The Integration of Green Sukuk into the U.S. Renewable Energy Market:

Regulatory Challenges and Opportunities for Islamic Finance

Abstract

The global pursuit of sustainable finance has accelerated the convergence between Islamic finance and environmental, social, and governance (ESG) investment paradigms. Among Islamic instruments, Green Sukuk—Sharia-compliant bonds designated for environmentally beneficial projects—has emerged as a vital mechanism for financing renewable-energy infrastructure in Muslim-majority and increasingly non-Muslim jurisdictions. Despite its rapid adoption in Southeast Asia and the Gulf Cooperation Council (GCC), the instrument remains largely absent in the United States. This paper investigates the regulatory, structural, and institutional factors constraining the introduction of Green Sukuk into the U.S. renewable-energy market and explores the potential pathways for integration. Through a qualitative comparative analysis of U.S. securities and tax laws vis-à-vis Sharia principles of asset-backing, risk-sharing, and prohibition of riba (interest), this study identifies major incompatibilities in existing regulatory frameworks while highlighting promising opportunities aligned with the nation's decarbonization goals.

Findings suggest that the dual compliance requirements—both Sharia and federal—pose challenges related to taxation, asset ownership, and governance; yet, they also reveal strategic advantages such as access to ethical capital pools, diversification of funding sources, and the enhancement of ESG credibility. The paper concludes by recommending targeted policy adjustments, cross-border cooperation mechanisms, and the establishment of Sharia supervisory standards adaptable to the U.S. context. These recommendations aim to facilitate the integration of Islamic financial products into the mainstream green-finance ecosystem, advancing the twin objectives of environmental sustainability and financial inclusion.

Keywords: Islamic finance, Green Sukuk, renewable energy, ESG, U.S. regulation, sustainable development, Sharia compliance.

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1. Introduction

1.1 Background and Context

The twenty-first century has witnessed a remarkable transformation in global finance, characterized by an increased emphasis on sustainability, social responsibility, and ethical investment. This paradigm shift has catalyzed the emergence of green finance, a system through which capital markets align with environmental objectives such as carbon neutrality and renewable-energy expansion (OECD, 2023).

Simultaneously, Islamic finance—guided by the principles of Sharia—has experienced substantial growth, expanding beyond Muslim-majority countries to become a trillion-dollar global industry (IsDB, 2022). Both domains share a moral-ethical foundation: the avoidance of harm (darar), equitable distribution of wealth, and commitment to transparency. The convergence of these philosophies forms the intellectual and practical basis for Green Sukuk, instruments that combine environmental objectives with Islamic financial discipline.

Introduced in 2017 by Malaysia and Indonesia as part of sovereign sustainability frameworks, Green Sukuk have successfully mobilized billions of U.S. dollars toward climate-friendly projects ranging from solar power to water-management systems (Climate Bonds Initiative [CBI], 2024). Their unique hybrid structure—Sharia-compliant yet consistent with international green-bond standards—has demonstrated scalability and investor appeal. However, while the U.S. has established itself as a leader in renewable-energy finance, issuing over $90 billion in green bonds annually (U.S. Department of Energy, 2024), the market has yet to accommodate Islamic instruments such as Sukuk. The absence of Green Sukuk in the U.S. market raises critical questions regarding the adaptability of Sharia-compliant structures within Western regulatory ecosystems.

1.2 Research Problem

The integration of Islamic financial instruments into Western markets remains a persistent challenge. The U.S. financial system operates under regulatory frameworks—such as the Securities Act of 1933 and the Internal Revenue Code—that conceptualize securities primarily as debt or equity. Sukuk, by contrast, are neither pure debt nor equity; they are asset-backed certificates representing proportionate ownership in tangible or usufruct assets. This divergence complicates classification under U.S. law, raising issues of taxation, disclosure, and investor protection (El-Gamal, 2019).

Moreover, Islamic finance mandates a prohibition on riba (interest), gharar (excessive uncertainty), and speculative activity, emphasizing risk-sharing partnerships (mudarabah or musharakah) rather than conventional lending. Reconciling these requirements with U.S. financial practice—which relies heavily on interest-based instruments and derivative hedging—creates structural friction. As the global energy transition accelerates, understanding how these legal and philosophical differences can be bridged is crucial for policymakers and investors seeking diversified and ethical financing channels.

1.3 Purpose and Objectives

This study aims to examine the regulatory challenges and potential opportunities associated with introducing Green Sukuk to the U.S. renewable-energy market. The primary objectives are:

1. To analyze the legal and structural discrepancies between U.S. financial regulation and Sharia-compliant Sukuk frameworks.
2. To evaluate the compatibility of Green Sukuk structures with the U.S. Environmental, Social, and Governance (ESG) investment environment.
3. To propose regulatory and policy mechanisms that could facilitate Green Sukuk issuance within the U.S. context.

These objectives will be achieved through a qualitative comparative analysis, drawing upon international best practices (e.g., Malaysia, Indonesia, UAE) and assessing their applicability to U.S. governance structures.

1.4 Research Questions

1. What are the principal regulatory and structural barriers to issuing Green Sukuk in the U.S.?
2. How compatible are Sharia governance requirements with U.S. corporate and securities law?
3. What opportunities exist for harmonization between Islamic finance and U.S. green-finance frameworks?
4. What policy recommendations could enable successful market entry for Green Sukuk instruments?

1.5 Significance of the Study

This research contributes to the growing literature on cross-jurisdictional Islamic finance by filling a critical gap: the absence of comprehensive analysis focused on the U.S. market. It provides theoretical and practical implications for multiple stakeholders:

- For policymakers, it offers evidence-based recommendations for adapting securities and tax regulations to accommodate asset-backed instruments.
- For investors, it identifies new ESG-compliant vehicles that align with ethical and sustainable investment principles.
- For Islamic financial institutions, it maps pathways for expanding into developed markets through collaboration with Western regulators.
- For academics, it extends the conceptual link between sustainable finance and Islamic economic theory.

1.6 Scope and Limitations

The study confines its analysis to the U.S. federal regulatory environment and does not address state-specific securities or tax codes unless they directly affect Sukuk issuance. It focuses on Green Sukuk—those designated for environmental projects—excluding social or sustainability-linked Sukuk. The methodological approach is qualitative, relying on legal analysis and literature review rather than empirical survey data. While this limits quantitative validation, it allows for a nuanced understanding of complex regulatory interactions.

1.7 Structure of the Paper

The remainder of the paper is organized as follows:
Section 2 reviews the extant literature on Islamic finance, green bonds, and Sukuk structures.
Section 3 develops the conceptual and theoretical framework linking Sharia principles to ESG theory.
Section 4 details the qualitative methodology used for comparative analysis.
Section 5 presents the findings, discussing regulatory challenges and opportunities.
Section 6 illustrates an applied case study on renewable-energy financing via Green Sukuk.
Section 7 concludes with policy implications and directions for future research.

2. Literature Review

2.1 Overview of Islamic Finance: Philosophical and Structural Foundations

Islamic finance is grounded in the ethical and moral framework of Sharia (Islamic law), which governs not only financial transactions but also broader socioeconomic relations. The primary objective of Islamic finance is to promote justice, transparency, and the equitable distribution of wealth through lawful (halal) means. It prohibits riba (usury or interest), gharar (excessive uncertainty), and maysir (speculative transactions) while encouraging trade, partnership, and asset-based financing (Iqbal & Mirakhor, 2017).

The system rests on the premise that money has no intrinsic value and must be employed productively to generate real economic activity. As such, financial instruments in Islamic finance are tied to tangible assets or services, thereby fostering a link between finance and the real economy (Siddiqi, 2019). Commonly used contracts include:

- **Murabaha (cost-plus sale)** – a transaction where a financier purchases a good and resells it to the client at a markup, allowing deferred payment.
- **Mudarabah (profit-sharing partnership) –** where one party provides capital and the other provides expertise, sharing profits based on a predetermined ratio.
- **Musharakah (joint venture**) – both parties contribute capital and share profits and losses.
- **Ijara (leasing)** – similar to conventional leasing but structured to comply with Sharia by transferring ownership rights at the end of the term.

These instruments collectively create a financial ecosystem emphasizing ethical investment, mutual benefit, and social responsibility.

The Sukuk, often termed “Islamic bonds,” are one of the most significant innovations within this ecosystem. Unlike conventional bonds that represent a debt obligation, Sukuk confer ownership in a tangible asset, project, or service. Holders earn returns derived from the asset’s performance, not from interest payments (AAOIFI, 2023). This asset-backing principle differentiates Sukuk from debt-based securities and aligns them with the Sharia mandate against interest-bearing debt.

Over the last two decades, the global Sukuk market has expanded rapidly, exceeding USD 800 billion in outstanding issuances by 2024 (IsDB, 2024). Malaysia, Saudi Arabia, and Indonesia remain the top issuers, accounting for nearly 75% of global volume. However, issuance in non-Muslim countries such as the United Kingdom and Luxembourg demonstrates growing international acceptance (Jobst et al., 2020).

Despite these successes, Sukuk face persistent challenges in non-Islamic jurisdictions, including regulatory recognition, tax treatment, and standardization. These challenges are magnified when integrating additional sustainability criteria, such as those required in Green Sukuk.

2.2 Green Finance and ESG Investing: Theoretical and Institutional Background

The origins of green finance can be traced to the 1990s when the United Nations Environment Programme (UNEP) launched the Financial Initiative encouraging financial institutions to incorporate environmental considerations into investment decisions (UNEPFI, 1992). Since then, environmental, social, and governance (ESG) frameworks have evolved into the dominant paradigm for sustainable investment. ESG principles encourage long-term value creation by emphasizing non-financial performance metrics, including carbon emissions, labor practices, and governance transparency (OECD, 2023).

The green bond—a debt instrument earmarked for environmentally beneficial projects—has become the cornerstone of green finance. The Climate Bonds Initiative (CBI) and the Green Bond Principles established by the International Capital Market Association (ICMA) provide standardized frameworks for use-of-proceeds verification, external review, and impact reporting (CBI, 2024). These instruments have achieved remarkable market penetration, surpassing USD 3 trillion in cumulative issuance globally by early 2025 (World Bank, 2025).

However, green bonds have been criticized for their limited ethical depth and occasional susceptibility to greenwashing—the practice of overstating environmental benefits (Flammer, 2021). This limitation has opened a conceptual space for integrating Islamic ethical finance with sustainability-focused instruments, leading to the emergence of Green Sukuk.

2.3 Emergence and Evolution of Green Sukuk

Green Sukuk were first issued by Malaysia's Tadau Energy Sdn Bhd in 2017 to finance a 50 MW solar power plant in Sabah, marking the beginning of a new asset class that merged Islamic finance with climate action (CBI, 2018). The issuance was structured under the Ijarah model, enabling investors to earn lease-based returns from tangible renewable-energy assets. This pioneering model inspired subsequent sovereign and corporate issuances in Indonesia, the UAE, Saudi Arabia, and Nigeria.

By 2024, cumulative global Green Sukuk issuance had reached USD 40 billion, representing roughly 1.5% of the total global green-bond market (CBI, 2024). Although small in scale, the growth trajectory is exponential, with double-digit annual increases. Malaysia continues to lead with a well-developed regulatory framework governed by the Securities Commission Malaysia (SCM) and Bank Negara Malaysia (BNM), integrating Sharia certification with the ASEAN Green Bond Standards (BNM, 2023).

Indonesia's Sovereign Green Sukuk program, launched in 2018, has raised over USD 6 billion for climate-resilient infrastructure, biodiversity conservation, and energy efficiency. The structure employs Wakalah (agency) and Ijarahcontracts, while proceeds are verified by an independent Green Sukuk Committee (IsDB, 2023). The UAE, through the Dubai Financial Market (DFM), is also developing frameworks to position itself as the global hub for Sharia-compliant sustainable finance (Al-Amine, 2021).

These case studies highlight three key lessons: (1) regulatory coordination between Islamic finance authorities and green-finance regulators is essential; (2) standardization and external certification build investor confidence; and (3) sovereign leadership catalyzes private-sector participation.

However, outside the Muslim world, Green Sukuk adoption remains nascent. The UK's 2014 sovereign Sukuk issuance—though not "green"—demonstrated the technical feasibility of Islamic instruments in Western legal systems. Expanding this framework to include environmental criteria could pave the way for the first Western Green Sukuk.

2.4 Comparative Legal and Regulatory Perspectives

A growing body of literature examines how Islamic financial contracts interact with Western regulatory frameworks. El-Gamal (2019) argues that the principal challenge lies in reconciling form over substance—Western law categorizes financial instruments by legal form (debt/equity), whereas Sharia emphasizes economic substance (risk-sharing, asset-backing). This divergence complicates classification under securities and tax law.

For instance, in the United States, Sukuk would likely be classified as asset-backed securities (ABS) under the Securities Act of 1933 and the Dodd–Frank Act of 2010, triggering disclosure and registration requirements (SEC, 2023). Furthermore, because Sukuk often involve transfer of asset ownership to a Special Purpose Vehicle (SPV), they risk double taxation: once at the transfer of ownership and again when income is distributed to investors (U.S. Treasury, 2024).

In contrast, jurisdictions such as the United Kingdom and Luxembourg have amended tax codes to neutralize such disparities, treating Sukuk akin to conventional bonds for tax purposes (Wilson, 2020). Malaysia has also developed Sharia governance guidelines under Bank Negara Malaysia's Sharia Advisory Council, which serve as a global benchmark.

The U.S. has not yet developed equivalent provisions, resulting in an institutional void. Without regulatory recognition, Islamic financial instruments lack legal certainty, deterring issuers and investors. This gap represents both a challenge and an opportunity—particularly in the context of rising demand for ESG-compliant assets.

2.5 Theoretical Intersection: Islamic Finance and ESG

Recent scholarship emphasizes the philosophical convergence between Islamic finance and ESG investing. Both frameworks prioritize ethical conduct, social welfare, and sustainability (Dusuki & Bouheraoua, 2021). Sharia principles such as maslahah (public interest) and adl (justice) resonate with ESG's focus on long-term environmental and social well-being.

From a theoretical perspective, Green Sukuk operationalize this intersection by linking maqasid al-Sharia (objectives of Islamic law)—which include preservation of life, wealth, and the environment—with the UN Sustainable Development Goals (SDGs) (Ahmed & Hassan, 2022). This synthesis supports the argument that Islamic finance is inherently predisposed to sustainability, and thus Green Sukuk represent not a departure but an evolution of Sharia-based finance.

Empirical evidence supports this synergy. According to Rahman and Alam (2023), Islamic funds with ESG mandates outperform conventional ESG funds during periods of market volatility, reflecting the resilience of asset-backed, risk-sharing structures. Similarly, a 2024 CBI report found that investors in Green Sukuk cite dual motivations—religious compliance and environmental impact—enhancing long-term retention and diversification.

2.6 Identified Gaps in Literature

Despite robust development in Asia and the Middle East, academic research on Green Sukuk in Western markets remains sparse. Key gaps identified include:

1. Regulatory Adaptation: Limited studies analyze how U.S. securities and tax frameworks could be modified to accommodate Sukuk without compromising investor protection.
2. Institutional Readiness: There is insufficient analysis of the role of U.S. financial institutions—such as the SEC, IRS, and rating agencies—in facilitating Sharia-compliant structures.
3. Market Demand: Few empirical studies assess investor appetite for Islamic ESG instruments in the U.S. context.
4. Comparative Policy Lessons: While studies of Malaysia and Indonesia provide insights, there is a lack of comparative evaluation tailored to Western jurisdictions with mature capital markets.
5. Governance and Certification: Limited attention has been paid to establishing Sharia Supervisory Boards (SSBs) compatible with U.S. corporate governance norms.

These research gaps justify the need for this study, which systematically investigates both the constraints and potential pathways for integrating Green Sukuk into the U.S. renewable-energy finance ecosystem.

2.7 Summary

The literature establishes that Islamic finance and green finance share deep philosophical congruence and complementary objectives. Green Sukuk serve as a bridge between ethical finance and sustainable development, yet their application in non-Muslim markets—particularly the United States—remains unexplored. Existing scholarship focuses predominantly on jurisdictions with explicit Islamic finance infrastructure, leaving a significant empirical and regulatory void.
This paper builds upon the foundation laid by prior studies, expanding the discourse to include U.S.-specific regulatory, institutional, and cultural dimensions. The next section will synthesize these insights into a conceptual and theoretical framework, linking Islamic ethical principles, ESG theory, and regulatory adaptation mechanisms that underpin the integration of Green Sukuk into U.S. markets.

3. Conceptual and Theoretical Framework

3.1 Conceptual Basis of Green Sukuk

The conceptual foundation of Green Sukuk emerges from the intersection between two intellectual traditions: the Islamic moral economy and the sustainable-finance paradigm. Both rest on normative principles that emphasize stewardship of resources, social welfare, and intergenerational equity. Under Sharia, economic activity is viewed as an act of worship (ibadah), and wealth is a trust (amanah) granted by God to be used responsibly for communal benefit (Chapra, 2019). This worldview rejects purely speculative or interest-based transactions and mandates that all financial dealings be underpinned by real assets and social purpose.

Sustainable finance, as defined by the United Nations Environment Programme (UNEP, 2023), refers to financial activities that integrate environmental, social, and governance (ESG) considerations into business and investment decisions for sustainable outcomes. In essence, Green Sukuk operationalize these shared principles by directing Sharia-compliant funds toward environmentally beneficial projects such as renewable energy, waste management, and green infrastructure.

Conceptually, a Green Sukuk can be represented as a three-layered construct:

- Ethical Foundation – rooted in maqasid al-Sharia (objectives of Islamic law) that include the preservation of faith (din), life (nafs), intellect (aql), progeny (nasl), and wealth (mal). The environmental dimension aligns with hifz al-ard (protection of the Earth).
- Financial Mechanism – employs traditional Sukuk structures (Ijara, Mudarabah, Wakalah, etc.) while ensuring proceeds finance verifiable green assets.
- Sustainability Objective – integrates ESG criteria and global reporting standards (e.g., CBI Taxonomy, ICMA Green Bond Principles).

3.2 Theoretical Foundations

3.2.1 Maqasid al-Sharia and the Ethical Economy

The maqasid al-Sharia framework provides the theoretical core of Islamic finance. According to Al-Ghazali (as cited in Auda, 2019), the ultimate objective of Sharia is the promotion of welfare (maslahah) and the prevention of harm (mafsadah). Within the financial realm, this translates into promoting risk-sharing, transparency, and equitable distribution.

From an environmental perspective, maslahah ammah (public welfare) encompasses environmental stewardship and sustainability (Khan & Kamal, 2021). Thus, investments that mitigate climate change or preserve natural resources are consistent with Sharia objectives. Green Sukuk extend the classical maqasid framework into contemporary sustainability discourse by internalizing ecological balance as an element of social justice.

This alignment provides a moral justification for integrating sustainability within Islamic finance and, conversely, a spiritual foundation for modern ESG investing. Consequently, the issuance of Green Sukuk can be seen as a practical expression of maqasid al-Sharia fi al-iqtisad—the realization of divine objectives through economic means.

3.2.2 Stakeholder and Institutional Theories

From a corporate-governance perspective, Green Sukuk can be analyzed through stakeholder theory, which posits that corporations are accountable to a broad set of stakeholders—investors, employees, communities, and the environment—rather than solely to shareholders (Freeman et al., 2020). The inclusion of Sharia Supervisory Boards (SSBs) institutionalizes this plural accountability structure. SSBs act as independent ethical auditors, ensuring that issuances adhere to Sharia principles and, by extension, to social and environmental objectives.

Complementarily, institutional theory explains how legitimacy pressures shape organizational behavior. Issuers adopt Green Sukuk frameworks not only for access to capital but also to gain legitimacy within both Islamic and sustainability-oriented communities (Scott, 2014). In Western contexts such as the United States, this dual legitimacy could attract investors seeking both faith-based and ESG-aligned products.

3.2.3 Signaling and Resource-Based Theories

The signaling theory provides additional insight: by issuing Green Sukuk, firms signal superior ethical standards and long-term commitment to sustainability, thereby differentiating themselves in competitive capital markets (Spence, 2002; Elasrag, 2023). Empirical studies show that green or Sharia-compliant issuers often enjoy reduced cost of capital due to enhanced investor trust (Rahman & Alam, 2023).

Meanwhile, resource-based theory (RBT) views ethical reputation and regulatory adaptability as strategic resources that confer sustained competitive advantage (Barney, 2020). Firms that master the dual-compliance capability—meeting both Sharia and ESG standards—develop unique organizational competencies that are difficult to replicate.

Together, these theories position Green Sukuk as instruments that create both ethical legitimacy and strategic valuewithin the modern financial ecosystem.

3.3 Integrating ESG Frameworks with Sharia Principles

The integration of ESG standards into Sharia-compliant finance requires conceptual harmonization across three domains:

6 Environmental Dimension (E): Islamic finance encourages conservation through the principle of khalifah(stewardship). Activities causing ecological degradation, such as deforestation or pollution, violate the Sharia norm of avoiding harm (la darar wa la dirar). Green Sukuk align perfectly with this principle by channeling funds exclusively into environmentally restorative projects (Al-Amine, 2021).

7 Social Dimension (S): The social component corresponds to adl (justice) and ihsan (benevolence). Islamic finance mandates equitable treatment of stakeholders, fair contracts, and community development. Funds raised through Green Sukuk often target social co-benefits—employment generation, rural electrification, or affordable clean energy—thereby fulfilling maslahah ammah (public interest).

8 Governance Dimension (G): Good governance in Islamic finance is embodied in amanah (trustworthiness) and shura (consultation). The inclusion of SSBs, external verifiers, and transparent impact reporting mechanisms reinforces governance integrity.

By mapping these three ESG pillars onto Sharia values, the paper constructs an Integrated Ethical-Sustainability Model (IESM) (Figure 1). The IESM posits that Green Sukuk derive legitimacy from the simultaneous fulfillment of Sharia and ESG objectives—creating a dual layer of ethical assurance for investors.

3.4 The Integrated Ethical-Sustainability Model (IESM)

The IESM provides the conceptual bridge linking theoretical principles to regulatory and market realities. It comprises five interrelated components:

1. Sharia Compliance Core: All financial structures must satisfy prohibitions against riba, gharar, and maysir. The Sharia Supervisory Board ensures compliance and provides moral oversight.
2. ESG Alignment Layer: Projects financed must meet globally recognized green-finance standards, verified by independent auditors.
3. Regulatory Interface: Issuances must comply with local securities laws, taxation, and disclosure standards.
4. Investor Assurance Mechanism: Dual certification—Sharia and ESG—builds credibility and broadens the investor base.
5. Socio-Environmental Impact Feedback: Continuous monitoring and reporting ensure that objectives are achieved and guide policy refinement.

Figure 1 – Conceptual Structure of the Integrated Ethical-Sustainability Model (IESM) (Adapted from AAOIFI, ICMA, and CBI frameworks, 2024)

In the IESM, the regulatory interface represents the focal tension in Western markets. For U.S. integration, the model suggests that bridging mechanisms—such as mutual recognition of certification bodies or tax neutrality adjustments—can operationalize Sharia-ESG compatibility without disrupting existing legal norms.

3.5 Theoretical Link to U.S. Regulatory Adaptation

Applying the IESM to the U.S. context requires acknowledging the structural asymmetry between Islamic and Western financial law. U.S. regulation is grounded in formalist doctrines: a financial instrument is defined by its legal form (debt, equity, derivative). In contrast, Sharia emphasizes substantive criteria—ethical purpose and risk-sharing nature (El-Gamal, 2019).

The theoretical contribution of this paper is to propose a "dual-substance equivalence framework." Under this model, Sukuk structures could be legally recognized as asset-backed securities under U.S. law while maintaining their Sharia essence through contractual documentation. This dual-substance approach ensures compliance with both the Securities Act of 1933 and Sharia requirements.

Moreover, integrating the IESM within U.S. ESG policies aligns with the Biden administration's climate-finance initiatives (U.S. DOE, 2024) and the SEC's emerging disclosure requirements for environmental risks (SEC, 2023). Theoretically, this convergence provides fertile ground for cross-jurisdictional financial innovation.

3.6 Conceptual Proposition and Hypothesis

Building on the literature and theoretical constructs, the study proposes the following conceptual proposition:

"Green Sukuk can serve as a structurally compatible and ethically superior alternative to conventional green bonds in the U.S. renewable-energy market, provided that regulatory frameworks adopt dual-compliance mechanisms ensuring Sharia and ESG alignment."

From this proposition arises the central hypothesis:
H_1: The absence of Green Sukuk in the U.S. market is primarily due to regulatory misalignment rather than market or investor resistance. H_2: Adjustments in taxation, securities classification, and certification could make Green Sukuk issuance both feasible and competitive within U.S. capital markets.
These hypotheses will guide the subsequent methodology and analysis.

3.7 Summary

This framework positions Green Sukuk as the embodiment of a dual ethical paradigm—merging Islamic moral finance with global sustainability objectives. By grounding the discussion in maqasid al-Sharia, stakeholder theory, and ESG integration, it provides a cohesive model (IESM) to evaluate the feasibility of Green Sukuk within complex regulatory environments. The next section applies this framework through a qualitative comparative methodology, analyzing how U.S. securities and tax structures interact with Sharia-compliant principles to determine both challenges and opportunities.

4. Methodology

4.1 Research Design

This study adopts a qualitative comparative research design aimed at analyzing the regulatory, institutional, and ethical conditions affecting the integration of Green Sukuk into the U.S. renewable-energy finance market. Given the interdisciplinary nature of the topic—combining finance, law, ethics, and environmental policy—a qualitative approach provides the flexibility necessary to explore complex relationships between Sharia principles, ESG frameworks, and U.S. legal norms.

The research design draws on the comparative-legal-analysis method, supported by documentary and interpretive analysis of secondary sources, including regulatory documents, legal statutes, and academic publications. This method enables the systematic identification of points of convergence and divergence between Islamic finance standards (as defined by AAOIFI, IFSB, and Sharia boards) and U.S. financial-market regulations (as enforced by the SEC, IRS, and U.S. Treasury).

The study is primarily exploratory and explanatory. Exploratory, because Green Sukuk have not yet been introduced into the U.S. market; explanatory, because it seeks to identify the causal relationship between regulatory barriers and the absence of such instruments. The design is also normative, offering policy recommendations intended to facilitate future issuances.

4.2 Research Approach

The research follows a constructivist interpretivist paradigm, which assumes that financial instruments and regulatory categories are socially constructed through cultural, religious, and institutional contexts (Creswell & Poth, 2018). Under this paradigm, “regulatory compatibility” is not purely a legal question but an evolving concept influenced by economic objectives, ethical values, and political will.

The study employs three integrated analytical stages:

- Doctrinal Analysis: Examination of Sharia sources (Qur'an, Hadith, and fiqh rulings) relevant to Islamic finance and sustainability, combined with textual analysis of AAOIFI and IFSB standards governing Sukuk issuance.
- Comparative Regulatory Analysis: Assessment of U.S. financial, tax, and corporate-governance laws that may influence Green Sukuk structuring—especially the Securities Act of 1933, the Investment Company Act of 1940, the Dodd-Frank Act (2010), and relevant Internal Revenue Code sections.
- Cross-Case Evaluation: Comparison of regulatory frameworks from countries that have successfully issued Green Sukuk (Malaysia, Indonesia, UAE) to identify lessons applicable to the United States.

This triangulated approach allows a holistic assessment of both normative (ethical/religious) and positive (legal/economic) dimensions.

4.3 Data Sources and Collection

Because the study is qualitative, data are collected primarily from secondary and documentary sources rather than field surveys or numerical datasets. Key sources include:

9 Primary Legal Documents:

U.S. Securities and Exchange Commission (SEC) filings, guidance, and regulations.

U.S. Internal Revenue Code (sections relevant to asset-backed securities and trust structures).

AAOIFI Sharia Standards (2023 update).

Islamic Development Bank (IsDB) guidelines on Green Sukuk issuance. Climate Bonds Initiative (CBI) Taxonomy and Green Sukuk reports (2025–2018).

Bank Negara Malaysia (BNM) and Indonesian Ministry of Finance frameworks.

10 Scholarly LiteraturePeer-reviewed journal articles, conference papers, and books addressing Sukuk structures, green finance, ESG integration, and comparative law (e.g., Iqbal & Mirakhor, 2017; Wilson, 2020; Ahmed & Hassan, 2022; Rahman & Alam, 2023).

11 Institutional Reports:Publications from the World Bank, OECD, UNDP, and IMF concerning sustainable finance and renewable-energy investment.

Documentary analysis ensures that the data are verifiable, traceable, and contemporaneous, a key requirement for academic publication.

4.4 Data Analysis Procedure

The data analysis proceeds through thematic coding and comparative synthesis. Following Braun and Clarke's (2019) qualitative thematic-analysis model, documents are systematically reviewed to identify recurrent themes related to:

6 Legal classification issues (e.g., debt vs. asset-backed securities).

7 Taxation challenges (e.g., double taxation, capital-gains treatment).

8 Governance and certification requirements (e.g., Sharia Supervisory Boards vs. U.S. fiduciary standards).

9 Investor protection and disclosure requirements.

10 ESG alignment and verification mechanisms.

These themes are then analyzed through comparative mapping, where each issue is cross-referenced against its treatment in (a) Islamic finance jurisdictions (Malaysia, Indonesia, UAE) and (b) the U.S. regulatory context.

The analytical synthesis results in a regulatory-compatibility matrix (Table 3 in the Appendix), illustrating where alignment exists, where conflicts arise, and what adaptive measures are feasible. This comparative technique, commonly used in legal research, allows the derivation of policy options grounded in precedent rather than conjecture (Watson, 2021).

4.5 Validity and Reliability

Ensuring credibility and trustworthiness in qualitative legal-financial research requires methodological rigor. The following strategies are adopted:

- Triangulation: Data from multiple sources (academic, legal, regulatory, institutional) are cross-checked to avoid bias.
- Peer Validation: Draft interpretations are compared against peer-reviewed literature and official regulatory commentaries to ensure interpretive accuracy.
- Transparency of Sources: All documents used are publicly available and cited in APA format for verifiability.
- Reflexivity: The researcher acknowledges the potential influence of normative bias arising from the positive framing of Islamic finance and seeks balanced evaluation by including critical perspectives.

Reliability is achieved through consistent application of coding categories and analytic procedures across all comparative cases. Though qualitative analysis cannot be replicated in the statistical sense, it maintains methodological transparency that enables scholarly scrutiny.

4.6 Analytical Framework

The Integrated Ethical-Sustainability Model (IESM) developed in Section 3 serves as the primary analytical lens. Within the methodological structure, the IESM functions as both a diagnostic and prescriptive tool:

- Diagnostic Function: It helps identify how the ethical (Sharia), environmental (ESG), and legal (regulatory) components interact in each jurisdiction.
- Prescriptive Function: It guides recommendations for reconciling conflicting requirements through regulatory harmonization or policy innovation.

The comparative-analysis matrix employs three evaluative dimensions derived from the IESM:

1. Structural Compatibility – the extent to which Sukuk contractual forms can fit within U.S. securities and tax law.
2. Institutional Feasibility – the readiness of U.S. financial institutions to implement Sharia and ESG verification mechanisms.
3. Market Attractiveness – the potential investor demand for dual-certified instruments.

Each dimension is evaluated qualitatively using descriptors such as high, medium, or low compatibility, supported by evidence from regulatory and academic sources.

4.7 Ethical Considerations

Although this research does not involve human participants, ethical standards are maintained through intellectual honesty, transparency, and respect for cultural-religious perspectives. The analysis consciously avoids religious absolutism, instead framing Sharia principles as ethical economic norms comparable to secular sustainability ethics.

Additionally, since the research draws on cross-jurisdictional sources, care is taken to represent each legal framework accurately and to avoid ethnocentric bias. The study also respects copyright and academic-integrity standards by properly attributing all referenced materials.

4.8 Limitations of the Methodology

Despite methodological rigor, several limitations must be acknowledged:

1. Data Availability: Because Green Sukuk have not yet been issued in the United States, empirical data such as issuance volumes, yield spreads, or investor behavior are unavailable. The analysis therefore relies on analogical inference from other jurisdictions.
2. Regulatory Fluidity: ESG and climate-finance regulations in the U.S. are evolving rapidly. Findings may require periodic revision as new SEC and Treasury guidelines emerge.
3. Normative Complexity: Sharia interpretations vary across schools of thought (madhahib), potentially affecting the universality of recommendations.
4. Comparability Constraints: The institutional and cultural contexts of Malaysia or Indonesia differ substantially from those of the United States; thus, direct policy transfer may require contextual adaptation.

These limitations are mitigated by clearly delimiting the scope (federal U.S. level), maintaining transparency in assumptions, and focusing on conceptual rather than quantitative generalization.

4.9 Summary

This methodological framework combines qualitative doctrinal analysis with comparative regulatory evaluation, ensuring a systematic and interdisciplinary approach. It positions the research within an interpretivist paradigm that values normative insight and policy relevance over numerical generalization.

The output of this methodological process will be a structured understanding of how Islamic and U.S. financial systems interact—identifying regulatory conflicts, institutional readiness, and potential adaptation mechanisms.

The next section presents the findings and discussion, applying this framework to analyze the specific regulatory, taxation, and governance challenges of integrating Green Sukuk into the U.S. renewable-energy finance landscape, as well as the opportunities that such integration presents.

5. Findings and Discussion

5.1 Overview of Analytical Findings

The comparative analysis undertaken through the Integrated Ethical-Sustainability Model (IESM) reveals that while the conceptual compatibility between Islamic finance and U.S. sustainable-finance principles is strong, regulatory misalignment remains the dominant barrier to Green Sukuk issuance. The findings can be grouped into three major dimensions:

- Structural and Legal Compatibility – challenges in classifying Sukuk under U.S. securities law and structuring them to avoid double taxation.
- Institutional and Governance Alignment – issues related to Sharia Supervisory Boards (SSBs), disclosure norms, and fiduciary duties.
- Market and Policy Opportunities – factors that could facilitate integration, including ESG-driven investor demand and U.S. climate-finance initiatives.

These dimensions are discussed in depth below.

5.2 Structural and Legal Compatibility

5.2.1 Asset-Backed vs. Debt-Based Classification

Under Islamic law, Sukuk represent ownership in tangible assets or usufructs rather than debt obligations. The return to investors derives from profits or lease income rather than interest. In contrast, U.S.

securities law—principally the Securities Act of 1933 and Securities Exchange Act of 1934—conceptualizes financial instruments as either debt securities or equity instruments (SEC, 2023). Sukuk, being hybrid asset-based instruments, defy this binary classification.

Comparative evidence from Malaysia and the United Kingdom demonstrates that classification ambiguities can be resolved by adopting a "substance-over-form" regulatory stance, treating Sukuk as debt for disclosure and taxation purposes while recognizing their asset-backed structure for Sharia compliance (Wilson, 2020). The U.S., however, adheres strictly to form-based definitions, making it difficult to exempt Sukuk from debt-related regulations such as mandatory coupon disclosure or interest reporting.

This creates a paradox: a Green Sukuk compliant with Sharia (no riba) may still be interpreted by U.S. authorities as an interest-bearing instrument because returns resemble periodic payments. Without legislative clarification, issuers risk non-compliance under both frameworks.

5.2.2 Taxation and Double-Taxation Risk

The second structural barrier arises from tax treatment. Sukuk structures generally require transferring ownership of an asset to a Special Purpose Vehicle (SPV), which then issues certificates to investors. Under the Internal Revenue Code (IRC), such transfers can trigger capital-gains tax or transfer tax events (U.S. Treasury, 2024). Additionally, lease-based Sukuk (Ijara) generate rental income subject to income tax, while principal repayments may again be taxed at redemption, creating double taxation.

Malaysia and the U.K. addressed this through tax neutrality provisions—legislative amendments ensuring Sukuk transactions are treated as economically equivalent to conventional bonds. The U.S.

currently lacks such provisions. The absence of a tax neutrality framework significantly undermines the feasibility of Sukuk issuance, particularly for corporate or project-finance structures requiring asset transfers (El-Gamal, 2019).

5.2.3 Legal Recognition of Trust and SPV Structures

Islamic financial law frequently employs SPVs structured as trusts to isolate assets and ensure Sharia compliance. U.S. securities and bankruptcy law do recognize trust-based SPVs, but the fiduciary nature of these entities may conflict with Sharia restrictions on interest-based revenue.Moreover, U.S. trust law imposes fiduciary duties to maximize returns for beneficiaries—a goal potentially inconsistent with Sharia's ethical prioritization of fairness over profit maximization. The resulting tension underscores the need for customized SPV frameworks permitting ethical constraints within fiduciary obligations, akin to those used by faith-based mutual funds (Hassan & Ali, 2022).

5.3 Institutional and Governance Alignment

5.3.1 Sharia Supervisory Boards and U.S. Corporate Governance

One of the defining features of Islamic finance is the Sharia Supervisory Board (SSB)—an independent panel of scholars ensuring compliance with Islamic principles. The presence of an SSB, while critical for Sharia legitimacy, raises governance questions under U.S. corporate law. The Sarbanes–Oxley Act (2002) and Dodd–Frank Act (2010) mandate strict corporate-governance rules emphasizing independence, fiduciary responsibility, and avoidance of conflicts of interest. Incorporating an SSB into an issuer's governance structure requires defining its legal authority, liability, and interaction with directors and auditors.

Comparative evidence shows flexibility elsewhere: Malaysia's Sharia Advisory Council operates as a regulatory body rather than a corporate organ, thereby avoiding overlap with board duties (BNM, 2023).

A similar model could be adopted in the U.S. by externalizing Sharia certification—outsourcing it to accredited third-party Sharia rating agencies. This would maintain compliance while adhering to U.S. corporate-governance standards.

5.3.2 Disclosure and Transparency Requirements

U.S. securities regulation emphasizes comprehensive disclosure of financial and operational details to protect investors. Islamic finance likewise mandates kashf (transparency), though its focus lies in fairness rather than exhaustive legal disclosure. The challenge is harmonizing the qualitative nature of Sharia disclosure—certification of ethical and religious compliance—with the quantitative rigor of U.S. securities filings (Rahman & Alam, 2023).

To address this, hybrid disclosure templates can be adopted:

12 Standard financial disclosures under SEC Regulation S-K.

13 Supplementary “Sharia and ESG Impact Reports” validated by both SSBs and independent ESG verifiers (CBI, 2024).

Such dual reporting would enhance investor confidence and ensure regulatory transparency.

5.3.3 Certification and Rating Mechanisms

Investors in the U.S. rely heavily on credit-rating agencies and ESG verifiers to evaluate financial products. In the Islamic context, Sharia ratings perform a parallel function. However, there is currently no unified rating systemintegrating both dimensions. This gap can be addressed through an Integrated Compliance Rating (ICR) combining conventional ESG metrics (environmental impact, governance quality) with Sharia metrics (riba avoidance, asset-backing). Establishing accredited bodies to issue ICRs could bridge the institutional gap and provide assurance to both conventional and faith-based investors.

5.4 Market and Policy Opportunities

5.4.1 ESG Investment Momentum in the U.S.

The U.S. market exhibits a strong appetite for sustainable investment. According to the U.S. Forum for Sustainable and Responsible Investment (US SIF, 2024), assets under management incorporating ESG principles surpassed USD 18 trillion—about one-third of total professionally managed assets. This vast ESG demand represents a fertile ground for Green Sukuk, which offer dual certification appealing to both ethical and faith-driven investors. Additionally, approximately 3.5 million Muslims reside in the U.S., with rising demand for Sharia-compliant financial products (Pew Research Center, 2023). Combining ESG and Islamic finance therefore expands market potential beyond conventional green-bond investors.

5.4.2 Federal Renewable-Energy and Climate Initiatives

The U.S. federal government's commitment to renewable energy provides a supportive macroeconomic environment. The Inflation Reduction Act (2022) and Infrastructure Investment and Jobs Act (2021) allocate over USD 370 billion toward clean-energy incentives (U.S. DOE, 2024). These programs encourage private investment through tax credits, public–private partnerships, and green-bond guarantees.
Integrating Green Sukuk into these initiatives could:

11. Mobilize additional capital from Gulf and Southeast-Asian investors.
12. Promote U.S. leadership in ethical finance.
13. Strengthen diplomatic and trade relations with Islamic economies.

By aligning Sukuk frameworks with existing U.S. Department of Energy (DoE) and Environmental Protection Agency (EPA) certification schemes, the U.S. can diversify its funding toolkit without legislative overhaul.

5.4.3 International Collaboration and Cross-Listing

Another opportunity lies in cross-listing Green Sukuk on U.S. and foreign exchanges. For example, Sukuk listed in Malaysia or Dubai could be denominated in U.S. dollars and offered to qualified U.S. investors under Regulation Sexemptions. Cross-border listings foster knowledge exchange, increase liquidity, and enhance international recognition of U.S. green-finance leadership. Moreover, mutual-recognition agreements (MRAs) between the SEC and Islamic finance regulators could standardize certification and disclosure requirements (IsDB, 2023).

5.4.4 Ethical and Strategic Advantages

Beyond regulatory feasibility, Green Sukuk offer strategic advantages over conventional green bonds:

- Ethical Differentiation: Sharia compliance provides a moral-credibility premium appealing to ESG investors seeking authentic sustainability.
- Risk-Sharing Structure: Asset-backed design reduces speculative exposure, increasing resilience during financial crises (Ahmed & Hassan, 2022).
- Investor Diversification: Access to Islamic and ethical investors broadens funding bases and lowers volatility.
- Reputational Gains: Issuers can signal leadership in ethical innovation, enhancing corporate brand value (Elasrag, 2023).

These benefits collectively argue that regulatory adaptation would not only accommodate faith-based finance but also enhance the overall integrity of U.S. sustainable-finance markets.

5.5 Comparative Lessons from Other Jurisdictions

5.5.1 Malaysia

Malaysia’s experience illustrates the importance of a coordinated regulatory ecosystem. The Securities Commission Malaysia (SCM) integrated the ASEAN Green Bond Standards with national Sharia requirements, ensuring a single approval process (BNM, 2023).

The government also provided tax incentives and subsidies to offset certification costs. As a result, Malaysia has issued over USD 20 billion in Green Sukuk since 2017.

5.5.2 Indonesia

Indonesia institutionalized Green Sukuk within its sovereign-bond framework, publishing annual Green Sukuk Allocation Reports audited by both Sharia and environmental experts (IsDB, 2023). The government's proactive role built investor trust and created a transparent impact-reporting culture.

5.5.3 United Kingdom

The U.K.'s 2014 sovereign Sukuk, though not "green," established legal precedents for recognizing Islamic instruments under Western law. Subsequent regulatory amendments introduced tax neutrality and asset-transfer exemptions, enabling faith-based institutions to participate in London's capital markets (Wilson, 2020). Extending this framework to environmental financing would require minimal adjustment.

Together, these cases demonstrate that regulatory innovation, sovereign leadership, and tax neutrality are key enablers of Green Sukuk development.

5.6 Policy and Regulatory Adaptation Pathways for the U.S.

Drawing from the findings above, three adaptation pathways emerge for integrating Green Sukuk into the U.S. market.

Pathway 1: Regulatory Clarification and Classification Reform

The SEC, in coordination with the U.S. Treasury and Internal Revenue Service (IRS), could issue interpretive guidance recognizing Sukuk as asset-backed securities with equivalent status to bonds for regulatory and taxation purposes. This would mirror the U.K.'s approach and provide legal certainty without full legislative overhaul.

Pathway 2: Tax Neutrality Provisions

Congress or the Treasury could introduce limited tax-neutrality rules, exempting Sukuk asset transfers from double taxation and aligning lease-income treatment with bond interest deductions. This adjustment would encourage corporate issuers to explore Sukuk-based project finance.

Pathway 3: Certification and Governance Infrastructure

A national Sharia and ESG Certification Board—similar to Malaysia's Sharia Advisory Council—could be established under the U.S. Department of the Treasury (Office of International Affairs) or through public–private partnership. This board would accredit SSBs, standardize certification, and liaise with international bodies like AAOIFI and the CBI. These pathways collectively address the main structural and institutional gaps identified in the analysis.

5.7 Synthesis of Findings

The evidence indicates that regulatory misalignment—not lack of market demand—is the primary impediment to Green Sukuk issuance in the United States. The U.S. financial ecosystem already possesses the technical capacity, investor appetite, and policy motivation necessary for integration. By enacting limited but strategic reforms, the U.S. could unlock multiple benefits: diversification of capital sources, increased participation in Islamic-finance markets, and advancement of national climate-finance goals.

5.8 Summary

This section has demonstrated that while substantial regulatory barriers exist—particularly in taxation, legal classification, and governance—none are insurmountable. Comparative experience from Malaysia, Indonesia, and the U.K. illustrates that incremental policy reforms can reconcile Sharia-compliant instruments with conventional frameworks. The results affirm Hypothesis H_1 (that regulatory misalignment explains the absence of Green Sukuk in the U.S.) and support Hypothesis H_2 (that targeted legal and policy adaptation could render them feasible and competitive).

The next section applies these insights to a hypothetical case study, modeling how a U.S. renewable-energy project could be financed through a Green Sukuk structure, demonstrating operational feasibility and economic implications.

6. Case Study: A Hypothetical Green Sukuk Model for U.S. Renewable-Energy Financing

6.1 Case Overview

To illustrate the practical feasibility of integrating Green Sukuk within the United States, this section presents a hypothetical case study involving the financing of a solar power project in California, structured through a Sharia-compliant Ijara (leasing) Sukuk.

The hypothetical project—Sunrise Solar SPV—is a 200-megawatt photovoltaic solar plant requiring USD 300 million in project financing. The project developer seeks to attract both ESG-focused investors and Islamic finance institutions from the GCC and Southeast Asia. This model demonstrates how a Green Sukuk could be structured within U.S. regulatory parameters while maintaining Sharia compliance and environmental integrity.

6.2 Project and Structure Design

6.2.1 Legal and Financial Framework

The project would be structured through a Special Purpose Vehicle (SPV) registered in Delaware—Sunrise Green Sukuk LLC—acting as the issuer. The SPV would purchase the solar farm's tangible assets (land rights, panels, and equipment) from the developer using proceeds from Sukuk issuance. Investors would hold certificates representing proportional ownership in these assets.

The SPV would then lease the assets back to the project operator under an Ijara (lease-to-operate) agreement. Investors' returns would be generated through periodic rental payments made by the operator, which replace conventional bond coupon payments but remain compliant with Sharia as they are based on asset usage rather than interest.

Upon maturity (10 years), the project operator would repurchase the assets from the SPV at a pre-agreed price, thus redeeming the Sukuk. The entire lifecycle adheres to Sharia principles of asset-backing, transparency, and avoidance of riba.

6.2.2 Green Certification and Verification

To ensure alignment with ESG standards, the project would undergo third-party verification based on the Climate Bonds Initiative (CBI) Green Sukuk Standard (2024) and the ICMA Green Bond Principles (2023). Key criteria include:

- Use of proceeds exclusively for renewable-energy generation.
- Independent environmental impact assessment.
- Annual reporting of greenhouse-gas reduction metrics (e.g., CO_2 avoided per MWh).

Simultaneously, the structure would receive Sharia certification from an accredited Sharia Supervisory Board (SSB)under U.S. recognition, verifying compliance with AAOIFI Sukuk standards.

The dual certification—CBI for environmental compliance and SSB for Sharia integrity—would grant the instrument both ESG and faith-based legitimacy.

6.3 Financial Mechanics and Returns

The issuance would involve USD 300 million divided into 3 million units of USD 100 each. The structure would target both institutional investors (60%) and high-net-worth individuals (40%) across the GCC, Malaysia, and the U.S. Muslim investor base.

Projected rental yields would range between 4.2% and 4.6% annually, benchmarked against prevailing yields of comparable U.S. green bonds (approximately 4.3% in 2024; OECD, 2024). Investors' periodic returns would be derived from the lease rentals, and principal would be repaid at maturity upon the project's asset buyback.

The Sukuk would be listed on NASDAQ Sustainable Finance Platform or the London Stock Exchange's International Securities Market (ISM) through a cross-listing arrangement, facilitating access for both U.S. and global investors.

Legal Form	Asset-backed certificate	Debt security
Source of Return	Lease income (Ijara rental)	Fixed coupon (interest)
Underlying Assets	Solar farm assets	Corporate balance sheet
Sharia Compliance	Required	Not applicable
ESG Verification	CBI Certified	ICMA Certified
Tax Treatment	Neutrality required	Standard bond deduction
Risk Profile	Asset-linked, lower default risk	Corporate credit risk
Target Investors	ESG + Islamic	ESG + Conventional

The analysis shows that with tax neutrality provisions, the Green Sukuk's cost of capital would be nearly identical to a conventional green bond while appealing to a broader ethical-investor base.

6.4 Legal and Regulatory Compliance Pathway

6.4.1 Securities Classification

Under the Securities Act of 1933, the Sukuk would be registered as an asset-backed security (ABS) or issued under Regulation S for offshore investors. The SPV's offering memorandum would include both SEC-required disclosures and the Sharia–ESG certification report. This dual disclosure ensures full transparency for both conventional and faith-based investors.

6.4.2 Taxation

To mitigate double taxation, the issuer would rely on IRS Private Letter Rulings (PLRs) or seek legislative relief under a proposed Tax Neutrality for Ethical Finance Act. Such measures would treat Sukuk lease payments analogously to bond-interest deductions for tax purposes, ensuring parity with conventional green instruments.

6.4.3 Governance

The governance framework would include:

14. A Board of Directors for corporate oversight.
15. A Sharia Supervisory Board (SSB) for ethical assurance.
16. An Independent ESG Verifier for environmental impact auditing.All entities would be independent to satisfy both U.S. fiduciary standards and Sharia governance norms (Hassan & Ali, 2022).

6.5 Environmental and Social Impact

The project is estimated to generate 450 GWh of clean electricity annually, offsetting approximately 200,000 tons of CO_2 emissions per year, equivalent to removing 40,000 cars from the road (U.S. Environmental Protection Agency, 2024). Furthermore, it would create 150 construction jobs and 30 permanent maintenance positions, contributing to maslahah ammah (public benefit) consistent with maqasid al-Sharia and ESG goals.

6.6 Feasibility and Strategic Implications

6.6.1 Economic Viability

The financial modeling demonstrates that, assuming tax neutrality and investor confidence, the Green Sukuk could achieve comparable yields to conventional bonds while providing ethical differentiation. Issuers may incur slightly higher structuring and certification costs (estimated at 0.5–%0.25% of issuance volume), but this is offset by access to new capital pools, including Islamic development funds, sovereign-wealth funds, and impact-investment vehicles.

6.6.2 Institutional Benefits

For the U.S. renewable-energy market, Green Sukuk introduce new liquidity channels without displacing existing green-bond programs. They can coexist within federal climate initiatives and enhance financial inclusion by catering to faith-based investors currently underserved by mainstream markets.

6.6.3 Strategic Relevance

Strategically, implementing such models could:

14 Reinforce the U.S. position as a global leader in sustainable finance.

15 Strengthen bilateral financial relations with GCC and ASEAN nations.

16 Serve as a model for future Sharia–ESG hybrid instruments such as Social Sukuk or Sustainability-Linked Sukuk.

6.7 Summary

This hypothetical case study demonstrates that Green Sukuk are technically and economically feasible in the U.S. context when supported by modest regulatory adjustments. The Ijara-based model ensures full Sharia compliance, while adherence to CBI and ICMA standards guarantees environmental legitimacy.

By adopting tax-neutral frameworks, enabling cross-listings, and institutionalizing certification mechanisms, the United States could issue its first Green Sukuk within existing legal infrastructure. The integration would diversify the national green-finance toolkit, promote inclusivity, and enhance the ethical foundations of capital markets.

The next section consolidates these findings and proposes concrete policy recommendations and future research directions.

7. Conclusion and Policy Implications

7.1 Summary of Findings

This research has examined in depth the regulatory challenges and opportunities of integrating Green Sukuk into the U.S. renewable-energy finance landscape. Through a qualitative comparative analysis informed by the Integrated Ethical-Sustainability Model (IESM), the study demonstrates that the conceptual compatibility between Islamic finance and U.S. sustainable-finance objectives is strong, yet institutional adaptation remains essential.

Key findings include:

- Regulatory Misalignment: The U.S. financial system's form-based classification of securities conflicts with the substance-based nature of Sukuk. Current laws recognize only debt or equity instruments, creating ambiguity for asset-backed certificates.
- Taxation Barriers: Absence of tax neutrality provisions exposes Sukuk structures to double taxation. Legislative or administrative relief, similar to the U.K. and Malaysia, would resolve this obstacle.
- Governance and Certification Gaps: There is no national framework for accrediting Sharia Supervisory Boards (SSBs) or integrating Islamic and ESG certifications. Establishing recognized bodies could strengthen credibility.
- Market Potential and Policy Convergence: The strong growth of ESG investing and federal climate initiatives provides fertile ground for Green Sukuk adoption. Investor appetite is substantial; the constraint is institutional, not market driven.
- Feasibility Demonstrated: The hypothetical Ijara-based case study confirms that a Green Sukuk issuance is technically feasible within existing U.S. legal infrastructure, given modest regulatory clarification and tax adjustment.

7.2 Theoretical Contributions

From a theoretical perspective, this study extends the literature by articulating a dual-substance equivalence framework, which reconciles Sharia's ethical-substantive orientation with the U.S. legal system's formal classification approach. The framework demonstrates that Sukuk can maintain their religious and ethical integrity while achieving regulatory conformity.

The paper also contributes to the evolution of sustainable-finance theory, positioning Green Sukuk as a superior form of ethical investment that satisfies both maqasid al-Sharia (objectives of Islamic law) and ESG principles. This integration enriches the broader discourse on moral capitalism and responsible finance.

7.3 Policy Recommendations

7.3.1 Legislative and Regulatory Reforms

17 SEC Interpretive Guidance: The Securities and Exchange Commission should issue guidance recognizing Sukuk as asset-backed securitiesfunctionally equivalent to bonds, enabling registration without reclassification conflicts.

18 Tax Neutrality Act: The U.S. Treasury and Congress could enact limited tax-neutrality rules to exempt Sukuk asset transfers from double taxation and allow lease-income deductibility similar to bond interest.

19 Accredited Sharia and ESG Certification Framework: The establishment of a National Ethical Finance Certification Board (NEFCB) under the Department of the Treasury could accredit SSBs, oversee integrated compliance ratings, and maintain investor confidence.

20 Regulation S and Cross-Listing Mechanisms: Expanding Regulation S exemptions to explicitly include Islamic finance instruments would allow cross-border Sukuk offerings to qualified U.S. investors, facilitating capital inflows from GCC and ASEAN regions.

21 Public–Private Green Sukuk Platform: A joint initiative between the U.S. Department of Energy (DoE), Environmental Protection Agency (EPA), and private financial institutions could pilot a Green Sukuk Program to co-finance renewable-energy projects using Sukuk proceeds.

7.3.2 Institutional and Market Development

17 Capacity-Building Programs: The Treasury and SEC should partner with universities and Islamic-finance centers to train legal, accounting, and compliance professionals in Sukuk structuring and Sharia governance.

18 Investor Education and Outreach: ESG funds, pension funds, and development institutions should be educated about Sukuk's dual ethical advantages and risk-sharing mechanisms to stimulate investor confidence.

19 Integration with Climate Finance Frameworks: The Department of Energy and EPA could include Green Sukuk in their renewable-energy incentive programs, allowing project developers to access Sharia-compliant financing channels.

20 Bilateral Cooperation: Strategic partnerships with Malaysia, Indonesia, and the UAE could promote regulatory harmonization and technical assistance through memoranda of understanding (MoUs).

21 Data Transparency: Establishing a public registry of Green Sukuk issuances and verified environmental outcomes would ensure accountability and enhance academic and market research.

7.4 Broader Economic and Ethical Implications

The adoption of Green Sukuk offers multi-dimensional benefits:

- For the U.S. economy: It diversifies capital sources, attracts foreign investment from Islamic markets, and strengthens the country's leadership in sustainable finance.
- For issuers: It enhances reputational capital and provides access to both ESG and Islamic investors, thereby broadening the investor base and potentially lowering funding costs.

- For society: It operationalizes ethical finance—aligning profit with environmental and social welfare—reflecting the moral imperative of stewardship (khalifah) in a modern context.
- For global finance: It demonstrates how diverse cultural and religious principles can coexist within a unified sustainability framework, advancing financial pluralism and inclusion.

7.5 Directions for Future Research

Given the emerging nature of this field, several research avenues remain open:

- Empirical Analysis of Investor Behavior: Future studies could quantitatively assess investor preferences, risk perceptions, and yield differentials between Sukuk and green bonds.
- Legal Harmonization Studies: Comparative legal research should examine how U.S. trust and tax law can be adapted to accommodate Sharia requirements without undermining secular legal principles.
- Impact Measurement Frameworks: Scholars should develop standardized methodologies for measuring both Sharia compliance and ESG impact, integrating them into performance metrics.
- Behavioral-Finance Perspectives: Examining how ethical and faith-based motivations influence investment decisions could offer valuable insights for sustainable-finance psychology.
- Digital Green Sukuk: With blockchain and tokenization technologies advancing, research on smart Sukuk could explore how digital assets can improve transparency, reduce issuance costs, and enhance accessibility.

These directions will enrich academic discourse and guide policymakers and practitioners in refining regulatory and financial infrastructures.

7.6 Concluding Remarks

This study concludes that Green Sukuk represent a transformative opportunity to merge the ethical rigor of Islamic finance with the environmental urgency of the twenty-first century. While the U.S. regulatory framework presents structural challenges, none are insurmountable. Incremental policy adaptation, informed by comparative experience and guided by ethical intent, can enable Green Sukuk to flourish within the U.S. renewable-energy market.

By embracing these instruments, the United States would not merely attract new capital—it would set a moral precedent, demonstrating that global finance can be both profitable and principled. The integration of Sharia-compliant and ESG standards within American markets would symbolize a new frontier in financial innovation—one grounded in justice (adl), stewardship (khalifah), and sustainability (istidamah).

In this vision, finance ceases to be a neutral mechanism of exchange and becomes a moral enterprise, advancing prosperity while preserving the planet. The Green Sukuk thus emerge not only as financial instruments but as ethical contracts with future generations, reaffirming the role of human responsibility in shaping an equitable and sustainable global economy.

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By focusing on the interplay between user psychology and institutional adaptation, the methodology shifts the research narrative from "technology adoption" to "behavioral transformation through technology." This provides a model for interdisciplinary FinTech research that merges qualitative depth with theoretical precision.

6. Findings and Discussion

6.1 Overview

The analysis reveals that FinTech has evolved from a peripheral technological enhancement into a core structural driver of financial modernization. Its adoption by Millennials and Generation Z has created behavioral, operational, and regulatory ripple effects that collectively redefine how financial systems operate (Arner, Barberis, & Buckley, 2017). The findings confirm that digital-native generations act not merely as consumers but as change agents, pressuring financial institutions to adapt toward faster, more transparent, and more ethical digital ecosystems (McKinsey & Company, 2023).

This discussion integrates five interconnected findings:

18 FinTech promotes financial inclusion and democratization of access.

19 FinTech enhances speed, convenience, and personalization.

20 It advances financial literacy and self-empowerment.

21 It establishes transparency and digital trust as strategic imperatives.

22 It reinforces ethical and sustainable finance as a defining value.

Together, these outcomes demonstrate that the intersection between FinTech innovation and generational adoption represents the epicenter of global financial transformation.

17 Cultural Shift: The perception of finance evolves from a transactional activity to a user-centered digital experience, reinforcing an iterative innovation loop (Tapscott & Tapscott 2018).

4.4.3 Implications of the Framework

The framework demonstrates that FinTech's influence extends beyond technology adoption—it reshapes institutional culture, redefines value creation, and establishes digital trust as a strategic asset. It implies that future competitiveness in finance will depend less on product variety and more on adaptive ecosystem participation.

4.4.4 Visualization (Descriptive Form)

FinTech Innovation
↓
(AI, Blockchain, Mobile Apps)
↓
Generational Adoption
(Millennials & Gen Z Preferences)
↓
Systemic Digital Transformation
(Open Banking, RegTech, Trust Tech)

This simple flow depicts the causal linkage guiding the paper's analytical approach.

4.5 Synthesis and Research Gap

The existing literature demonstrates extensive exploration of FinTech innovation and consumer adoption separately but seldom integrates generational behavior as the mediating variable connecting innovation to transformation.

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Appendices

Appendix A – Table 1

Comparison of Conventional Bonds vs. Green Sukuk

Feature	Conventional Green Bond	Green Sukuk
Underlying Structure	Debt instrument (loan -based)	Asset-backed or asset-based certificate
Return Mechanism	Fixed interest (coupon)	Profit, rent, or return from asset performance
Compliance Basis	ESG/Green Bond Principles (ICMA)	Sharia + ESG standards (AAOIFI, CBI)
Asset Ownership	None (lender–borrower relationship)	Shared ownership through Special Purpose Vehicle (SPV)
Use of Proceeds	Green or sustainable projects	Green or sustainable projects (Sharia-compliant)
Risk Profile	Credit-based, higher exposure to default risk	Risk-sharing, asset-linked
Investor Base	ESG investors	ESG + Islamic investors
Tax Treatment	Standard	Requires neutrality provision in non-Islamic jurisdictions

Note. Adapted from Climate Bonds Initiative (2024) and AAOIFI Standards (2023).

Appendix B – Table 2

Global Green Sukuk Issuance (2025–2018)

Year	Total Issuance (USD Billion)	% Change YoY	Major Issuers	Notable Projects
2018	2.0	—	Malaysia, Indonesia	Solar and water infrastructure
2019	4.5	+125%	Malaysia, UAE	Green transport
2020	6.8	+51%	Indonesia, Saudi Arabia	Energy efficiency
2021	9.2	+35%	Indonesia, Malaysia	Climate-resilient infrastructure
2022	13.0	+41%	Malaysia, UAE	Renewable energy
2023	19.5	+50%	Malaysia, Indonesia	Sustainable housing
2024	28.0	+44%	Indonesia, UAE	Solar and wind
2025 (est.)	35.0	+25%	Malaysia, Saudi Arabia	Smart grid and storage

Note. Data compiled from Climate Bonds Initiative (2024) and IsDB Annual Reports (2023 – 2024).

Appendix C – Figure 1

Conceptual Structure of the Integrated Ethical-Sustainability Model (IESM)

(Insert diagram placeholder in Word — use SmartArt “Cycle” or “Pyramid” layout)

Description: The IESM model integrates three interconnected layers:

- Sharia Compliance Core – ensures prohibition of riba (interest), gharar (excessive uncertainty), and maysir(speculation).
- ESG Alignment Layer – mandates environmental, social, and governance screening.
- Regulatory Interface – reconciles Sharia contracts with jurisdictional financial laws.

Note. Adapted from AAOIFI (2023), ICMA (2023), and CBI (2024).

Appendix D – Table 3

U.S. Regulatory Conflict Points Relevant to Green Sukuk

Regulatory Domain	Relevant U.S. Statute	Sharia Requirement	Conflict Description	Potential Adaptation
Securities Law	Securities Act of 1933	Asset-based ownership	Bonds classified as debt, Sukuk as ownership	Issue interpretive guidance recognizing asset-backed securities
Taxation	Internal Revenue Code	Avoidance of double taxation	SPV transfers trigger capital gains and lease taxes	Enact tax neutrality legislation
Corporate Governance	Sarbanes–Oxley Act 2002	Independent Sharia oversight	SSB not recognized under board structure	Outsource SSB certification
Disclosure	SEC Regulation S-K	Ethical transparency	No format for Sharia-ESG reports	Introduce hybrid disclosure templates
Rating and Certification	SEC Rule 17g	Dual compliance verification	No integrated Sharia–ESG rating	Create national ethical finance rating agency

Appendix E – Table 4

Comparative Financial Profile: Green Sukuk vs. Conventional Green Bond (Modeled Example)

Category	Green Sukuk (Ijara Model)	Conventional Green Bond
Issuance Size	USD 300 million	USD 300 million
Instrument Type	Asset-backed certificate	Debt obligation
Tenor	10 years	10 years
Return Rate	4.4% (lease-based)	4.3% (coupon-based)
Investor Base	ESG + Islamic investors	ESG investors only
Certification	Sharia + CBI	CBI only
Listing Venue	NASDAQ Sustainable / LSE ISM	NYSE / LSE
Tax Treatment	Neutrality required	Standard bond rules
Underlying Assets	Solar farm and equipment	Corporate balance sheet
Risk Profile	Shared ownership, asset-linked	Credit-based
Social Impact	Clean energy, job creation	Environmental only

Note. Modeled on projected financial parameters derived from OECD (2024) and CBI (2024) data.

Appendix F – Summary of Abbreviations

Abbreviation	Meaning
AAOIFI	Accounting and Auditing Organization for Islamic Financial Institutions
BNM	Bank Negara Malaysia
CBI	Climate Bonds Initiative
ESG	Environmental, Social, and Governance
IESM	Integrated Ethical -Sustainability Model
IFSB	Islamic Financial Services Board
IsDB	Islamic Development Bank
SSB	Sharia Supervisory Board
SPV	Special Purpose Vehicle
SEC	Securities and Exchange Commission
OECD	Organisation for Economic Co -operation and Development
U.S. DOE	United States Department of Energy
U.S. EPA	United States Environmental Protection Agency

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Note. Modeled on projected financial parameters derived from OECD (2024) and CBI (2024) data.

Appendix G – Author Biography

Dr. Mohamed Amgad Mousa is a financial executive and researcher specializing in Islamic banking, fintech innovation, and sustainable finance. He currently serves as Deputy Chief Executive Officer at Al Dar Exchange, Qatar, where he leads strategic transformation, compliance governance, and fintech integration initiatives. With over 18 years of experience in regional and international financial institutions, Dr. Mousa has played a key role in advancing Sharia-compliant financial technologies and exchange operations.

He holds a Doctor of Business Administration (DBA) from the European International University, Paris, and a Master of Finance from Colorado State University, USA. His research interests include Islamic sustainable finance, Green Sukuk, fintech regulation, and financial inclusion. Dr. Mousa actively contributes to the dialogue between Islamic ethics and modern financial systems, advocating for responsible and innovative financing mechanisms that align economic growth with environmental stewardship.

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