

The Integration of Carbon Accounting in Islamic Economics: A Conceptual Islamic Social Finance Model for Advancing Sustainable Development Goal 15 (Life on Land)

Aulia Rahmi,^{1*} Afda Refani,² and Harmanto Raharjo³

^{1,2,3} UIN Sunan Gunung Djati Bandung, Indonesia

*Corresponding author: auliahmi3096@gmail.com

Abstract: Global environmental degradation, particularly land degradation and deforestation, indicates that conventional approaches to environmental management remain sectoral and have not been able to comprehensively integrate financing, investment, and impact measurement. This study aims to develop an Islamic Carbon Economy framework through the integration of Islamic Social Finance, green investment, carbon accounting, and carbon sequestration into a unified conceptual model to support the achievement of Sustainable Development Goal (SDG) 15. The research employs a qualitative library-based approach using conceptual analysis and theoretical synthesis. Primary sources include classical works on *maqāṣid al-sharī'ah* and reports published by international institutions, while secondary sources consist of reputable journal articles published between 2019 and 2025. The findings reveal that these four components are systematically interconnected. Islamic Social Finance functions as a strategic source of funding directed toward green investments such as reforestation and land rehabilitation. Carbon accounting serves as a measurement, reporting, and verification mechanism that ensures transparency and accountability, while carbon sequestration represents the primary ecological outcome and simultaneously generates economic value through carbon credits. Ethical principles embedded within Islamic finance are found to strengthen environmental governance by aligning economic objectives with ecological sustainability. This study recommends the development of carbon waqf, environmental zakat, and Sharia-compliant carbon markets as derivative instruments, as well as further empirical research to examine the validity and applicability of the proposed model within real policy contexts.

Keywords: Islamic Carbon Economy, Islamic Social Finance, Green Investment, Carbon Accounting, Carbon Sequestration, SDGs 15.

Introduction

The global climate crisis has reached an increasingly alarming stage, as evidenced by the continuous rise in greenhouse gas emissions and the significant rate of deforestation over recent decades. The land-use and forestry sector contributes substantially to total global emissions while simultaneously possessing considerable potential as a carbon sink through carbon sequestration mechanisms (Peng et al., 2025). Consequently, terrestrial ecosystems have become strategically important, prompting the international community to establish the Sustainable Development Goals (SDGs), particularly SDG 15 (Life on Land), which focuses on the protection, restoration, and sustainable use of terrestrial ecosystems (Pan et al., 2024). Nevertheless, numerous reports indicate that land degradation and biodiversity loss continue to persist, revealing a serious gap between global commitments and policy implementation in practice (Leclère et al., 2020).

In response to these challenges, carbon accounting has evolved into a critical instrument in climate governance. This approach enables the systematic measurement, reporting, and verification (MRV) of both carbon emissions and carbon sequestration, thereby enhancing transparency and accountability in environmental management (He et al., 2022). Furthermore, carbon accounting has become a fundamental basis for the development of carbon markets and climate-based financing schemes, including carbon credit mechanisms derived from reforestation, agroforestry, and land rehabilitation activities (Mittal et al., 2025). Despite these advancements, its development continues to be dominated by conventional economic approaches that prioritize market efficiency, while giving relatively limited attention to ethical considerations, distributive justice, and normative values.

From the perspective of environmental economics, ecosystem degradation is generally understood as a consequence of market failure, particularly in the form of negative externalities that are not internalized within the pricing system (Arimura, 2024). The concept of natural capital further emphasizes that natural resources constitute economic assets that must be managed sustainably to ensure long-term development continuity (Melnik et al., 2025). However, this approach remains largely rooted in a secular-utilitarian paradigm and therefore has not fully accommodated value-based financial systems that have the potential to strengthen ecological responsibility in a more comprehensive manner.

On the other hand, Islamic economics offers an alternative framework through ethical financial principles that emphasize justice, balance, and sustainability. Islamic Social Finance (ISF)—which includes instruments such as zakat, waqf, and sukuk—possesses unique characteristics reflected in its orientation toward social welfare

and economic redistribution (Rosman et al., 2022). A growing body of research has demonstrated the effectiveness of ISF in supporting poverty alleviation and inclusive development. Nevertheless, its contribution to environmental issues, particularly climate change mitigation and carbon management, remains relatively limited and has not yet been systematically integrated with modern environmental instruments such as carbon accounting (Raimi et al., 2024). Consequently, significant conceptual opportunities exist for developing an integrated framework that links Islamic finance with data-driven environmental management mechanisms.

From a theoretical perspective, *maqāṣid al-sharī'ah* provides a comprehensive normative foundation for Islamic economics. Although it has traditionally focused on the protection of religion, life, intellect, lineage, and wealth, contemporary Islamic scholarship has expanded its scope to include environmental considerations through the concept of *ḥifẓ al-bī'ah* (environmental preservation) (Güney, 2024). This expansion reflects a paradigmatic shift from an anthropocentric orientation toward a more ecocentric perspective, positioning environmental sustainability as an integral component of the objectives of the Sharī'ah. However, the integration of *maqāṣid al-sharī'ah* with technical instruments such as carbon accounting remains underdeveloped in the existing literature, thereby creating substantial opportunities for theoretical advancement.

Furthermore, previous studies have generally examined carbon accounting, Islamic finance, and the Sustainable Development Goals (SDGs) as separate domains. Research on carbon accounting tends to focus on the technical dimensions of measurement and climate policy without adequately considering the ethical dimensions of finance (Liew & Cao, 2025). Meanwhile, the Islamic finance literature primarily emphasizes socio-economic issues, such as financial inclusion and welfare distribution, while paying limited attention to climate change and environmental conservation (K. Anami & Ramadhani, 2026). Likewise, studies related to the SDGs frequently adopt conventional approaches that do not comprehensively integrate value-based financial systems (Trucco et al., 2021). This fragmentation reveals a significant research gap, particularly in developing an integrative model that connects Islamic Social Finance, carbon accounting, carbon sequestration, and the achievement of SDG 15.

In response to this gap, the present study aims to develop a conceptual framework referred to as the Islamic Carbon Economy Framework, which integrates Islamic Social Finance with green investment, carbon accounting, and carbon sequestration to support the achievement of SDG 15. Specifically, this study contributes in three major ways: (1) by linking carbon accounting with Islamic economics within a unified analytical framework; (2) by introducing the concept of the Islamic Carbon Economy as an alternative approach to sustainable economics; and (3) by extending the framework of *maqāṣid al-sharī'ah* through the incorporation of environmental protection (*ḥifẓ al-bī'ah*) as a central dimension of economic policy. Accordingly, this study is expected not only to make a significant theoretical contribution but also to provide practical implications for the development of Islamic financial policies that are responsive to the challenges of global climate change.

Method

This study employs a qualitative approach using a conceptual paper design based on library research. This approach was selected because the primary objective of the study is to develop an integrative conceptual framework linking Islamic Social Finance (ISF), green investment, carbon accounting, carbon sequestration, and the achievement of SDG 15. Given the interdisciplinary nature of the integration between Islamic economics, environmental economics, and climate governance, the phenomenon cannot be adequately explained through a single empirical approach. Therefore, an in-depth theoretical synthesis is required to generate a systemic and value-based model.

The data used in this study consist of both primary and secondary sources. Primary sources include classical works on *maqāṣid al-sharī'ah*, relevant Qur'anic verses and Prophetic traditions concerning environmental stewardship, as well as reports issued by authoritative international organizations such as the Intergovernmental Panel on Climate Change (IPCC), which provide data on emissions and carbon governance. Secondary sources comprise peer-reviewed international journal articles indexed in Scopus, accredited national journals published between 2019 and 2025, and relevant books and conference proceedings. The selection of literature was based on relevance to the main variables, recency of publication, and academic credibility to ensure conceptual validity.

Data were collected through a systematic literature search conducted in major academic databases, including Scopus, Web of Science, and Google Scholar. The search employed keywords such as *Islamic Social Finance*, *Green Investment*, *Carbon Accounting*, *Carbon Sequestration*, *SDG 15*, and *Maqāṣid al-Sharī'ah*. The search process was carried out iteratively and comparatively to obtain representative literature and to identify emerging patterns of relationships among concepts across different disciplines. Documentation and classification of references were managed using reference management software to ensure consistent tracking and verification of sources.

Data analysis was conducted through four interrelated stages. The first stage involved data reduction through the selection of literature most relevant to the research focus. The second stage consisted of thematic classification, whereby the literature was organized into key domains: SDG 15 and ecosystem crises, carbon accounting,

environmental economics, Islamic Social Finance, and *maqāṣid al-sharī'ah*. The third stage employed descriptive-critical analysis to identify limitations in previous approaches, particularly the fragmentation between financing, environmental investment, and carbon measurement. The fourth and central stage involved conceptual synthesis, integrating the findings to construct causal and systemic relationships among the variables. Descriptive-analytical, comparative, and theoretical synthesis approaches were applied complementarily to formulate a model that is not only conceptually robust but also operationally coherent. To ensure data validity, source triangulation and source criticism techniques were employed to assess the quality and consistency of references. The final outcome of the analysis was the formulation of the Islamic Carbon Economy Framework as a conceptual model that emphasizes the systemic relationships among its core components.

Results and Discussion

1. Islamic Carbon Economy Framework: Integrating Islamic Social Finance and Green Investment

This study proposes the Islamic Carbon Economy Framework as a conceptual synthesis that integrates four key components—Islamic Social Finance (ISF), green investment, carbon accounting, and carbon sequestration—into a unified systemic pathway aimed at achieving SDG 15. Within this model, ISF is positioned as the starting point or financial driver that provides value-based sources of financing. Instruments such as zakat, waqf, and sukuk serve not only as mechanisms for economic redistribution but also as strategic tools capable of directing resource allocation toward environmentally oriented productive sectors. This financing is subsequently transformed into green investment, which functions as a bridge between the financial system and ecological activities, including reforestation, agroforestry, and land rehabilitation. The outcomes of these investments are validated through carbon accounting as a Measurement, Reporting, and Verification (MRV) mechanism and ultimately materialize in enhanced carbon sequestration capacity as the primary ecological output. Importantly, the relationship among these components is not merely linear; rather, it forms a sustainability loop in which the economic value generated by verified carbon sequestration can be reintegrated into ISF instruments, such as carbon waqf, thereby reinforcing the long-term connection between financing, investment, and environmental impact.

The conceptual findings indicate that Islamic Social Finance possesses substantial yet underutilized potential in supporting the global sustainability agenda, particularly through its transformation into green investment initiatives (Munir, 2025). To date, ISF has largely been positioned as a social redistribution mechanism focused on poverty alleviation and the enhancement of community welfare (Saputri, 2026). While such a role remains highly relevant within the context of social development, an overly narrow orientation has limited the strategic contribution of ISF in addressing environmental challenges, including land degradation and deforestation (Raimi et al., 2024). Within the framework developed in this study, ISF is reconceptualized not merely as a social instrument but as a financial enabler capable of directing resources toward environmentally productive activities. This reconceptualization expands the function of Islamic finance beyond social welfare objectives and positions it as a strategic component of sustainable environmental governance.

This transformation is particularly important because the green investment sector—including reforestation, agroforestry, and land rehabilitation initiatives—often faces significant financing constraints due to the dominance of conventional market logic that prioritizes short-term profitability. Financial actors frequently perceive restoration projects as high-risk investments with relatively low returns, resulting in limited flows of private capital into this sector (Löfqvist et al., 2023). Owing to its value-based characteristics, commitment to justice, and sustainability-oriented principles, Islamic Social Finance possesses a comparative advantage in addressing this financing gap. Nevertheless, the literature indicates that the integration of Islamic finance and environmental investment remains fragmented and insufficiently structured (Rosman et al., 2022). Most existing studies highlight the normative potential of ISF without developing operational mechanisms that connect financing with measurable ecological outcomes.

Within this context, the present study argues that green investment functions as the primary transformation mechanism linking Islamic Social Finance to environmental impact. Sharī'ah-compliant financing is directed toward activities capable of enhancing carbon sequestration, thereby generating tangible ecological benefits while simultaneously creating opportunities for economic value through carbon-related schemes. Consequently, the relationship between ISF and green investment constitutes a causal mechanism through which ethical values are translated into measurable ecological interventions. This integration also reflects the practical implementation of *maqāṣid al-sharī'ah*, particularly the principles of *hifẓ al-bī'ah* (environmental preservation) and *hifẓ al-māl* (protection and sustainability of economic resources), within the context of contemporary development. By channeling ISF toward green investment, Sharī'ah values function not merely as normative principles but also as operational foundations for the sustainable management of natural resources.

These findings directly address a significant gap in the literature that has traditionally separated Islamic financial systems from environmental investment mechanisms. By positioning ISF as the principal driver of green

investment, this study expands the functional scope of Islamic finance while simultaneously providing a conceptual foundation for the development of more integrative economic models. Accordingly, the integration of ISF and green investment constitutes a fundamental pillar of the Islamic Carbon Economy Framework, demonstrating that value-based financing can play a strategic role in advancing environmental sustainability and supporting the achievement of SDG 15.

Furthermore, the repositioning of ISF within this framework signifies a transition from a charitable philanthropy paradigm toward a sustainable productive-financing model. Under conventional approaches, religious social funds are often allocated to short-term consumption and rarely generate measurable ecological assets. In contrast, the proposed model ensures that every financing allocation is directed toward activities capable of producing verifiable environmental outcomes while simultaneously creating new forms of economic value. As a result, ISF is no longer viewed merely as a social expenditure mechanism but rather as a strategic investment instrument that integrates spiritual, economic, and ecological dimensions within a mutually reinforcing system.

2. Carbon Accounting as a Mechanism of Environmental Accountability and Validation

Within the integrative framework developed in this study, carbon accounting occupies a strategic position as the mechanism that connects green investment activities with the environmental impacts they generate (Doloksaribu et al., 2024). Unlike conventional approaches that treat carbon accounting merely as a technical tool for measuring emissions, this study reconceptualizes it as a multidimensional accountability instrument encompassing scientific, economic, and ethical dimensions. This repositioning is particularly important in light of the growing demand for measurement systems that are not only accurate but also capable of ensuring transparency and credibility in environmental impact reporting (Glenk, 2025). Without such systems, claims regarding the success of ecological interventions are difficult to verify and justify objectively.

Functionally, carbon accounting provides the Measurement, Reporting, and Verification (MRV) framework that has become a widely accepted standard in global climate governance (IPCC, 2023). Through this mechanism, the contributions of green investment activities—such as reforestation and land rehabilitation—can be quantified in terms of both emission reductions and enhanced carbon sequestration capacity. Nevertheless, existing literature suggests that current carbon accounting practices remain largely dominated by quantitative approaches focused on technical efficiency, often paying insufficient attention to issues of benefit distribution and social justice (He et al., 2022). As a consequence, many existing systems fail to address fundamental questions concerning who benefits from climate mitigation initiatives and how those benefits are distributed equitably.

In this context, the integration of carbon accounting with Islamic Social Finance offers a more holistic alternative approach. The principles of transparency (*amanah*) and accountability embedded within Islamic finance provide a strong normative foundation for the development of a carbon accounting system that functions not only as a measurement tool but also as a mechanism of moral responsibility. Consequently, carbon accounting within this framework is concerned not merely with quantifying the volume of emissions reduced but also with ensuring that both the processes and outcomes are aligned with the values of justice and sustainability. It is precisely this integration of technical and ethical dimensions that distinguishes the proposed model from mainstream carbon accounting frameworks.

Furthermore, carbon accounting plays a critical role in linking investment activities with carbon sequestration as the primary ecological outcome. Without a credible measurement system, claims regarding improvements in carbon absorption capacity would be difficult to verify scientifically, thereby creating opportunities for exaggerated claims and greenwashing practices (Ontl et al., 2020). Consequently, carbon accounting serves as a fundamental prerequisite for ensuring that green investments financed through Islamic Social Finance genuinely generate measurable environmental benefits. In this regard, carbon accounting functions as a validation mechanism that strengthens the causal relationship between financing, investment activities, and ecological outcomes within the overall framework.

Moreover, the integration of carbon accounting creates opportunities for the development of carbon-based economic mechanisms, including carbon credits and carbon markets. Nevertheless, existing literature indicates that conventional carbon markets are frequently criticized for issues related to speculation, unequal access, and insufficient transparency (Choi, 2025). In this context, a Sharī'ah-based approach that integrates carbon accounting with principles of distributive justice has the potential to create a more inclusive and equitable system. Accordingly, carbon accounting should not be viewed merely as a technical instrument; rather, it serves as a foundational element for the development of a sharia-compliant carbon market in which data validity and reliability constitute the basis of transactional trust.

These findings explicitly address a major gap in the literature that has traditionally separated carbon measurement systems from value-based financial frameworks. Most previous studies have examined carbon accounting within the domains of climate policy or environmental economics, largely independent of Islamic financial systems. This study demonstrates that the integration of the two is not only feasible but also necessary for establishing a more comprehensive and sustainable system. Furthermore, such integration reflects the practical implementation of *maqāṣid al-sharī'ah*, particularly the principles of *ḥifẓ al-bī'ah* (environmental preservation)

and *hifẓ al-māl* (protection of wealth and resources), within the context of contemporary environmental governance. In this framework, carbon accounting becomes the instrument through which these values are operationalized into measurable and accountable practices. As a result, strengthening the role of carbon accounting within the Islamic Carbon Economy Framework not only improves the accuracy of environmental impact assessment but also expands the function of Islamic economics as a system capable of integrating ethical values with technical mechanisms in climate change governance.

The methodological implications of this reconceptualization are equally significant. Once carbon accounting is understood as a mechanism of accountability, reporting standards can no longer be limited to meeting technical parameters alone; they must also be subject to evaluation in terms of distributive justice and public welfare outcomes. This requirement necessitates the involvement of Islamic financial institutions, zakat and waqf authorities, and independent verification bodies within a transparent accountability chain. Under such a framework, every reported unit of carbon possesses a traceable record, beginning with the source of financing, continuing through the type of investment activity undertaken, and culminating in the ecological outcomes achieved. This traceability strengthens both the legitimacy of the system and public trust in its operation.

3. Carbon Sequestration and Its Contribution to SDGs 15

Within the Islamic Carbon Economy Framework, carbon sequestration is positioned as the primary ecological output that reflects the effectiveness of the integration among Islamic Social Finance (ISF), green investment, and carbon accounting. Unlike conventional approaches that tend to separate economic activities from their environmental consequences, this study conceptualizes carbon sequestration as a key indicator linking financing, investment, and measurement dimensions within a coherent and integrated system. Consequently, the success of the framework is assessed not merely by the volume of funds allocated but by the extent to which such activities enhance carbon absorption capacity in a measurable and meaningful manner. From an ecological perspective, carbon sequestration represents the ability of ecosystems—particularly forests and degraded lands—to absorb and store atmospheric carbon (Nzabarinda et al., 2025). Green investment initiatives such as reforestation, agroforestry, and land rehabilitation have been shown to contribute significantly to strengthening this capacity (Psistaki et al., 2024).

Nevertheless, the literature indicates that many ecosystem restoration programs fail to achieve optimal outcomes due to the absence of sustainable financing mechanisms and credible measurement systems. This limitation underscores the importance of integrating value-based financing with carbon accountability systems, as proposed in this study. From an economic perspective, carbon sequestration possesses strategic value because of its potential to be converted into tradable carbon credits within carbon markets (Mittal et al., 2025). This demonstrates that ecological activities generate not only environmental benefits but also economic incentives that support long-term sustainability. However, conventional carbon markets have frequently been criticized for creating unequal access, fostering market imbalances, and encouraging speculative practices that are not always aligned with sustainability objectives (Munonye et al., 2025). In this context, the integration of Islamic financial principles becomes essential to ensure that the economic benefits derived from carbon sequestration are distributed fairly and remain consistent with ethical values.

Within the proposed model, carbon sequestration is not treated as a passive outcome but rather as an integral component of a sustainability cycle. Verified increases in carbon absorption capacity, validated through carbon accounting, can generate economic value that is subsequently reintegrated into the financing system through instruments such as carbon waqf or sharia-compliant carbon market mechanisms. In this way, carbon sequestration serves as a bridge between ecological outputs and financial sustainability, enabling the system to evolve and sustain itself over time.

This integration also reflects the implementation of *hifẓ al-bī'ah* (environmental preservation), which recognizes environmental protection as a component of public welfare (*maṣlaḥah*), while *hifẓ al-māl* (protection of wealth and resources) is manifested through the sustainable and equitable management of the economic value generated by these activities (Arzam & Kusnadi, 2025).

At the level of practical implications, the integration of these four components provides a strategic contribution to accelerating the achievement of SDGs 15. Unlike conventional approaches, which tend to be sectoral in nature and heavily dependent on regulatory instruments alone, the proposed model offers a systemic approach that links financing, implementation, measurement, and ecological impacts within a unified policy ecosystem.

From a policy perspective, one of the major weaknesses in the implementation of SDGs 15 lies in the limited integration between financing instruments and environmental impact assessment mechanisms (Su et al., 2024). Many land restoration and ecosystem conservation policies have failed to achieve their intended targets because they are not supported by sustainable financing schemes and credible evaluation systems (Strassburg et al., 2020). In this regard, the integration of Islamic Social Finance as a source of funding with carbon accounting as a mechanism of accountability offers a promising solution capable of significantly enhancing the effectiveness of environmental policies.

Furthermore, this model provides a foundation for the development of sharia-compliant green financing policies that can be adopted by governments and financial institutions to support land rehabilitation and ecosystem conservation programs. Instruments such as environmental zakat and carbon waqf may be institutionalized as components of public policy to expand non-conventional sources of financing. This is particularly relevant for developing countries that face fiscal constraints while possessing substantial potential for the advancement of Islamic finance (Harahap et al., 2023). In addition, incorporating carbon accounting into policy frameworks enhances transparency and accountability in the management of environmental programs while simultaneously creating opportunities to access global funding mechanisms that require rigorous carbon reporting standards (Di Vaio et al., 2025). Accordingly, this study argues that achieving SDGs 15 requires a paradigm shift in public policy—from a fragmented and sectoral approach toward an integrative framework that connects values, financing, and environmental impact measurement within a coherent and mutually reinforcing system.

The issue of justice in the utilization of carbon credits also deserves particular attention. If the economic value generated from carbon sequestration flows exclusively to large capital holders, sustainability initiatives may inadvertently reproduce the very inequalities that have long been criticized in conventional carbon markets. Therefore, the proposed framework emphasizes the active involvement of local communities as both managers and beneficiaries of ecosystem restoration activities. In this way, carbon sequestration becomes not only an ecological achievement but also a mechanism for economic empowerment that is consistent with the principle of *maṣlaḥah* (public welfare) in Islamic economics.

4. Strengthening the Model: Innovations in Carbon Waqf, Environmental Zakat, and Sharia-Compliant Carbon Markets

Relevansi As its principal theoretical contribution, this study develops the concept of the Islamic Carbon Economy, an integrative framework that connects Islamic Social Finance (ISF), green investment, carbon accounting, and carbon sequestration within a single value-based and sustainability-oriented economic system. This concept expands the scope of Islamic economics beyond its traditional socio-economic domain toward integration with data-driven climate governance, thereby addressing the limitations of conventional approaches that tend to separate financial considerations from environmental concerns. Accordingly, the Islamic Carbon Economy is not merely a theoretical synthesis; it offers a new paradigm for natural resource management that combines ethical values, institutional mechanisms, and measurable impacts. To strengthen its practical dimension, this study identifies three derivative innovations that translate the conceptual framework into more operational instruments.

First, the concept of carbon waqf enables environmental assets, such as forests and conservation lands, to be managed as productive waqf assets that generate both ecological and economic benefits. Through this mechanism, the outcomes of carbon sequestration can be converted into carbon credits and subsequently utilized to support sustainable financing initiatives. This approach addresses the limitations of traditional waqf models, which have generally not been integrated into modern economic systems and have rarely been directed systematically toward environmental objectives. In practice, carbon waqf requires clear legal recognition of environmental assets, professional governance by *nāẓirs* (waqf managers), and transparent recording and reporting systems to ensure accountability for both ecological and economic value creation. The principal strength of this instrument lies in the perpetual nature of waqf, making it highly compatible with the long-term conservation logic required for ecosystem restoration.

Second, the study proposes the development of environmental zakat as a redistributive instrument specifically directed toward land rehabilitation and ecosystem conservation. Traditionally, zakat has been focused primarily on consumptive assistance and short-term economic empowerment programs (Hafiz & Nurani, 2024). By extending its scope to environmental initiatives, zakat can serve as a catalyst for green investment programs that generate long-term ecological benefits. Such an expansion of the interpretation of *mustahiq* (eligible beneficiaries) and zakat utilization domains requires a strong jurisprudential foundation as well as contemporary *ijtihād* that recognizes environmental welfare as an integral component of the objectives of Islamic law (*maqāṣid al-sharī'ah*). The implementation of environmental zakat also necessitates a clear regulatory and institutional framework to ensure compliance with sharia principles while maintaining practical effectiveness, thereby avoiding overlap with established zakat allocation categories.

Third, the study proposes the development of a sharia-compliant carbon market as an alternative to conventional carbon markets. Existing carbon markets are frequently criticized for being overly speculative, lacking transparency, and paying insufficient attention to distributive justice (Choi, 2025). By incorporating Islamic principles—such as the prohibition of *gharar* (excessive uncertainty) and *maysir* (speculation or gambling)—carbon markets can be designed to ensure transactions that are more equitable, transparent, and oriented toward public welfare. In this context, carbon accounting serves as the fundamental pillar that guarantees the validity and credibility of every carbon unit traded, ensuring that market prices genuinely reflect real ecological impacts rather than purely speculative expectations.

These three innovations demonstrate that the Islamic Carbon Economy extends beyond the conceptual level and possesses substantial implementation potential in supporting the transformation of economic systems toward sustainability. The integration of Islamic financial instruments with carbon management mechanisms creates opportunities to establish a system that is not only economically efficient but also socially just and environmentally sustainable. At the same time, this finding highlights the adaptive capacity of Islamic economics to respond to contemporary global challenges, particularly climate change.

The study explicitly addresses a significant gap in the existing literature, which has yet to develop an integrative framework linking Islamic finance, carbon accounting, and carbon markets within a single systematic model. Most previous studies have examined these dimensions separately, limiting their ability to generate comprehensive solutions to global environmental challenges. By integrating the principles of *hifẓ al-bī'ah* (environmental preservation) and *hifẓ al-māl* (protection of wealth and resources) into technical mechanisms such as carbon accounting and carbon markets, this research demonstrates that sharia principles can be operationalized concretely within data-driven environmental governance. Moreover, it opens new directions for future policy development and empirical research.

Ultimately, these three innovations should not be viewed as isolated initiatives but rather as mutually reinforcing components within a single value chain. Environmental zakat can function as an initial financing mechanism to support ecosystem restoration projects, carbon waqf can ensure the long-term sustainability of environmental asset management, and a sharia-compliant carbon market can provide a fair mechanism for monetizing verified ecological impacts. The synergy among these three instruments creates a comprehensive financing ecosystem that spans the entire process—from initial funding to long-term value generation—and positions the Islamic Carbon Economy as a framework that is not only theoretically coherent but also suitable for testing and implementation within real-world policy contexts.

Conclusion

This study develops the Islamic Carbon Economy Framework as a conceptual model that integrates Islamic Social Finance, green investment, carbon accounting, and carbon sequestration to support the achievement of SDG 15 (Life on Land). The findings demonstrate that Islamic Social Finance can serve as a strategic source of funding directed toward green investment initiatives, whose environmental impacts are validated through carbon accounting as a mechanism for Measurement, Reporting, and Verification (MRV), ultimately resulting in carbon sequestration as the primary ecological outcome. This integration addresses the fragmentation in existing literature that has traditionally separated Islamic finance from carbon governance, while also highlighting the capacity of Islamic economics to contribute systematically to climate change mitigation efforts.

The framework further extends the application of *maqāṣid al-sharī'ah*, particularly the principles of *hifẓ al-bī'ah* (environmental preservation) and *hifẓ al-māl* (protection of wealth and resources), by translating them into measurable and sustainability-oriented economic practices. From a practical perspective, the study provides important implications for the development of sharia-based green financing policies through innovative instruments such as carbon waqf, environmental zakat, and sharia-compliant carbon markets.

Nevertheless, this research remains conceptual in nature. Future empirical studies are therefore needed to test the validity of the proposed framework, evaluate its implementation effectiveness, and develop more operational policy instruments. In this regard, the study opens a new direction for the advancement of Islamic economics, positioning it not only as a system concerned with socio-economic development but also as an active contributor to addressing global environmental challenges.

Ultimately, the proposed model offers a meeting point between Islamic ethical values and the requirements of data-driven climate governance. As such, it provides a relevant framework for both scholars and policymakers seeking innovative and sustainable approaches to environmental management and climate action.

References

- Arimura, T. H. (2024). Environmental Problems: A Market Failure. Dalam T. H. Arimura & A. Hibiki, *Introduction to Environmental Economics and Policy in Japan* (hlm. 3–18). Springer Nature Singapore. https://doi.org/10.1007/978-981-97-2187-0_1
- Arzam, A., & Kusnadi, K. (2025). Maqasid al-Shari'ah and Ecotheology: A Philosophical Analysis of the Normative Foundations of Islamic Law in Ecological Issues. *Jurnal Mediasas: Media Ilmu Syari'ah dan Ahwal Al-Syakhsiyyah*, 8(4), 902–916. <https://doi.org/10.58824/mediasas.v8i4.473>
- Choi, C. (2025). Trading Carbon, Trading Justice: Ethical Dimensions of Market-Based Climate Solutions. *East Asian Journal of Business Economics (EAJBE)*, 13(1), 1–16. <https://doi.org/10.20498/EAJBE.2025.13.1.1>
- Di Vaio, A., Chhabra, M., Zaffar, A., & Balsalobre-Lorente, D. (2025). Accounting and Accountability in the Transition to Zero-Carbon Energy for Climate Change: A Systematic Literature Review. *Business Strategy and the Environment*, 34(5), 5925–5946. <https://doi.org/10.1002/bse.4282>

- Doloksaribu, R. P., Silkapienis, A. A., & Firmansyah, A. (2024). Bagaimana Peluang Dan Tantangan Implementasi Atas Pengungkapan Emisi Karbon Di Indonesia? *Jurnalku*, 4(2), 125–144. <https://doi.org/10.54957/jurnalku.v4i2.636>
- Glenk, G. (2025). Corporate Carbon Accounting: Current Practices and Opportunities for Research. *Foundations and Trends® in Accounting*, 19(3–4), 96–126. <https://doi.org/10.1561/1400000080-5>
- Güney, N. (2024). Maqāsid al-Sharī'a in Islamic Finance: A Critical Analysis of Modern Discourses. *Religions*, 15(1), 114. <https://doi.org/10.3390/rel15010114>
- Hafiz, A., & Nurani, M. F. (2024). Pendayagunaan Dana Zakat, Infak dan Sedekah dalam Program Kotim Sejahtera pada Baznas Kabupaten Kotawaringin Timur. *Indonesian Journal of Islamic Jurisprudence, Economic and Legal Theory*, 2(2), 1156–1168. <https://doi.org/10.62976/ijijel.v2i2.626>
- Harahap, B., Risfandy, T., & Futri, I. N. (2023). Islamic Law, Islamic Finance, and Sustainable Development Goals: A Systematic Literature Review. *Sustainability*, 15(8), 6626. <https://doi.org/10.3390/su15086626>
- He, R., Luo, L., Shamsuddin, A., & Tang, Q. (2022). Corporate Carbon Accounting: A Literature Review of Carbon Accounting Research from the Kyoto Protocol to the Paris Agreement. *Accounting & Finance*, 62(1), 261–298. <https://doi.org/10.1111/acfi.12789>
- Intergovernmental Panel On Climate Change (Ipcc) (Ed.). (2023). *Climate Change 2022 - Mitigation of Climate Change: Working Group III Contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (1 ed.). Cambridge University Press. <https://doi.org/10.1017/9781009157926>
- K. Anami, A., & Ramadhani, B. J. (2026). Islamic finance and inclusive economic development: Challenges, opportunities, and policy implications. *Open Access Research Journal of Multidisciplinary Studies*, 11(1), 047–055. <https://doi.org/10.53022/oarjms.2026.11.1.0017>
- Leclère, D., Obersteiner, M., Barrett, M., Butchart, S. H. M., Chaudhary, A., De Palma, A., DeClerck, F. A. J., Di Marco, M., Doelman, J. C., Dürauer, M., Freeman, R., Harfoot, M., Hasegawa, T., Hellweg, S., Hilbers, J. P., Hill, S. L. L., Humpenöder, F., Jennings, N., Krisztin, T., ... Young, L. (2020). Bending the Curve of Terrestrial Biodiversity Needs an Integrated Strategy. *Nature*, 585(7826), 551–556. <https://doi.org/10.1038/s41586-020-2705-y>
- Liew, M., & Cao, J. (2025). Accounting for Carbon Emissions Through Green Supply Chain Management: A Systematic Literature Review. *Business Strategy and the Environment*, 34(7), 8281–8304. <https://doi.org/10.1002/bse.70021>
- Löfqvist, S., Garrett, R. D., & Ghazoul, J. (2023). Incentives and Barriers to Private Finance for Forest and Landscape Restoration. *Nature Ecology & Evolution*, 7(5), 707–715. <https://doi.org/10.1038/s41559-023-02037-5>
- Melnyk, V., Nadvynychnyy, S., Pohrishchuk, B., & Pohrishchuk, O. (2025). Economic Administration of Agricultural Sector Development in the Concept of “Natural Capital.” *Revista Administração em Diálogo - RAD*, 27(SI), 152–166. <https://doi.org/10.23925/2178-0080.2025v27iSI.73122>
- Mittal, A., Thukral, S., Mittal, A., & Shah, P. (2025). Carbon Credits and Environmental Sustainability in India: Opportunities, Challenges, and Policy Implications. *International Journal of Environmental Sciences*, 11(1), 152–164. <https://doi.org/10.64252/qmwld754>
- Munir, M. (2025). Integration of Islamic Finance and Green Economy in Realizing Sustainable Finance in Indonesia. *At-Tahdzib: Jurnal Studi Islam dan Muamalah*, 13(2), 138–155. <https://doi.org/10.61181/hjpxfl64>
- Munonye, J., Munonye, C., & Department of Architecture, Chukwuemeka Odumegwu Ojukwu University, Uli, Nigeria. (2025). Carbon Finance for Climate Justice: Pathways to Inclusive Sustainable Development. *IPS Intelligentsia Multidisciplinary Journal*, 4(1), 42–62. <https://doi.org/10.54117/iimj.v4i1.13>
- Nzabarinda, V., Bao, A., Tie, L., Uwamahoro, S., Kayiranga, A., Ochege, F. U., Muhirwa, F., & Bao, J. (2025). Expanding Forest Carbon Sinks to Mitigate Climate Change in Africa. *Renewable and Sustainable Energy Reviews*, 207, 114849. <https://doi.org/10.1016/j.rser.2024.114849>
- Ontl, T. A., Janowiak, M. K., Swanston, C. W., Daley, J., Handler, S., Cornett, M., Hagenbuch, S., Handrick, C., Mccarthy, L., & Patch, N. (2020). Forest Management for Carbon Sequestration and Climate Adaptation. *Journal of Forestry*, 118(1), 86–101. <https://doi.org/10.1093/jofore/fvz062>
- Pan, H., Liu, G., Muller, J.-P., Sun, Z., Yao, Y., Chang, Y., Xiong, Z., & Zhang, Y. (2024). Comprehensive Assessment of Sustainable Development of Terrestrial Ecosystem Based on SDG 15—A Case Study of Guilin City. *Remote Sensing*, 17(1), 63. <https://doi.org/10.3390/rs17010063>
- Peng, D., Zhang, B., Zheng, S., Ju, W., Chen, J. M., Ciais, P., Guo, H., Pan, Y., Yu, L., Xu, Y., Zhao, B., Benediktsson, J. A., Huete, A. R., Shi, Z., Hu, Y., Liu, L., Chen, F., Shen, M., Huang, L., & Zhang, X. (2025). Newly Established Forests Dominated Global Carbon Sequestration Change Induced by Land Cover Conversions. *Nature Communications*, 16(1), 6570. <https://doi.org/10.1038/s41467-025-61956-y>
- Psistaki, K., Tsantopoulos, G., & Paschalidou, A. K. (2024). An Overview of the Role of Forests in Climate

- Change Mitigation. *Sustainability*, 16(14), 6089. <https://doi.org/10.3390/su16146089>
- Raimi, L., Abdur-Rauf, I. A., & Ashafa, S. A. (2024). Does Islamic Sustainable Finance Support Sustainable Development Goals to Avert Financial Risk in the Management of Islamic Finance Products? A Critical Literature Review. *Journal of Risk and Financial Management*, 17(6), 236. <https://doi.org/10.3390/jrfm17060236>
- Rosman, R., Redzuan, N. H., Mokhtar, N. Z. N., Engku Ali, E. R. A., & Mohammed, M. O. (2022). Islamic Social Finance and Sustainable Development Goals: Issues and Challenges. *Journal of Islamic Finance*, 11(2), 56–67. <https://doi.org/10.31436/jif.v11i2.690>
- Saputri, R. D. (2026). Peran Zakat Baznas Sebagai Instrumen Fiskal Islam Dalam Pengentasan Kemiskinan di Indonesia. *RIGGS: Journal of Artificial Intelligence and Digital Business*, 5(1), 6790–6797. <https://doi.org/10.31004/riggs.v5i1.7064>
- Strassburg, B. B. N., Iribarrem, A., Beyer, H. L., Cordeiro, C. L., Crouzeilles, R., Jakovac, C. C., Braga Junqueira, A., Lacerda, E., Latawiec, A. E., Balmford, A., Brooks, T. M., Butchart, S. H. M., Chazdon, R. L., Erb, K. -H., Brancalion, P., Buchanan, G., Cooper, D., Díaz, S., Donald, P. F., ... Visconti, P. (2020). Global Priority Areas for Ecosystem Restoration. *Nature*, 586(7831), 724–729. <https://doi.org/10.1038/s41586-020-2784-9>
- Su, Y., Lucey, B. M., & Jha, A. K. (2024). Finance Research and the UN Sustainable Development Goals – An analysis and forward look. *Research in International Business and Finance*, 71, 102463. <https://doi.org/10.1016/j.ribaf.2024.102463>
- Trucco, S., Demartini, M. C., & Beretta, V. (2021). The Reporting of Sustainable Development Goals: Is the Integrated Approach the Missing Link? *SN Business & Economics*, 1(2), 35. <https://doi.org/10.1007/s43546-021-00046-9>

This page is intentionally left blank.