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Philanthropy and Global Warming: The Potential of Green Waqf in Addressing Climate Change in Indonesia

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Abstract: Indonesia, with its vast tropical rainforests, faces serious threats such as illegal logging and forest fires that exacerbate greenhouse gas emissions and environmental degradation. Amid this crisis, Green Waqf emerges as an innovative solution that leverages philanthropy for environmental conservation. This research examines the potential of Green Waqf in supporting forest conservation, carbon emission reduction, and climate change mitigation in Indonesia. The primary focus is on exploring the integration of Green Waqf with conservation efforts and the social and environmental benefits it offers, as well as identifying challenges and opportunities in its implementation. The methodology employed a qualitative, library-based approach, which enabled the author to verify prior research findings and contribute new elements. Descriptive analysis was used to provide an in-depth understanding of related theories and experts' views. The findings indicate that Green Waqf can be an effective tool for mitigating climate change through forest conservation projects, tree planting, and resource management. In addition to reducing carbon emissions, Green Waqf also provides social benefits by creating local economic opportunities and enhancing community welfare.

Keywords: Philanthropy; green waqf; climate change; carbon emissions

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INTRODUCTION

In the contemporary era, rapid technological advancement and increasingly complex global dynamics have intensified humanity's interaction with the natural environment (Mufti Afif et al., 2025). One of the most pressing consequences of this transformation is global climate change, manifested through rising temperatures, extreme weather events, and shifting rainfall patterns. These changes are primarily driven by greenhouse

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gas emissions such as carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) originating from industrial activities, transportation systems, and large-scale deforestation (Prafitri & Zulaikha, 2016). As a result, climate change has evolved from a scientific concern into a multidimensional crisis affecting ecological stability, economic resilience, and social well-being.

The ecological implications of economic expansion have been critically examined through Schnaiberg's Treadmill of Production theory, which explains how the relentless pursuit of growth locks societies into patterns of environmental degradation without proportional improvements in collective welfare. Increased extraction of natural resources accelerates ecosystem damage, pollution, and carbon accumulation in the atmosphere, ultimately reinforcing the greenhouse effect and global warming (Foster, 2020; Rahma et al., 2022). In this context, human activities have become the dominant drivers of environmental degradation, surpassing natural factors that historically shaped ecological change (York, Richard, & Bellamy Foster, 2016).

These dynamics are further exacerbated by global population growth, which has exceeded eight billion and continues to rise. Expanding demands for land, energy, and food intensify deforestation, land conversion, and fossil-fuel dependence, thereby accelerating climate instability (Daioglou, 2020). The consequences are increasingly evident in the form of floods, prolonged droughts, and severe storms, disproportionately affecting vulnerable communities and heightening socio-economic risks (Muksin et al., 2023). Addressing these challenges requires not only state-led policies and market-based mechanisms, but also collective action involving civil society and alternative sources of sustainable financing (Ananta et al., 2024; Prafitri & Zulaikha, 2016).

In Indonesia, the urgency of climate action is particularly pronounced. As home to some of the world's largest tropical rainforests, Indonesia plays a vital role in global climate regulation through carbon sequestration and biodiversity preservation. However, illegal logging, agricultural expansion, and recurrent forest fires have significantly reduced forest cover, weakened carbon absorption capacity, and increased emissions from land-use change (Fitria, 2016; Seftiani et al., 2024). These conditions highlight the need for innovative, context-sensitive approaches that integrate environmental protection with social and economic sustainability.

One emerging approach is philanthropy, which has evolved beyond traditional charitable giving to include strategic investments in environmental conservation and ecosystem restoration. Philanthropic initiatives can mobilize financial resources, foster innovation, and complement public-sector climate policies, particularly in addressing long-term ecological challenges (Fauzi & Gunawan, 2022; Pratama, 2019; Seftiani et al., 2024). Within Islamic social finance, philanthropy is institutionalized through instruments such as waqf, which emphasizes sustainable asset management and long-term public benefit.

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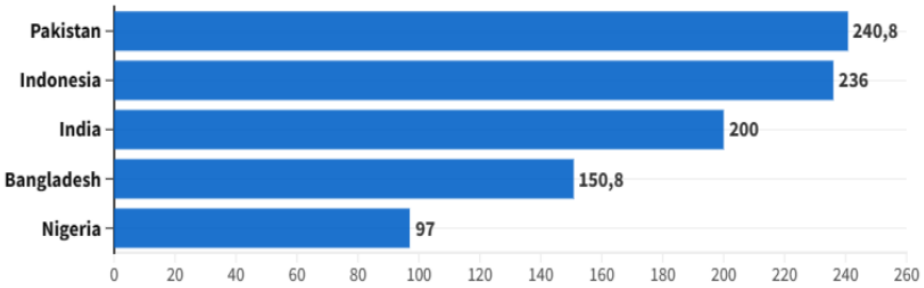
In this context, green waqf has emerged as an innovative model that aligns Islamic philanthropic principles with environmental sustainability objectives. By allocating waqf assets to initiatives such as forest conservation, tree planting, and sustainable resource management, green waqf offers a mechanism for integrating ecological responsibility with religious and social values (Lubis, 2021). Indonesia's large Muslim population and substantial unrealized waqf potentially provide a strong foundation for scaling this approach, despite current challenges in governance, awareness, and institutional capacity (Munandar & Hasan, 2023; Utomo et al., 2024).

Table 1: List of Countries with the Largest Muslim Populations in 2024



Green waqf holds substantial potential for addressing environmental challenges in Indonesia, particularly given its position as one of the countries with the largest Muslim populations globally (Seftiani et al., 2024). The demographic dominance of Muslims provides a strong social and normative foundation for mobilizing Islamic social finance instruments in support of climate change mitigation and environmental protection. Islamic teachings emphasize human responsibility as *khalīfah* to maintain ecological balance, framing environmental stewardship as both a moral duty and a form of worship (Solahudin, 2016). Within this framework, green waqf represents a value-based mechanism that aligns religious principles with sustainability objectives, enabling collective participation in ecosystem preservation through long-term, productive waqf assets.

Through initiatives such as tree planting, forest conservation, and land rehabilitation, green waqf contributes not only to carbon emission reduction, biodiversity protection, and water regulation, but also to socio-economic empowerment by creating employment opportunities and enhancing community welfare (Rahma et al., 2022; Wauran, 2018). Nevertheless, the effectiveness of green waqf is contingent upon sound governance, transparency, accountability, and multi-stakeholder coordination involving religious institutions, communities, government, and the private sector (Baiq, 2020). While existing climate mitigation approaches often face limitations in scalability and long-term sustainability, green waqf offers an alternative model rooted in ethical finance and social legitimacy (Waniatri et al., 2022). Accordingly, this study examines the

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potential application of green waqf in supporting forest conservation and climate change mitigation in Indonesia, identifies key managerial and institutional challenges, and assesses its broader environmental and social implications as a sustainable and context-sensitive solution

LITERATURE REVIEW

Philanthropy and Climate Action

Philanthropy refers to the voluntary act of giving for the welfare of society, including financial, institutional, and in-kind support. In the context of environmental sustainability, philanthropy has emerged as a critical source of climate finance, complementing public- and private-sector efforts. Foundations and philanthropic actors have increasingly directed resources toward climate change mitigation, disaster preparedness, and green innovation. According to UNEP (2021), philanthropic contributions to climate-focused projects have increased by over 45% globally over the last decade (Krakowski, 1971). This reflects a shift in donor priorities toward long-term, sustainable impact. In Indonesia, philanthropic organizations such as Dompet Dhuafa and BAZNAS have initiated environmental programs rooted in Islamic social finance instruments (Beck et al., 1996; Idllalène, 2021).

Green Waqf Concept

Waqf, an Islamic endowment, has traditionally been used for social goods such as education, health, and public utilities. The Green Waqf concept refers to waqf assets dedicated to environmentally sustainable initiatives, such as reforestation, renewable energy, and eco-friendly infrastructure (Basri et al., 2025). According to Cizakca, the integration of environmental goals into waqf management aligns with both Islamic values and global sustainability targets (Çizakça, 1998). The green waqf model can support the SDGs by providing long-term funding for environmental causes without relying on unstable donor support. In Indonesia, initiatives such as Waqf Forests and solar waqf are gaining attention as innovative forms of Islamic philanthropy (Idllalène, 2021).

Islamic Environmental Ethics

Islamic teachings emphasize balance (*mīzān*), stewardship (*khalīfah*), and prohibition of waste (*isrāf*), which form the ethical foundation for environmental care. Qur'anic principles encourage the preservation of nature as a form of worship and responsibility. According to Nasr (1996), the environmental crisis stems partly from the spiritual and moral detachment of modern society from nature (Nasr, 2011; Quadir, 2011). The revival of Islamic ecological ethics through waqf-based environmental programs helps restore the ethical connection between human actions and natural balance. This dimension underpins the legitimacy of Green Waqf as a spiritually rooted solution to climate issues (Sayem, 2021).

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METHOD

This study employs a qualitative approach using a library research method to examine the potential of green waqf in addressing climate change mitigation in Indonesia (Merriam, 1990). Library research was selected to systematically synthesize existing theoretical, conceptual, and empirical studies related to Islamic philanthropy, green waqf, and environmental sustainability (Hancock et al., 2009). The literature was collected from peer-reviewed journal articles, academic books, policy reports, and authoritative institutional publications relevant to the research topic.

The selection of literature was guided by three main criteria: (1) relevance to green waqf, Islamic social finance, climate change mitigation, or environmental ethics; (2) academic credibility, prioritizing peer-reviewed and institutionally recognized sources; and (3) temporal relevance, with emphasis on recent studies while including seminal works to establish theoretical foundations. Sources that lacked clear academic grounding, were not directly related to the research focus, or contained repetitive or non-substantive discussions were excluded from the analysis.

Data analysis was conducted using descriptive-analytical techniques (Bazen et al., 2021). The selected literature was systematically reviewed, categorized, and interpreted to identify key themes, conceptual patterns, and analytical relationships between green waqf, environmental conservation, and socio-economic outcomes. This process involved comparing perspectives across studies, synthesizing findings, and critically evaluating existing arguments to uncover gaps and generate integrated insights. Through this structured analytical procedure, the study aims to provide a comprehensive understanding of green waqf as a value-based and sustainable framework for climate change mitigation, while offering theoretically grounded insights to enrich the existing body of knowledge (Pimay & Savitri, 2021).

RESULT AND DISCUSSION

Philanthropy and Climate Change Mitigation

The literature consistently indicates that climate change poses multidimensional risks, including environmental degradation, biodiversity loss, and socio-economic vulnerability (Irma & Gusmira, 2024). Empirical studies highlight that carbon emissions from fossil fuel dependence and deforestation continue to exceed safe planetary thresholds, threatening global climate targets such as the 1.5°C limit (Fitrah & Soemitra, 2022). In this context, philanthropy emerges as a complementary mechanism for climate finance, particularly for addressing funding gaps left by public and market-based instruments.

Philanthropic interventions support climate mitigation by financing renewable energy innovation, ecosystem restoration, and community-based environmental programs (Fauzi & Gunawan, 2022). Evidence from post-COP26 initiatives demonstrates that philanthropic funding accelerates clean energy transitions and

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enhances adaptive capacity through cross-sector collaboration (Mutmainnah & Romadhon, 2023). Strategic investments such as the USD 358 billion allocated globally to renewable energy in 2023 illustrate how non-state actors contribute to reducing emissions while fostering sustainable development (Hasdiana, 2020; Muntasiroh, 2024; Seftiani et al., 2024). These findings support the claim that philanthropy functions not merely as charity but as a catalyst for systemic environmental transformation.

In the Islamic context, philanthropy institutionalized through zakat, *infaq, sadaqah*, and waqf strengthens social solidarity while addressing structural inequalities (Baiq, 2020; Mustofa, 2021). Empirical cases from Indonesia show that faith-based philanthropic institutions contribute to poverty reduction, economic empowerment, and social resilience by integrating social and productive financing models (Mukhlishin, 2019; Munadi & Susilayati, 2016). This evidence substantiates the argument that Islamic philanthropy provides a normative and operational foundation for sustainable development initiatives, including environmental protection.

Green Waqf: Conceptual Framework and Empirical Potential

Green waqf extends the traditional waqf institution by explicitly integrating environmental sustainability into its objectives (Wahida, 2023). Unlike conventional waqf, which primarily targets social infrastructure, green waqf allocates endowment assets to projects such as forest rehabilitation, renewable energy development, and ecosystem conservation (Irma & Gusmira, 2024). Studies demonstrate that such projects generate long-term environmental benefits while maintaining the perpetual nature of waqf assets (Idllalène, 2021; Ramadhany, 2023).

Quantitative estimates further reinforce its potential impact. Indonesia's waqf assets are valued at approximately IDR 2,000 trillion, with annual cash waqf potential reaching IDR 170 trillion, equivalent to 3.4% of GDP (Mauliyah et al., 2023; Sukmana & Rusydiana, 2023). These figures support the claim that green waqf can serve as a viable alternative financing instrument for climate action, particularly in forest restoration and land rehabilitation, sectors critical to Indonesia's emission reduction targets.

Empirical examples of green waqf implementation,, such as community-based tree planting and forest rehabilitation, demonstrate measurable outcomes, including carbon sequestration, biodiversity preservation, and local employment generation (Badriyah et al., 2023). These findings validate the argument that green waqf simultaneously addresses environmental and socio-economic objectives, aligning with SDGs 7, 13, and 15.

However, the literature also identifies structural challenges that constrain effectiveness, including weak governance, limited stakeholder coordination, and regulatory ambiguity (Pratama, 2019). The roles of key institutions such as the Indonesian Waqf Board (BWI) and the Indonesian Ulema Council (MUI) are crucial in strengthening legal certainty, accountability, and managerial professionalism

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(Maulidiana et al., 2024). Without transparent governance and standardized monitoring mechanisms, the long-term sustainability of Green Waqf initiatives remains uncertain.

Overall, the analyzed studies demonstrate that green waqf is not merely a normative religious practice but a strategic, value-based instrument capable of supporting climate mitigation, community empowerment, and sustainable development (Sukmana & Rusydiana, 2023). When supported by clear regulations, cross-sector collaboration, and professional management, green waqf has the potential to become a scalable and inclusive solution to Indonesia's environmental challenges.

Strategies and Institutional Challenges of Green Waqf Implementation

The findings indicate that green waqf holds strong strategic relevance as a faith-based and non-profit instrument for climate change mitigation, particularly in sectors that are less attractive to commercial investment, such as forest restoration and renewable energy development. Its perpetual asset structure enables long-term environmental benefits while simultaneously supporting socio-economic empowerment, positioning green waqf as a complementary mechanism to conventional climate finance in Indonesia (Idllalène, 2021).

Effective implementation of green waqf requires coherent institutional strategies that integrate public education, cross-sector collaboration, and sustainable project design. Previous studies emphasize that strengthening stakeholder coordination among regulators, *nazir*, and community-based organizations is essential to ensure accountability, transparency, and operational effectiveness (Rahayu Ningsih et al., 2022). In addition, the adoption of digital governance tools and standardized reporting mechanisms can enhance public trust and improve the scalability of green waqf initiatives.

Despite its potential, green waqf faces structural and regulatory challenges that limit its broader impact. Regulatory uncertainty and uneven managerial capacity among nazir constrain program implementation and long-term sustainability. From an ethical perspective, environmental degradation reflects a weakening of the Islamic responsibility of humans as khalifah on Earth, reinforcing the need for governance frameworks that align institutional practices with moral accountability (Amin & Siregar, 2015).

From a policy and sustainability perspective, green waqf aligns closely with Indonesia's climate commitments and Islamic environmental ethics. By supporting environmentally friendly agriculture, forest conservation, and renewable energy projects, waqf-based financing can enhance climate resilience and promote inclusive adaptation strategies, particularly for vulnerable communities (Ramadhany, 2023). When supported by precise regulation, professional management, and collaborative governance, green waqf has the potential to function as an effective and sustainable instrument for climate change mitigation and environmental protection in Indonesia.

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CONCLUSION

This study finds that green waqf functions not merely as a charitable practice but as a structured, value-based financing instrument capable of supporting climate change mitigation and socio-economic empowerment in Indonesia. The analysis demonstrates that green waqf is particularly effective in non-commercial environmental sectors such as forest rehabilitation, tree planting, and renewable energy where conventional market mechanisms are limited. However, its effectiveness is contingent upon institutional readiness, including clear regulatory frameworks, professional *nazir* management, and coordinated stakeholder governance. From a policy perspective, integrating green waqf into national climate strategies and waqf regulations could strengthen Indonesia's progress toward its NDC and SDG targets. Practically, waqf institutions are encouraged to adopt transparent governance, digital reporting, and community-based project models to enhance accountability and impact. Future research should move beyond conceptual analysis by empirically assessing the environmental and socio-economic outcomes of green waqf projects and comparing their effectiveness with other green financing instruments.

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