

Research Article

The Role of Cash Waqf in Financing Renewable Energy Projects for Sustainable Islamic Economic Development

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Abstract: This study examines the significant role of cash waqf in financing renewable energy projects for sustainable Islamic economic development. Using a descriptive qualitative approach, the research collects data through case analysis of Islamic social finance institutions involved in renewable energy funding, along with interviews with key informants such as waqf managers and Islamic finance practitioners. The data were analyzed using thematic analysis to identify recurring patterns and key themes related to cash waqf's application in renewable energy projects. The findings show that cash waqf offers a more sustainable funding model compared to conventional charity. By preserving the principal and only utilizing the income, cash waqf provides long-term resources for clean energy projects. The study also highlights cash waqf's advantages in terms of accountability and transparency, as waqf institutions are required to provide auditable financial reports. In contrast, conventional charity is often short-term and lacks structured oversight, making cash waqf a more efficient model for financing ongoing projects like renewable energy. The research also identifies challenges in implementing cash waqf, such as regulatory issues and lack of awareness. However, there are significant opportunities to address these challenges through collaborations with Islamic banks and sustainable financial institutions. This study proposes integrating cash waqf with Islamic finance principles and ESG criteria to increase its impact on renewable energy projects. With appropriate regulation and increased awareness, cash waqf can play a crucial role in driving the transition to a sustainable green economy.

Keywords: Cash Waqf; Green Financing; Islamic Finance; Renewable Energy; Sustainable Islamic

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1. Introduction

Renewable energy plays a vital role in achieving sustainable development by reducing carbon emissions, improving energy security, and promoting environmental resilience. However, many Muslim-majority countries continue to face challenges in expanding renewable energy initiatives due to limited financial resources, weak institutional capacity, and regulatory inefficiencies (Shah et al., 2019). Financial and policy constraints have hindered the growth of renewable energy in countries such as Türkiye and Pakistan, where unstable economic conditions and underdeveloped green finance frameworks limit investment in sustainable infrastructure (Akhtar et al., 2023; Miah & Suzuki, 2020). These obstacles highlight the urgent need for innovative and inclusive financing mechanisms that can accelerate renewable energy adoption in the Islamic world.

Beyond economic advantages, renewable energy contributes significantly to environmental protection and intergenerational sustainability. Solar, wind, and hydropower

systems are central to mitigating climate change and ensuring long-term energy independence. For instance, Saudi Arabia's Vision 2030 integrates renewable energy as a strategic priority to reduce dependence on fossil fuels and diversify the economy (Benlahcen & Hussein, 2022).

From an Islamic perspective, sustainability is deeply aligned with the objectives of *Maqasid al-Shariah*, which emphasize the protection of religion, life, intellect, progeny, and wealth. These principles form the ethical foundation for promoting justice, responsible investment, and balanced resource management (Rahim et al., 2024). Islamic financial instruments such as *sukuk*, *zakat*, and *waqf* embody this alignment by channeling funds into activities that foster both social welfare and environmental stewardship (Ahmed et al., 2022). Among these, cash waqf has emerged as a particularly promising mechanism to address the financing gap in renewable energy development.

Historically, cash waqf a monetary endowment dedicated to public benefit has played a pivotal role in supporting education, healthcare, and community infrastructure (Asmara & Abubakar, 2019). It combines philanthropy with investment, ensuring long-term socio-economic returns. However, in many Muslim-majority nations, cash waqf remains underutilized due to governance issues, lack of standardization, and low public awareness. This underdevelopment constrains its potential contribution to modern sustainability goals, particularly in renewable energy financing.

Recent innovations in Islamic finance have sought to revitalize waqf through hybrid models such as Cash Waqf Linked Sukuk (CWLS) in Indonesia and Waqf-Integrated Green Bonds in Malaysia (Berakon et al., 2022; Ahmed & Kassim, 2022). These instruments demonstrate the feasibility of combining charitable capital with market-based financial tools to fund renewable energy infrastructure while remaining Sharia-compliant. Moreover, digital financial platforms and transparent governance systems can enhance the efficiency, accountability, and scalability of such initiatives (Hassan et al., 2023).

Developing Sharia-compliant financial models for renewable energy requires not only ethical investment practices but also effective regulatory support and institutional collaboration. Integrating cash waqf with renewable energy financing aligns financial innovation with the ethical imperatives of Islam promoting justice, stewardship (*kehalifan*), and community welfare (*maslahah*) (Obaidullah, 2020). By bridging the gap between faith and finance, *cash waqf*-based renewable energy projects offer a viable pathway toward achieving both the United Nations Sustainable Development Goals (SDGs) and *Maqasid al-Shariah* objectives across the Muslim world.

2. Literature Review

Concept of Cash Waqf in Islamic Finance

Definition and Principles of Waqf

Waqf, an Islamic endowment, represents a donation of property or funds for religious, educational, or charitable purposes, regulated by Sharia principles (Manaf et al., 2023; Farhan & Hasan, 2023). It is designed to serve both social and economic objectives, redistributing resources to underserved populations while sustaining public welfare. Cash waqf, a contemporary evolution of traditional waqf, embodies these principles in liquid form, emphasizing transparency, protection of donor rights, and effective fund management (Berakon et al., 2022; Hamza, 2017). Governance of waqf entails adherence to Sharia, ensuring that funds are allocated ethically and efficiently for public benefit.

Transformation from Traditional Asset-Based Waqf to Cash Waqf

Historically, waqf relied heavily on immovable assets such as land and buildings (Ahmad et al., 2016). However, the emergence of cash waqf has allowed for more flexible and liquid

funding mechanisms, facilitating diversified investments and simplifying collection processes (Altay, 2024). Modern financial instruments, including digital platforms and FinTech solutions, have further enhanced the efficiency, transparency, and accessibility of waqf management, enabling broader participation among donors (Berakon et al., 2022; Tahiri-Jouti, 2022). This transformation has paved the way for waqf to contribute not only to traditional social welfare programs but also to contemporary sustainable development initiatives.

Renewable Energy and Sustainable Development in Islamic Economics

Role of Renewable Energy in Achieving SDGs

Renewable energy plays a pivotal role in promoting sustainable development by addressing economic, social, and environmental dimensions (Ahmed et al., 2024). Islamic banks have increasingly participated in financing renewable energy projects, thereby contributing to energy security, environmental sustainability, and economic growth (Alnsour, 2024). Investments in renewable energy not only reduce greenhouse gas emissions but also generate long-term socio-economic benefits, aligning with global sustainable development goals (SDGs) (Ahmed et al., 2024).

Concept of Sustainability from the Islamic Perspective

Sustainability within the Islamic framework is guided by the Maqasid al-Shariah, which emphasizes the preservation of faith, life, intellect, lineage, and wealth (Mohamed et al., 2019; Khan & Haneef, 2022). The principle of stewardship (Khalifah) underscores responsible management of resources, ensuring intergenerational equity and environmental protection. Islamic teachings also advocate moderation (Wasatiyyah) in consumption and emphasize the ethical obligation to protect natural resources, thereby complementing conventional sustainability concepts (Mursid et al., 2024; Khan & Haneef, 2022).

Integration of Islamic Social Finance and Green Projects

Integration of Cash Waqf in Sustainable Development

Islamic social finance instruments, including zakat and waqf, can be effectively integrated into green projects to enhance sustainable outcomes (Tahiri-Jouti, 2022). Cash waqf, with its liquidity and flexibility, is particularly suited to finance renewable energy initiatives, thereby contributing to both environmental and social goals. Innovative financial models, such as cash waqf linked sukuk or digital waqf platforms, have been proposed to optimize resource allocation while ensuring Shariah compliance (Aufa et al., 2023; Berakon et al., 2022). These integrative approaches not only mobilize resources for green projects but also enhance socio-economic inclusivity, supporting community welfare and sustainable economic development (Manaf et al., 2023).

Digitalization and Regulatory Enhancements

The adoption of digital platforms and regulatory reforms has been essential in enhancing the management, transparency, and accountability of cash waqf (Berakon et al., 2022; Tahiri-Jouti, 2022). These developments enable broader public participation, facilitate efficient monitoring, and ensure that waqf-based investments align with sustainable development goals. By integrating traditional Islamic philanthropic values with modern financial technologies, cash waqf serves as a dynamic mechanism to support renewable energy initiatives and foster long-term socio-economic sustainability within the Islamic economic framework (Hassan et al., 2023; Ahmed & Kassim, 2022).

Previous Studies on Islamic Finance and Renewable Energy

Islamic Finance Mechanisms Supporting Renewable Energy

Islamic finance has increasingly been recognized as a crucial mechanism for promoting renewable energy investments while adhering to Shariah principles. Instruments such as green sukuk, impact investing, and other Shariah-compliant financing tools have been identified as

effective in channeling funds toward environmentally sustainable projects, supporting both economic growth and ethical investment frameworks (Alnsour, 2024; Othman & Haron, 2024; Faizi et al., 2024). These mechanisms demonstrate compatibility with global sustainability objectives, particularly in reducing environmental degradation and fostering inclusive economic development.

Geographical Focus and Empirical Insights

Research in this area has predominantly concentrated on countries such as Saudi Arabia, Malaysia, the UAE, and Indonesia, which are actively integrating Islamic finance with renewable energy initiatives (Alnsour, 2024). Empirical evidence indicates that the development of Islamic finance correlates with a significant reduction in CO2 emissions, highlighting the sector's role in promoting environmentally friendly energy projects (Silahul et al., 2024). These studies underscore the potential of Islamic finance not only as a tool for economic development but also as a means to advance climate change mitigation efforts.

Conceptual Insights: Sustainable Halal Financing and Energy Justice

Conceptually, Islamic finance frameworks provide a foundation for sustainable Halal financing, integrating ethical considerations into the Blue-Green economy. Principles such as risk-sharing, prohibition of *riba* (interest), and ethical investment align with energy justice, promoting fair, equitable, and sustainable energy systems (Karim, 2023; Othman & Haron, 2024). These conceptual perspectives emphasize the dual role of Islamic finance in balancing economic efficiency with social and environmental responsibility.

Research on Cash Waqf and Green Finance

Current Status of Green Waqf Practices

While Islamic finance instruments such as green sukuk have been extensively examined in both theory and practice, research on the utilization of cash waqf as a structured green finance mechanism remains limited. Existing studies have discussed the role of green waqf in promoting sustainability, particularly in Malaysia and Indonesia, emphasizing institutional governance, accountability mechanisms, and environmental initiatives undertaken by waqf institutions (Ibrahim & Mohammed, 2021; Pitchay et al., 2018). These studies highlight the potential of cash waqf to fund eco-friendly projects and support climate change mitigation, yet empirical evidence and model development remain scarce compared to other Islamic financial instruments such as sukuk or Islamic green bonds (Ahmed & Kassim, 2022; Haneef et al., 2019).

Identified Research Gaps

The existing literature highlights notable research gaps regarding the role of cash waqf in sustainable finance. Empirical evidence remains limited on its function as a dedicated green finance instrument, as most studies have primarily focused on broader Islamic financial mechanisms such as green sukuk, zakat, or Islamic microfinance (Othman & Haron, 2024). The systematic integration of cash waqf into green finance frameworks for renewable energy development also remains underexplored, particularly in terms of governance, operational mechanisms, and regulatory models (Ahmed & Kassim, 2022; Berakon et al., 2022). Furthermore, there is a pressing need to identify best practices and successful implementation models of green waqf to guide policymakers, Islamic financial institutions, and waqf organizations in optimizing their contribution to sustainable development (Hassan et al., 2023).

3. Research Method

This study adopts a descriptive qualitative approach to explore the role of cash waqf in financing renewable energy projects, with a focus on its contribution to promoting sustainable

Islamic economic development. The chosen approach allows for a deep understanding of the practices, strategies, and challenges faced in implementing cash waqf for green financing initiatives. It also aims to identify the social, economic, and environmental impacts of cash waqf-based projects. To gather data, the study combines case analysis of Islamic social finance institutions, such as waqf-based energy cooperatives and green waqf foundations, with semi-structured interviews of key informants, including waqf managers, Islamic finance practitioners, and project coordinators. Secondary data are collected from organizational reports, financial statements, policy documents, and previous research publications. The analysis of these data, using thematic analysis, enables the identification of key themes and patterns, focusing on the strategies employed by waqf institutions in financing renewable energy projects. The findings provide valuable insights into the effectiveness of these strategies and their role in supporting sustainable development goals, revealing both best practices and the challenges that lie ahead. Below is a flowchart that illustrates the research methodology.

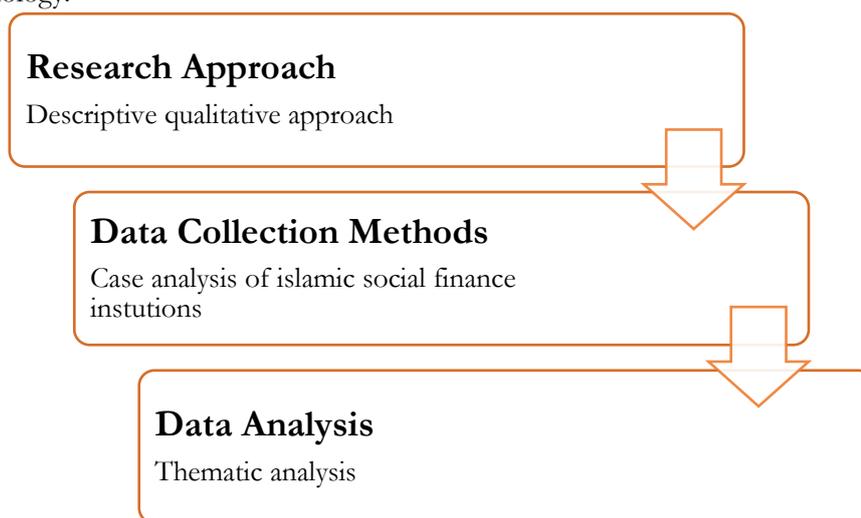


Figure 1. Diagram of Research Methodology: The Role of Cash Waqf in Financing Renewable Energy Projects for Sustainable Islamic Economic Development.

Research Approach

This study adopts a descriptive qualitative approach to explore the role of cash waqf in financing renewable energy projects. It examines how cash waqf contributes to promoting sustainable Islamic economic development. The approach allows for an in-depth understanding of practices, strategies, and challenges in implementing cash waqf for green financing. Through this method, the study also identifies the social, economic, and environmental impacts of cash waqf-based initiatives. Overall, it provides a comprehensive perspective on the potential of cash waqf to support sustainable development goals.

Data Collection Methods

Data for this study are collected through case analysis of Islamic social finance institutions that actively participate in renewable energy funding. Examples of these institutions include waqf-based energy cooperatives and green waqf foundations. Primary data are obtained using semi-structured interviews with key informants, such as waqf managers, Islamic finance practitioners, and project coordinators. Secondary data are gathered through document analysis, including organizational reports, financial statements, policy documents, and previous research publications. The combination of interviews and document review allows for a rich and contextual understanding of the operational mechanisms and challenges faced by cash waqf initiatives in renewable energy financing.

Data Analysis

The collected data are analyzed using thematic analysis to identify recurring patterns and key themes related to cash waqf applications. This method allows for a systematic examination of qualitative information from case studies and interviews. The analysis focuses on understanding the strategies employed by waqf institutions in financing renewable energy projects. It also assesses the effectiveness and impact of these strategies on promoting sustainable Islamic economic development. Through this approach, insights into best practices and potential challenges are revealed.

4. Results and Discussion

Results

This study identified several successful examples of renewable energy initiatives based on waqf in Muslim-majority countries, particularly in Indonesia, Malaysia, and Turkey. In Indonesia, projects like Yayasan Waqf Energi have successfully funded the installation of solar panels for the agricultural sector in off-grid areas. These projects have provided dual benefits, offering clean energy and boosting agricultural productivity. Similarly, in Malaysia, similar projects funded through waqf have provided renewable energy infrastructure to rural areas that lack access to central energy systems. These successes demonstrate that waqf can serve as an effective funding source for long-term renewable energy projects.

Role of Cash Waqf in Enhancing Funding Accessibility

Cash waqf plays a vital role in improving access to funding for renewable energy projects, especially in regions with limited access to conventional financing. Unlike zakat or traditional charity, which are typically one-time contributions, cash waqf serves as a long-term resource because the principal is preserved, and only the income generated is used for funding projects. This makes cash waqf highly effective in providing stable funding for long-term clean energy projects. In some cases, waqf is also used to fund research and development in renewable energy technology, accelerating the transition to a green economy.

Mechanisms that Enable Mobilization of Funds for Sustainable Projects

The mobilization of funds through cash waqf is facilitated by several mechanisms, such as partnerships between waqf institutions and renewable energy companies, as well as collaborations with government agencies. In many projects, waqf funds are used as seed capital, while additional funds are raised through partnerships with private sector entities or government subsidies. This often involves the issuance of green sukuk or other investment instruments to support fund mobilization. Furthermore, waqf funds are also directed toward capacity-building programs, which train local communities to maintain and manage renewable energy systems. This not only creates jobs but also ensures the long-term sustainability of the projects.

Comparative Analysis: Cash Waqf vs. Conventional Charity

When compared to conventional charity, cash waqf proves to be a more efficient model for supporting long-term projects like renewable energy initiatives. Conventional charity often focuses on short-term relief, while cash waqf, by preserving the principal, provides sustainable funding that can support projects over an extended period. Moreover, cash waqf is more transparent in its management. Waqf institutions typically have clear financial reports that can be monitored and audited by the public and relevant stakeholders, making its management more accountable than conventional charity, which may lack such oversight and control.

Challenges and Opportunities

Despite the significant potential of cash waqf, implementing waqf-based renewable energy projects faces several challenges, such as regulatory issues, governance complexities,

and a lack of awareness about waqf among potential donors and beneficiaries. Many countries still lack legal frameworks that support waqf-based energy projects, limiting the potential for this type of funding. Furthermore, there is a need to raise awareness about the benefits of waqf in sustainable development, as well as educating the public on the role of waqf in funding renewable energy. Nevertheless, these challenges present opportunities to strengthen the system, such as through partnerships between waqf organizations and Islamic financial institutions and increasing public awareness of waqf's role in green financing.

Future Potential for Integrating Waqf with Islamic Banking and ESG Finance

Looking to the future, there is significant potential for integrating cash waqf with Islamic banking and Environmental, Social, and Governance (ESG) finance. Islamic banks could develop waqf-linked investment products, such as green sukuk, to channel funds into renewable energy projects. This would blend traditional Islamic financial instruments with modern sustainability goals, providing a more structured and sustainable financing model. Additionally, applying ESG principles to the management of waqf funds could accelerate funding for renewable energy projects, attracting more investments. This integration could play a key role in scaling up the impact of cash waqf in financing large-scale, sustainable energy initiatives, contributing to global efforts toward achieving the Sustainable Development Goals (SDGs).

Discussion

The findings indicate that cash waqf plays a crucial role in improving access to funding for renewable energy projects, particularly in Muslim-majority countries. The successes of solar energy projects funded by cash waqf in Indonesia and Malaysia show that waqf can provide a sustainable funding source for long-term projects. Unlike conventional charity, which typically provides one-time donations, cash waqf ensures the preservation of principal funds, providing a continuous and reliable funding stream for clean energy initiatives. These projects can continue without depending on one-time donations, enabling long-term sustainability.

However, the implementation of cash waqf in renewable energy financing still faces several challenges. Regulatory frameworks in many countries are not yet fully supportive of waqf-based energy projects, which limits the potential for this type of funding. Moreover, there is a lack of understanding about waqf and its benefits among both potential donors and recipients. To fully realize the potential of waqf for renewable energy financing, it is essential to improve legal frameworks and enhance public education and awareness about waqf's role in sustainable development.

When compared to conventional charity, cash waqf is superior in terms of efficiency, accountability, and long-term sustainability. By preserving the principal and using only the returns for financing, cash waqf provides a continuous funding source, which conventional charity does not. Additionally, the transparent management of waqf funds, which can be audited and monitored, makes it a more reliable source of financing for renewable energy projects.

Looking ahead, integrating cash waqf with Islamic banking and ESG finance offers tremendous potential. The development of waqf-linked investment products like green sukuk can facilitate the flow of funds into renewable energy projects, providing a structured and sustainable financing model. The application of ESG principles to waqf management will ensure that funds are invested in projects that meet both financial and environmental sustainability criteria. By aligning Islamic finance with global sustainability goals, cash waqf can play a crucial role in financing the transition to a green economy, particularly in regions where traditional financing options are limited.

5. Comparison

Cash waqf offers a more sustainable and efficient model for financing renewable energy projects compared to conventional charity. While conventional charity typically provides one-time donations, cash waqf operates as a perpetual funding source. The principal of cash waqf remains intact, and only the income generated from it is used to finance projects, ensuring long-term availability of funds. In contrast, charity often depletes its resources after the funds are distributed, which limits its ability to provide ongoing support for projects that require continuous investment, such as renewable energy initiatives.

Additionally, cash waqf is more accountable than conventional charity. Waqf institutions are usually required to provide regular financial reports and undergo audits, ensuring transparency in the management of funds. This level of accountability allows donors and stakeholders to track the use of their contributions and ensures the efficient allocation of funds. Conventional charity, on the other hand, may lack such oversight, making it more difficult to ensure that funds are being used effectively and for the intended purpose.

Cash waqf also offers a more structured and long-term approach to financing projects. Because the principal remains intact, the income generated can be reinvested into other projects, creating a cycle of sustainable funding. Conventional charity, by its nature, does not have this capacity for long-term reinvestment, as the funds are typically directed toward immediate needs and often do not generate future income. This makes cash waqf a more reliable and forward-thinking option for financing projects that require sustained support, such as renewable energy systems that need ongoing maintenance and expansion.

In terms of governance and oversight, cash waqf has a distinct advantage over conventional charity. The governance structures of waqf institutions are typically well-defined, ensuring that funds are managed in a structured manner. Charitable organizations, however, may not always have the same rigorous governance mechanisms in place, which can lead to inefficiencies or a lack of transparency in fund distribution. The clear governance framework of cash waqf provides a more reliable and accountable method for financing projects, particularly those that require careful management of resources over time.

6. Conclusion

This study highlights the significant role of cash waqf in financing renewable energy projects, particularly in the context of sustainable Islamic economic development. Through an in-depth analysis of case studies and interviews, it has been demonstrated that cash waqf provides a reliable, sustainable, and transparent funding model for clean energy projects. Unlike conventional charity, which often lacks long-term sustainability, cash waqf ensures continuous financial support by preserving the principal amount, allowing the generated income to fund future initiatives. This feature makes cash waqf a more viable solution for financing renewable energy projects that require ongoing investment and long-term sustainability.

The findings also emphasize the efficiency and accountability of cash waqf compared to conventional charity. With transparent management and governance structures in place, waqf institutions can provide detailed reports and audits, ensuring that funds are used effectively and as intended. In contrast, conventional charity often lacks such oversight, which may result in inefficiencies or misuse of funds. This level of transparency, coupled with the long-term financial sustainability offered by cash waqf, makes it a more reliable model for supporting projects in renewable energy, a sector that is crucial for achieving sustainable development goals (SDGs).

Moreover, cash waqf offers opportunities for integrating Islamic financial principles with global sustainability goals. By collaborating with Islamic banks, leveraging green sukuk, and

adhering to ESG (Environmental, Social, and Governance) criteria, cash waqf can scale up its impact on renewable energy financing. This integration aligns with both the objectives of Islamic finance and the global push for environmental sustainability, providing a unique approach to addressing climate change and promoting green development.

In conclusion, cash waqf is a promising and underutilized tool in financing renewable energy projects. Its ability to provide long-term, sustainable funding, its transparent governance, and its alignment with Islamic economic principles make it an effective model for driving the transition to a green economy. With proper regulatory support and increased public awareness, cash waqf can play a crucial role in supporting renewable energy projects and contributing to the broader goals of sustainable development within Islamic economic frameworks.

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