are directed toward green infrastructure. However, waqf asset productivity remains challenged by data gaps, limited governance capacity, and regulatory ambiguity (Aisyah & Muiz, 2022; Iskandar et al., 2021; Mohd Nor et al., 2022). These challenges underscore the need for comprehensive institutional reforms addressing both technical and governance dimensions of waqf asset management.

The second cluster centers on financial instruments that mobilize waqf as capital for development, including waqf-linked sukuk, cash waqf, productive waqf, and blended finance approaches. Waqf-linked sukuk combine endowment principles with capital market instruments, enabling large-scale infrastructure financing while maintaining Shariah compliance (Rusydziana et al., 2024). Cash waqf significantly expands donor bases and increases liquidity in the waqf sector (Uluyol et al., 2021), with integration into Islamic financial institutions reducing capital costs and creating more inclusive financial systems (Adinugraha et al., 2023). Blended finance approaches combining public, private, and philanthropic capital address funding gaps in development projects (Jatmiko et al., 2025). Instrumental innovation serves climate action by funding renewable energy, sustainable agriculture, and climate-resilient infrastructure, while requiring clear standards and regulatory support. However, scalability challenges persist, particularly for cash waqf, necessitating integrated governance, standards, and institutional collaboration (Adinugraha et al., 2023; Aisyah & Muiz, 2022; Uluyol et al., 2021). The lack of standardized frameworks and varying Shariah interpretations across jurisdictions remain significant barriers to scaling these innovations.

The third cluster addresses environmental sustainability, including climate risk mitigation, green economy transitions, renewable energy, and SDG-aligned outcomes. Green Waqf is framed as a platform for collaborative action among waqf activists, environmental advocates, and renewable energy actors to address climate

change and energy access (Azwar, 2023). The conceptual compatibility between Green Waqf and the SDGs is grounded in *maqāṣid al-sharī'ah*, providing a normative foundation for integrating waqf into climate action (Rusydiaana & Khalifah, 2024). Alignment with SDG 13 (Climate Action), SDG 15 (Life on Land), and SDG 11 (Sustainable Cities and Communities) is particularly strong, with waqf assets directed toward ecosystem protection, renewable energy, and sustainable infrastructure (Hisyam & Marwini, 2024). Environmental finance requires robust asset governance and regulatory support to ensure transparent project delivery. However, translating green philanthropy into measurable SDG outcomes requires capacity building, partnerships, and policy alignment to overcome implementation barriers (Azwar, 2023; Rusydiaana & Khalifah, 2024). The lack of standardized environmental impact assessment frameworks and limited technical expertise remain significant constraints.

The fourth cluster examines governance, policy, and regulatory architecture shaping waqf operations and Islamic social finance ecosystems. Regulatory standards and institutional integration are repeatedly emphasized, with studies discussing national laws, integrated models, and standardized platforms to improve transparency and governance (Adinugraha et al., 2023; Iskandar et al., 2021). Formalization of digital platforms and adoption of Waqf Core Principles (WCP) are advocated to improve governance, accountability, and access to waqf information (Aisyah & Muiz, 2022). Governance underpins asset optimization and instrument scaling, providing policy levers for Green Waqf sustainability. However, regulatory clarity, data availability, and capacity constraints remain significant obstacles, requiring ongoing reform and collaboration among public, private, and civil society actors (Adinugraha et al., 2023; Aisyah & Muiz, 2022; Iskandar et al., 2021). Regulatory fragmentation across jurisdictions and inadequate professional capacity in waqf management institutions continue to hinder effective Green Waqf implementation.

Several research frontiers are gaining momentum but remain underexplored. Digital waqf platforms and digitization of waqf ecosystems are growth areas, including standardization of digital platforms and data systems (Aisyah & Muiz, 2022; Syamsuri & Mokaan, 2021). Blockchain technology's potential to enhance transparency and trust in waqf transactions warrants investigation. Green sukuk and climate finance are promising instruments for mobilizing waqf resources for environmental projects. Cash waqf and blended finance models require empirical validation, risk-sharing mechanisms, and institutional support (Jatmiko et al., 2025; Uluyol et al., 2021). SDG integration and *maqāṣid*-based impact assessment remain underdeveloped, with scholars calling for practical indicators and monitoring frameworks (Hisyam & Marwini, 2024; Rusydiaana & Khalifah, 2024). Scalability challenges and regulatory gaps must be resolved before these frontiers achieve full impact (Adinugraha et al., 2023; Uluyol et al., 2021).

The four clusters are interconnected through a complex web of relationships. Asset management provides core capital enabling Islamic finance instruments. Instrument innovation serves environmental outcomes by directing capital to green projects while requiring robust governance. Environmental action anchors Islamic philanthropy within green economy agendas, emphasizing climate resilience and sustainable development. Governance and regulatory frameworks act as cross-cutting enablers shaping data availability, standardization, fiscal incentives, and collaboration (Kashi et al., 2025). Persistent gaps include data and measurement

limitations, regulatory fragmentation, scalability challenges, and underdeveloped impact pathways to SDGs. Across the literature, convergence on four broad themes supports the proposed cluster framing as a coherent synthesis, indicating a maturing field with shared understanding of key dimensions. The research agenda should prioritize standardized metrics, empirical testing of scalable models, digital platform evaluation, regulatory reform investigation, and expanded sectoral studies on waqf-based solutions for water, sanitation, energy access, and climate resilience.

### **Institutional, Legal, and Governance Challenges of Green Waqf: Implementation Constraints and Policy Development Pathways**

The realization of Green Waqf as a strategic instrument for climate action and sustainable development in Muslim-majority contexts, particularly Indonesia, is fundamentally constrained by a complex interplay of institutional fragmentation, legal ambiguity, governance shortcomings, and limited integration with national climate policy. Green Waqf, defined as waqf-based endowments specifically channeled to finance, operate, or sustain environmental and climate-related projects, sits at the intersection of Islamic social finance, environmental governance, and development policy (Saputra, 2025). However, the synthesised evidence across multiple studies indicates that weak or evolving regulatory frameworks, nascent professional capacity among *nazhir* (waqf managers), opacity in reporting, and under-developed digital platforms undermine the scale and impact of Green Waqf initiatives (Overcoming barriers, 2025). These constraints interact with broader climate-finance gaps and SDG ambitions, suggesting that only integrated reforms encompassing legal reform, capacity-building, governance redesign, and innovative financial engineering can unlock Green Waqf potential in Indonesia and comparable contexts (Mubarok et al., 2025).

Indonesia's waqf regime rests on Law No. 41 of 2004 and Government Regulation No. 42 of 2006 as the core statutory framework, with the Indonesian Waqf Board functioning as regulator and *nazhir* in many schemes, including cash waqf and Cash Waqf-Linked Sukuk arrangements (Fitri, 2025). However, this framework does not guarantee uniform governance and reporting standards across *nazhirs* and waqf programs, particularly for complex environmental investments. The regulatory landscape for Cash Waqf Linked Sukuk remains uneven, with gaps in supervision, accountability, and harmonization across agencies that potentially undermine Green Waqf objectives (Musari, 2022). Minister of Religious Affairs Regulation No. 1 of 2022 on the Management and Development of Cash Waqf through CWLS provides operational guidance, yet remains administrative in nature and relies heavily on delegated regulations, thus not fully guaranteeing transparency, efficiency, and accountability in CWLS governance. A crucial misalignment exists between current waqf law and fundamental sharia values, particularly *maṣlahah* (public benefit) and justice, necessitating a conceptual reconstruction of CWLS governance through the integration of *maqāṣid al-shari'ah* and Critical Legal Studies frameworks (Atikah et al., 2026).

Professional capacity among *nazhirs* is a central constraint in Green Waqf implementation, with issues clustering around institutional capacity, *nazhir* competency, and professional human resource development (Faisal, 2025). According to data provided by BWI as of October 2021, only 303 out of 400 thousand *nazhirs* have been officially certified, indicating that traditional *nazhirs* still dominate waqf management. This certification gap reflects a broader systemic

failure to professionalize waqf management, leaving many institutions ill-equipped to handle the complexities of environmental investments and climate finance. Research identifies that low *nazhir* professionalism, limited fintech optimization, and lack of regulatory support are the most critical constraints (Murtagha & Maulida, 2025). Empirical work on CWLS fundraising performance shows that issues cluster around institutional capacity, *nazhir* competency, and professional HR development, with reporting and information technology enablement flagged as critical determinants of program sustainability (Kaila & Pribadi, 2025).

Transparency and accountability are repeatedly identified as key success factors for cash waqf and CWLS programs. Empirical work demonstrates a significant link between perceived transparency and trust in the regulator and waqf institutions, with regular reporting, accessible information, and digital platforms playing central roles in building donor confidence (Luthfi et al., 2025). The lack of transparent reporting mechanisms creates information asymmetry between wakif (donors) and *nazhir*, eroding trust and discouraging participation in Green Waqf initiatives (Maskun et al., 2025). Studies recommend open data, standardized reporting, and independent audits to prevent governance gaps that could undermine environmental investment credibility (Siswantoro, 2023). Blockchain and digital reporting platforms are highlighted as potential enablers for green waqf governance, promising enhanced traceability, tamper-resistance, and timely disclosure of project status, disbursements, and outcomes (Mutmainah et al., 2021).

Indonesia’s status as a pioneering issuer of sovereign Green Sukuk provides a platform for blending green financing with waqf-based social finance. The integration of Green Sukuk and CWLS is proposed as a mechanism to close climate finance gaps while leveraging Islamic social finance to maximize social and environmental co-benefits (Rusydiana et al., 2023). The conceptual compatibility between Green Waqf and the SDGs is grounded in the principles of sustainability, social justice, and intergenerational equity embedded in *maqasid al-shari’ah*, providing a strong normative foundation for integrating waqf into climate action (Harahap et al., 2023). The Green Sukuk and CWLS integration model includes Esham concepts to finance climate adaptation and mitigation projects, potentially via perpetual or evergreen structures (Musari, 2022). However, the lack of integration between Green Waqf strategies and national climate action plans and SDG tracking mechanisms represents a critical gap, preventing the alignment of project pipelines with policy targets and the measurement of climate co-benefits (Adinugraha et al., 2023). To provide a comprehensive overview of the constraints and policy pathways for strengthening Green Waqf implementation, table 1 synthesizes the key challenges and proposed reforms across five critical dimensions.

**Table 2. Constraints and Policy Pathways for Green Waqf Implementation in Indonesia**

Dimension	Key Constraints	Policy Pathways	Supporting References
Regulatory & Institutional	Fragmented authority among BWI, MoF, BI, Kemenag, and OJK Ambiguous	Regulatory consolidation and harmonization Clarified roles and responsibilities	(Atikah et al., 2026; Mubarok et al., 2025; Yasin, 2021)

	jurisdictional boundaries	Standardized reporting and external audit	
	Weak harmonization across agencies		
Professional Capacity	Only 303 out of 400,000 <i>nazhirs</i> certified	Nationwide <i>nazhir</i> certification program	(Faisal, 2025; Kaila & Pribadi, 2025; Murtadha & Maulida, 2025)
	Limited institutional capacity	Professional standards and training	
	Lack of professional HR development	Ethics and financial reporting requirements	
Transparency & Accountability	Information asymmetry between wakif and <i>nazhir</i>	Digital transparency and open data platforms	(Luthfi et al., 2025; Maskun et al., 2025; Siswanto, 2023)
	Limited transparent reporting	Standardized reporting and public dashboards	
	Weak public trust in CWLS	Independent audits and blockchain trails	
Climate Policy Integration	Lack of integration with national climate plans	Green Sukuk and CWLS integration	(Adinugraha et al., 2023; Harahap et al., 2023; Musari, 2022)
	Limited SDG tracking linkage	Alignment with SDG 13, SDG 11, SDG 15	
	Weak climate co-benefits measurement	Explicit Green Waqf strategies in climate plans	
Financial Innovation	Limited cash waqf mobilization	CWLS for renewable energy projects	(Hosen et al., 2022; Musari, 2022; Rusydiana et al., 2024; Wijaya, 2023)
	Underdeveloped blended finance		

Insufficient public-private partnerships	Blended finance approaches
	PPP frameworks with risk-sharing

Table 2 synthesizes the key constraints and proposed policy pathways for strengthening Green Waqf implementation in Indonesia across five critical dimensions: regulatory and institutional, professional capacity, transparency and accountability, climate policy integration, and financial innovation. The table demonstrates that addressing Green Waqf governance challenges requires a comprehensive, multi-dimensional approach that integrates regulatory reform, capacity building, transparency enhancement, climate policy alignment, and financial innovation. The proposed pathways are mutually reinforcing, suggesting that progress in one dimension often depends on improvements in others.

Innovative policy pathways for strengthening Green Waqf implementation have been proposed across the literature. Regulatory consolidation and governance harmonization are essential, including clarifying roles across BWI, BI, MoF, Kemenag, and *nazhirs*; standardizing reporting, external audit, and independent oversight; and establishing a legal pathway to explicitly accommodate perpetual and green CWLS structures (Yasin, 2021). Capacity-building programs for *nazhirs* with professional standards and certification are critical, as is the development of digital platforms for fundraising, asset management, transparency, and SDG-tracking (Afifah & Iqbal, 2022). Public-private partnerships and cross-sector collaboration are repeatedly proposed as policy pathways to mobilize private capital for environmental ends within a Green Waqf framework (Hosen et al., 2022). The convergence of CWLS, green sukuk, digital platforms, and PPPs offers a coherent policy pathway to operationalize Green Waqf at scale, contingent on governance reforms and literacy campaigns to boost wakif participation (Berakon et al., 2022).

The proposed framework for strengthening Green Waqf implementation includes six key components: regulatory consolidation and governance harmonization; capacity-building programs for *nazhirs* with professional standards and certification; digital platforms for fundraising, asset management, transparency, and SDG-tracking; transparency and accountability incentives including public dashboards and regular disclosure; PPP frameworks for project development with risk-sharing and governance clauses aligned to climate policies; and monitoring and evaluation protocols linking Green Waqf outcomes to SDG indicators and climate metrics (Rusydziana et al., 2023). The pathways identified are supported by a broad evidence base that links legal clarity, governance quality, and financial innovation to successful Islamic climate finance outcomes (Nasution et al., 2021). Green Waqf holds considerable promise as a catalytic instrument at the nexus of Islamic social finance and environmental action, but unlocking its potential requires comprehensive reforms addressing regulatory fragmentation, professional capacity constraints, governance deficits, and integration with climate policy.

### **Green Waqf Governance in Indonesia: An Institutional Analysis of Regulatory Fragmentation, Professional Capacity, and Policy**

The governance of Green Waqf in Indonesia faces significant structural challenges that can be effectively analyzed through institutional theory, particularly concepts of isomorphism and institutional logics (Dimaggio & Powell, 2021; Friedland, 2012). This analysis integrates multiple sources identifying governance

obstacles in productive waqf and Cash Waqf Linked Sukuk, describing the regulatory and institutional architecture, and proposing policy measures including regulatory harmonization, *nazhir* certification, and enhanced digital transparency (Afifah & Iqbal, 2022; Berakon et al., 2022; Yusuf & Maulana, 2023). The governance challenges are multifaceted, encompassing regulatory fragmentation, limited professional capacity, and transparency deficits that collectively undermine public trust and institutional effectiveness.

Regulatory fragmentation and overlapping authority represent a primary impediment to effective Green Waqf governance, arising from the complex interplay of multiple institutions including the Badan Wakaf Indonesia (BWI), Ministry of Religious Affairs, Bank Indonesia, and the Financial Services Authority (OJK) (Berakon et al., 2022; Hafandi & Handayati, 2021). This fragmented ecosystem, involving BWI as both regulator and *nazhir* alongside roles for the Ministry of Finance and LKS-PWU institutions, creates significant uncertainty regarding jurisdiction, reporting requirements, and accountability mechanisms (Berakon et al., 2022). Nasution et al., (2021) underline institutional and market problems including governance and regulatory support gaps, reinforcing that fragmentation hampers coherent waqf development. This fragmentation is particularly problematic for Green Waqf initiatives, which require coordinated action across multiple agencies to mobilize resources for climate-related projects and ensure transparent reporting of environmental outcomes.

The limited professional capacity of *nazhirs* is consistently identified as a core bottleneck, with institutional and market issues including capacity constraints and lack of professional management reducing productive waqf utilization (Fawwaz et al., 2021). Research documents that fundraising and CWLS implementation suffer from suboptimal professionalization, suggesting that strengthening *nazhir* competency is essential (Berakon et al., 2022; Sari, 2023). Quantitative indicators show that only 303 out of 400,000 *nazhirs* possess formal certification, contributing to public hesitancy and diminished trust in waqf assets (Hosen et al., 2022). Certifying *nazhirs* and standardizing professional qualifications would directly address capacity gaps (Afifah & Iqbal, 2022). This capacity gap is particularly acute for Green Waqf initiatives, which require specialized knowledge in environmental project appraisal, climate finance, and impact measurement that many traditional *nazhirs* lack.

Transparency and accountability deficiencies in CWLS reporting have been identified as major impediments to fundraising and public trust. Research demonstrates that perceived transparency and trust mediate willingness to participate in Retail CWLS, with trust in BWI being crucial (Berakon et al., 2022). Afifah & Iqbal, (2022) argue that reporting and accountability are central to CWLS sustainability, identifying governance capacity, community literacy, and information technology as core areas requiring improvement. Collectively, these studies converge on the conclusion that low transparency reduces public trust and CWLS uptake, constraining climate and SDG-oriented waqf outcomes. The lack of transparent reporting mechanisms creates information asymmetry between wakif (donors) and *nazhir*, eroding trust and discouraging participation in Green Waqf initiatives.

Institutional isomorphism provides a valuable theoretical lens for understanding these governance challenges. Coercive isomorphism operates through regulatory pressures, yet the fragmented regulatory environment creates

inconsistent pressures (Dimaggio & Powell, 2021). Mimetic isomorphism is evident as waqf institutions may imitate best practices elsewhere, yet fragmentation impedes uniform governance diffusion (Berakon et al., 2022). Normative isomorphism, through *nazhir* certification, could create shared professional identity, yet capacity gaps hinder convergence toward professional norms (Afifah & Iqbal, 2022; Arianty et al., 2023). The interplay of conflicting institutional logics religious (charity, *zakah*, waqf ethics), state (regulatory oversight, fiscal policy), and market (private capital, investor expectations) often produces conflicting incentives that impede Green Waqf governance (Musari, 2022). Several studies argue that governance must reconcile normative religious stewardship with transparent accountability demanded by markets and state regulation (Berakon et al., 2022).

The proposed policy reforms are comprehensive and mutually reinforcing. Regulatory harmonization is essential to clarify jurisdictions, reporting lines, and supervisory responsibilities (Arianty et al., 2023). A formal mechanism for regular interagency coordination, such as a standing CWLS governance committee, would help resolve fragmentation. *Nazhir* certification and professionalization are central to improving productive waqf management and public trust, with proposals for a nationwide certification program (Arianty et al., 2023; Hosen et al., 2022). Digital transparency and open data platforms represent a pivotal lever for trust and scalability (Arianty et al., 2023; Berakon et al., 2022). The integration of CWLS with green infrastructure and renewable energy initiatives is a prominent policy avenue (Musari, 2022; Wijaya, 2023). A comprehensive policy pathway should include regulatory harmonization, *nazhir* certification, digital transparency, climate-aligned CWLS design, and public engagement campaigns.

In conclusion, a coherent policy architecture for Green Waqf governance in Indonesia requires addressing three central obstacles: regulatory fragmentation, limited *nazhir* capacity, and low transparency and public trust in CWLS. Institutional theory, through analysis of coercive, mimetic, and normative isomorphism and competing institutional logics, illuminates how reforms must harmonize governance, professionalize management, and elevate transparency to realize the climate and SDG potential of Green Waqf. The proposed reforms are consistently supported across the literature as essential levers to improve governance, mobilize productive waqf assets, and strengthen public trust in CWLS as a transformative instrument for climate action and sustainable development in Indonesia.

## CONCLUSION

This study systematically maps the development of Green Waqf research and identifies four major thematic clusters: waqf asset management, Islamic finance instruments, environmental sustainability, and institutional governance. These themes illustrate the growing role of Green Waqf as an emerging area of Islamic philanthropy that supports climate action and sustainable development. The review also shows that, although the literature has progressed from conceptual discussions to more practical and policy-oriented studies, important gaps remain in empirical evidence, governance, and interdisciplinary research.

The findings indicate that the implementation of Green Waqf is still constrained by fragmented regulations, limited professional capacity of *nazhirs*, weak transparency, and insufficient integration with national climate policies. Therefore, strengthening Green Waqf requires more coherent regulations, improved professional training and certification for *nazhirs*, greater use of digital

technologies to enhance accountability, and the development of climate-oriented Islamic financial instruments. Institutional theory suggests that the success of these reforms depends on balancing the interests of religious institutions, governments, and market actors. This study highlights Green Waqf as a promising mechanism for mobilizing Islamic philanthropy to address environmental challenges. However, realizing its full potential requires stronger collaboration among policymakers, waqf institutions, civil society, and researchers. Future studies should provide more empirical evidence on the effectiveness of Green Waqf, examine the contribution of digital innovation to governance, and conduct comparative analyses across countries to identify best practices. By strengthening governance and institutional capacity, Green Waqf can become a more effective instrument for supporting climate action, environmental sustainability, and the achievement of the Sustainable Development Goals.

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**Rozi Andriani:** Writing-Preparation of original manuscript, Conceptualization, Methodology, **Razali:** Visualization, Investigation, Improve Content, **Muhammad Deni Putra:** Data accuracy and analysis, Improve Language, **Haniah Lubis:** Data accuracy and analysis, Improve Language, **Iskandar Ibrahim:** Data accuracy and analysis, Improve Language.

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