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The Reality of Islamic Financing for Green Development Projects: Successful Asian Countries as Models

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ABSTRACT

This research examines the critical role of Islamic financing in advancing green development projects, a pressing challenge confronting Asian nations that have actively pursued contemporary green financial instruments to foster sustainable development. The study establishes a comprehensive theoretical framework encompassing Islamic finance, its principal modalities, and applications within the green development paradigm, while systematically analyzing the utilization of these instruments within Asian Islamic banks. The findings demonstrate that Islamic banking constitutes a vital mechanism for supporting green development projects through Sharia-compliant financing formulas aligned with sustainability strategies, substantiated through selected case studies from successful Islamic Asian

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countries that have effectively employed Islamic financing for green development projects in accordance with Islamic jurisprudence.

1. Introduction

first century has witnessed a transformative revolution -The twenty in international financial transactions, characterized by the emergence notably of Islamic banking manifested through various forms, most Islamic finance, Takaful finance, and sustainable finance. These models have compelled numerous Islamic nations to adopt them as .foundational elements for building their economic systems

Simultaneously, environmental preservation has become mperative in light of prevailing environmental and climatic changes, i necessitating the adoption of green development objectives. Like other sectors, the Islamic banking industry in Asian countries and across the t to these goals and broader Islamic world has endeavored to adap principles by diversifying and adapting its Islamic financing formulas and products within a sustainability framework to finance various .green developmental projects

1.1 Research Problem

to supporting green To what extent does Islamic finance contribute development projects, and how can successful Asian country models ؟be leveraged in this domain

1.2Sub Research Questions:

- What constitutes the concept of Islamic finance, and what are ؟its most significant formulas
- ؟l strategies of green developmentWhat are the principa
- How effective is the application of Islamic finance in ؟supporting green development projects in Asian countries

1.3 Research Hypotheses:

To address the research problem, the following hypotheses were posited:

H_1: Islamic financing instruments, namely Mudarabah, Musharakah, Murabahah, and Ijarah, exhibit a positive and statistically significant association with the financing and implementation of green development projects.

H_2: The integration of green development strategies, particularly those

targeting energy transition and sustainable transportation, positively moderates the effectiveness of Islamic finance in achieving sustainable development outcomes.

H_3: Asian countries that have actively deployed Islamic financing mechanisms for green development projects demonstrate positive developmental impacts and have successfully attained their stated sustainability targets.

1.4 Research Objectives:

This research aims to establish a comprehensive theoretical framework for Islamic finance, its key formulas, and green development strategies, while analyzing their practical application in Asian Islamic banks for financing green projects. Subsidiary objectives include clarifying Islamic financing instruments, exploring the link between Islamic finance and green development, and examining the contribution of Islamic finance to green development in selected Asian countries.

1.5 Research Significance:

The importance of this research lies in its examination of a significant topic, Islamic financing for green development, which represents one of the challenges confronting Asian countries that have sought to utilize various modern green financial instruments to support and enhance sustainable green development.

1.6 Research Methodology and Tools

This research employs the descriptive-analytical approach to comprehend concepts related to the theoretical framework of Islamic finance, its principal formulas, and green development strategies, with emphasis on highlighting major projects in this domain. Subsequently, the theoretical framework is applied to the practical component, which examines the contribution of Islamic finance to achieving green development in selected Asian countries. This comprehensive approach aims to derive conclusions that synthesize the reality of the

presented analysis, culminating in recommendations and suggestions pertaining to the research topic.

1.7 Research Structure:

The study is structured around two principal axes. The first explores the conceptual foundations of Islamic finance, its operational principles, financing formulas, and theoretical alignment with green development through its ethical framework emphasizing sustainability, social responsibility, and environmental stewardship. The second shifts to empirical investigation, examining the practical role of Islamic finance in supporting green development projects across selected Asian countries through detailed case studies that analyze financing mechanisms, project types, and developmental outcomes, providing concrete evidence of its effectiveness in advancing sustainable green development agendas.

1.8 Previous Studies:

Farhan (2003) systematically investigated Islamic financing sources for small enterprises, identifying operational inefficiencies and policy gaps despite the sector's recognized importance in Arab economies, while emphasizing that Islamic finance embodies Islam's holistic vision for balanced development. Issa and Al-Mahjoubi (2022) empirically examined green investment contributions to sustainable development, concluding that clean-energy projects significantly advance sustainability goals and attract growing global investment driven by environmental concerns. Hafai and Shakhoum (2018) explored Malaysia's green sukuk experience, revealing that Islamic Sharia emphasizes environmental stewardship and that Islamic finance promotes ethical, socio-economic value beyond conventional financial intermediation.

The IIFM Sukuk Report (2024) documented Malaysia's global leadership in green sukuk issuances, followed by Indonesia. Zaini et al. (2025) investigated digital-green synergies in Southeast Asian Islamic finance, identifying rapid digital transformation, growth of green instruments, and blockchain-enabled carbon tracking that

reinforces maqasid al-shariah values. Achyar (2025) examined Islamic green financing's impact on GCC renewable energy development (2019-2023), finding significant enhancement of solar technologies through risk-sharing mechanisms that reform energy competition structures.

The University of Ankara (2025) analyzed ESG commitment across 12 countries (2020-2024), revealing 49.73% average compliance with social aspects prioritized as ḍarūriyāt (25.43%), governance as ḥājiyyāt (17.98%), and environmental factors as taḥsīniyyāt (7.21%). Yulita (2025) conducted a systematic literature review confirming theoretical and empirical alignment between maqasid sharia and ESG principles, though identifying persistent challenges requiring infrastructure and regulatory enhancement. Khawaja and Raza (2025) connected Islamic moral principles to SDGs through concepts of Khalifa (stewardship), Israf (prohibition of extravagance), proposing practical green finance projects including green and blue sukuk.

Syarvina and Batubara (2025) employed Analytic Network Process to identify three strategic pathways for Sharia compliance in green banking: human resource capacity enhancement, Sharia Supervisory Board optimization, and environmental certification mechanisms. Prayoga and Siswantoro (2025) found positive correlations between sustainable activities and financial performance in Asian Islamic banks (2015-2018), though Shariah supervisory boards did not strengthen this relationship.

Altamimi et al. (2026) examined 296 banks across 22 Asian countries (2013-2022), finding technology indicators more significantly impact ESG performance in Islamic banks than conventional ones. Soeharjoto et al. (2026) utilized Generalized Method of Moments across eight Asian countries (2018-2022), demonstrating that Islamic finance, FDI, and innovation positively influence green growth. Izzati et al. (2025) employed Analytic Hierarchy Process to reveal strong alignment between green sukuk,

maqashid al-shariah, and SDGs in Indonesia, though identifying imbalance in intellectual development realization. Ejaz et al. (2025) synthesized over 80 articles (2015-2025) using bibliometric analysis, revealing growing convergence between ESG and Islamic financial ethics while exposing fragmentation in reporting standards and calling for contextualized ESG-Shariah frameworks.

The present study partially aligns with previous research in identifying Islamic financing formulas and green development projects, but distinguishes itself methodologically through multiple comparative case studies across Asian countries, avoiding single-country limitations. It offers evidence-based policy recommendations to advance green Islamic finance in other Islamic nations, bridging theoretical frameworks with practical implementation while addressing the persistent challenge of operationalizing sustainability principles within Sharia-compliant financial structures.

2. Concepts of Islamic Finance and Its Relationship to Green Development

Islamic finance contributes approximately three trillion dollars annually to global economies, making it one of the most competitive and fastest-growing financial segments. Defined as "financing according to Islamic Sharia," it encompasses financial services complying with Islamic law principles (Elliesie, 2018). Islamic financial institutions are distinguished by religious and ethical foundations extending beyond interest-free banking to include avoidance of riba and gharar, halal activities, and pursuit of justice (Warde, 2000).

Foundational principles include prohibition of usurious interest without risk participation, operating on risk-sharing philosophy (State Bank of Pakistan, n.d.; Warde, 2000), prohibition of unethical profits (Chowdhury, 2015), prohibition of selling what one does not own ensuring asset-backed transactions, and contract clarity eliminating uncertainty (jahalah) and ambiguity (gharar) (Cattelan, 2009; El-Gamal, 2006). Islamic finance is defined as provision of wealth for

Sharia-permitted returns (Qahf, 2004) and for profit, donation, cooperation, or moral/material returns (Farhan, 2003), emphasizing multifaceted nature encompassing profit-seeking, charitable, and cooperative arrangements. Thus, Islamic finance constitutes an integrated mechanism founded on Quranic and Sunnah philosophy, employing profit-and-loss sharing, sales-based financing, leasing, and partnerships to promote equitable and stable financial systems contributing to sustainable economic development (Bacha & Mirakhor, 2012; El-Gamal, 2006).

2.2 Islamic Financing Instruments and Contractual Frameworks

Islamic finance in Islamic banks is distinguished by multiple formulas that differ substantially from the instruments utilized in conventional banks. These contracts are grounded in Sharia principles and are designed to facilitate economic transactions while ensuring compliance with Islamic ethical and legal frameworks. The primary Islamic financing formulas are as follows:

2.2.1Mudarabah (Profit-Sharing):

Mudarabah is a foundational Islamic finance contract defined as a partnership between a capital provider (rabb al-mal) and an entrepreneur (mudarib) who provides managerial expertise and labor for Sharia-compliant investments (Hassan & Abdul Aziz Bello, 2014; Nethercott & Eisenberg, 2020). Profits are distributed according to a pre-agreed ratio of actual profits, while financial losses are borne exclusively by the capital provider unless negligence or misconduct occurs (Hafizah & Kurniawan, 2021; Ramli, 2008; Hassan & Abdul Aziz Bello, 2014). This structure embodies Islamic risk-sharing principles, fostering entrepreneurship without interest-based obligations (Rabbani et al., 2025).

2.2.2 Murabahah (Cost-Plus Financing):

Murabahah is a sale-based financing formula where the bank sells goods at cost plus an agreed profit margin (Ahmed, 2016; Moosa, 2023). As a fiduciary sale (bay' al-amanah), the seller discloses the

purchase price with transparent profit (Sabri, 2015), with payment structured on deferred or installment basis (Fitriani et al., 2025). The bank must acquire ownership before resale (Rahman, 2025). Murabahah is the most widely used Islamic financing mode (Rahman, 2025), with Green Murabahah applications extending to renewable energy, solar irrigation, and waste management (Ningsih, 2025; Tayeb, 2025; Yulita, 2025).

2.2.3 Musharakah (Joint Venture/Partnership): Musharakah is a partnership contract where parties combine capital and/or labor, sharing profits according to agreement while losses are borne in proportion to capital contributions (Khouli & Hassani, 2015; Hassan & Abdul Aziz Bello, 2014). Risk-sharing is central, with partners collectively bearing financial and managerial responsibility (Rabbani et al., 2025). The Diminishing Musharakah variant enables progressive client ownership, suitable for infrastructure and renewable energy projects (Ahmed, 2016; Moosa, 2023; Taghizadeh-Hesary et al., 2025).

2.2.4 Salam (Forward Sale)

Salam is a forward sale contract with full advance payment for goods delivered at a specified future date (El-Gamal, 2006). It permits sale of non-existent goods if precisely described, originally legalized to finance agricultural production (Sharoun, 2018; El-Gamal, 2006). Contemporary applications focus on agriculture, enabling small-scale farmers without collateral to access financing (Hassan & Abdul Aziz Bello, 2014; Ramli, 2008).

2.2.5 Muzara'ah (Sharecropping)

Muzara'ah is an agricultural partnership where landowner provides land and seeds while farmer provides labor, with produce shared according to predetermined ratios (Al-Makkawi, 2012). Its legitimacy derives from Prophetic tradition and Quranic verses (Surah Al-Waqi'ah, 63-64). This formula supports sustainable farming, providing farmers access to land without collateral while banks share agricultural risk (Omar, 2020; Ramli, 2008; Taghizadeh-Hesary et al., 2025).

2.2.6 Musaqah (Irrigation Contract)

Musaqah is an agricultural partnership between tree/orchard owner and worker (musaqi) providing irrigation and care, with produce shared according to agreement (Khouja & Qaid, 2012; Al-Makkawi, 2012; Omar, 2020). The worker is not liable for natural disaster losses but bears responsibility for negligence. This promotes sustainable water management and agricultural productivity (Taghizadeh-Hesary et al., 2025; Ramli, 2008).

2.2.7 Istisna' (Manufacturing Contract)

Istisna' is a manufacturing contract where a manufacturer produces specified assets using their materials for a price paid immediately, in installments, or deferred (El-Gamal, 2006; Al-Assaf, 2015). Like Salam, it permits sale of non-existent goods with precise specifications. Contemporary applications link it to sustainable infrastructure, renewable energy components, and waste-to-energy systems (Taghizadeh-Hesary et al., 2025; Al-Makkawi, 2012; Hassan & Abdul Aziz Bello, 2014).

2.2.8 Ijarah (Leasing)

Ijarah is a leasing contract transferring usufruct of an asset for a specified period in exchange for consideration (Samhan, 2013; El-Gamal, 2006). Islamic banks employ Ijarah for leasing machinery, equipment, and vehicles, or providing safekeeping and collection services (Khouja & Qaid, 2012). The Ijarah Muntahia Bittamleek variant enables ownership transfer upon completing payments, making it practical for sustainable transport and green building projects (Taghizadeh-Hesary et al., 2025; Ramli, 2008).

2.3 Green Development, Its Strategies, and Projects

Green development refers to economic growth, social security, sustainable resource management, biodiversity preservation, and reduced environmental impacts (Shams, 2025). It is fundamentally linked to UN Sustainable Development Goals including clean energy, sustainable cities, climate action, and life on land/water (Hossain et

al., 2025). Green development principles align closely with Maqasid al-Shariah emphasizing environmental stewardship, social justice, and intergenerational equity, positioning Islamic finance as a natural partner in advancing sustainable development objectives (Yulita, 2025; Taghizadeh-Hesary et al., 2025).

2.3.1 Definition of Green Development

Green development aims to achieve balance between economic growth and environmental conservation to ensure natural resource sustainability for future generations. It represents a transition from traditional resource-depleting models to a dynamic model reducing carbon emissions, relying on renewable energies, emphasizing resource efficiency, and developing local communities (UNEP, 2010). As Nassar et al. (2025) articulate, green development embodies a "green economy" enabling less environmental risk and greater efficiency through environmentally friendly approaches that increase natural resource productivity while promoting human capital, access to information, and innovation.

2.3.2 Green Development Strategies

A country's green development strategy comprises six main pathways (Al-Miqdadi & Al-Housh, 2016, pp. 106-107). The Green Energy Pathway targets energy diversification and increased clean energy share through transitional fuels, carbon capture, and zero-emission technologies (Nassar et al., 2025). The Green Investment Pathway develops policies encouraging green investments, facilitating green product production, building national capacities, and creating green jobs through blended finance mechanisms attracting private sector participation (Khan & Badjie, 2025). The Green Cities Pathway focuses on urban planning for environmental preservation, improving building efficiency, promoting sustainable transport, and enhancing urban air quality, with Islamic green finance integrated into housing redevelopment projects prioritizing sustainability and poverty reduction (Taghizadeh-Hesary et al., 2025). The Climate Change Adaptation Pathway develops policies to reduce carbon emissions,

aligning with Maqasid al-Shariah principles of justice, benevolence, and balance (Asad & Alsaad, 2025; Khan & Badjie, 2025). The Green Lifestyle Pathway rationalizes natural resource use through recycling and environmental education, including reforestation and algae cultivation (Nassar et al., 2025). The Green Technology Pathway adopts carbon capture, waste-to-energy conversion, and energy efficiency technologies, with green fintech innovations offering opportunities for Islamic banking through blockchain-based carbon tracking and digital platforms for sustainable microfinance (Taghizadeh-Hesary et al., 2025).

2.3.3 Major Green Development Projects

Green development projects require appropriate financing for implementation (Abed Sounia, 2024, p. 11). Sustainable Transport Projects rely on renewable energy including electric vehicles and low-carbon fuels, with Islamic financing formulas like Ijarah and Musharakah supporting these sectors (Asad & Alsaad, 2025). Sustainable Green Agriculture Projects involve disease-resistant, low-water-consumption crops using natural fertilizers and crop rotation, with participatory Islamic financing mechanisms proposed for agricultural startups (ASJP, 2025) and blended finance supporting circular economy SMEs (Khan & Badjie, 2025). Green Technology Projects apply science and innovation to create environmentally friendly products across transport, energy, agriculture, and waste management (Nassar et al., 2025). Green Building Projects utilize eco-friendly materials, water-saving technologies, and renewable energy designs including smart cities (Taghizadeh-Hesary et al., 2025).

Investment in Green Financial Securities includes green sukuk mobilizing capital, with Malaysia leading global issuances followed by Indonesia (IIFM Sukuk Report, 2024), and Islamic blended finance structures supporting SMEs through consensus-based impact criteria (Khan & Badjie, 2025). Renewable energy projects, solar, wind,

hydropower, geothermal, and biomass, are central to green development, with solar requiring ~$39.5 billion investment (Nassar et al., 2025; Al-Mahjoubi, 2022, p. 121), wind as zero-emission technology (Nassar et al., 2025), hydropower from mountain flows, geothermal from earth's interior, and biomass from waste conversion (Al-Mahjoubi, 2022, p. 121; Taghizadeh-Hesary et al., 2025). Islamic finance instruments like Istisna' and Ijarah are suitable for financing these projects due to their asset-backed nature and risk-sharing alignment (Taghizadeh-Hesary et al., 2025; Nassar et al., 2025).

2.3.4 The Relationship between Islamic Finance and Green Development

The relationship between Islamic finance and green development is built upon a shared philosophical and ethical foundation. This relationship can be elaborated across several interconnected levels, as illustrated in Figure (01):

Figure (01): Levels of the Relationship between Islamic Finance and Green Development.



Source : Prepared by the researchers

The relationship between Islamic finance and green development is grounded in a shared conceptual foundation emphasizing ethics and social responsibility, recognizing the interconnectedness of financial, social, and environmental well-being (Taghizadeh-Hesary et al., 2025; Yulita, 2025). Islamic finance prohibits exploitation, usury, and

excessive uncertainty (gharar) to achieve equitable wealth distribution (Chapra, 2008), while green development ensures intergenerational equity in distributing natural resources, reflecting shared commitment to social justice (Nassar et al., 2025; Khan & Badjie, 2025). Islam's prohibition of extravagance and waste (israf) directly aligns with resource efficiency principles central to the green and circular economy (Hossain et al., 2025; Asad & Alsaad, 2025). The concept of stewardship (khalifah) requires humans to act as trustees of God's creation, necessitating comprehensive environmental protection and sustainable resource management aligned with green development objectives (Taghizadeh-Hesary et al., 2025). Achieving common societal interests (Maslahah) through Maqasid al-Shariah focuses on preserving life, property, intellect, and lineage, with contemporary scholarship demonstrating theoretical and empirical alignment between Maqasid al-Shariah and ESG principles concerning environmental stewardship, social equity, and ethical governance (Rahman, 2025; Yulita, 2025). This complementary and mutually reinforcing relationship enables fulfilling current needs while securing future generations' rights to natural resources, realizing sustainable development within an Islamic ethical paradigm (Asad & Alsaad, 2025; Taghizadeh-Hesary et al., 2025; Hossain et al., 2025).

3. The Role of Islamic Finance in Supporting Green Development Projects in Selected Asian Countries

Islamic financial institutions in Islamic Asian countries have worked to realize the financing of green projects to drive local development through various green financing formulas that combine adherence to Islamic Sharia principles with their utilization in projects serving the dimensions of sustainable green development (environmental, social, and economic).

3.1 The Indonesian Model

Indonesia represents a pioneering model in the field of Islamic financing for green development projects, with its experience

embodying a unique integration between Islamic finance principles and the economic, environmental, and social dimensions of green development.

Indonesia became the first country globally to issue sovereign green sukuk in March 2018, valued at USD 1.25 billion. Proceeds were directed to finance environmentally compliant projects, including renewable energy projects such as the Sarulla geothermal power plant and solar energy projects in Bali and Java, which contributed to reducing carbon emissions by more than 760,000 tons annually. Since then, additional issuances have been made through retail green sukuk, raising an estimated additional USD 1.4 billion between 2019 and 2023, as detailed in Table (01):

Table (01): Types of Retail Green Sukuk and Wholesale Sukuk in Indonesia.

Issuance Type	ST006	ST007	ST008	Wholesale Sukuk (PBSG001)
Year of Issuance	2019	2020	2021	2022
Issue Size (IDR)	1.4 trillion Rupiah	5.4 trillion Rupiah	5 trillion Rupiah	5.66 trillion Rupiah
Tenor	2 Years	2 Years	2 Years	7 Years
Yield	6.57%	5.5%	4.8%	6.625%

:Source Souar, M., & Aiach, Z. (2022, April). Contribution of green sukuk inclusion levels in Indonesia in enhancing financial. *Asil Journal of -Al*, 8(1), *Economic and Administrative Research*, 289.

Indonesia's green development through Islamic finance materialized in 23 projects during 2018-2019 across sustainable transport, clean energy, and waste management under the "Green Budget Tagging" framework. Sustainable financing in Islamic banks reached IDR 80.3 trillion (USD 5.1 billion) by end-2022 (Bank Indonesia, 2025), with

the Sustainable Finance Roadmap 2021-2025 accelerating sustainability integration.

In 2023, Pertamina Geothermal Energy issued USD 500 million green sukuk for geothermal development. Bank Syariah Indonesia offers Green Murabahah for solar panels and energy-efficient equipment, Musharakah for renewable energy and sustainable agriculture ventures, while Zakat and Waqf support reforestation and waste management, though BAZNAS acknowledges limited environmental financing.

Indonesia leveraged blended finance through the Tri Hita Karana initiative under South-South and Triangular Cooperation, creating enabling environments for private sector participation in health, energy, and disaster management. The G20 Global Blended Finance Alliance launched in 2024 builds on Indonesia's G20 presidency to accelerate climate investment (OECD, 2025).

Hydroelectric plants in West Java power 500,000 homes, CIMB Niaga provided USD 18.5 million for geothermal energy and Jakarta MRT financing (CIMB Niaga, 2025), with infrastructure extending to electric transport and smart water systems. Community-level organic farming and waste composting enhance financial inclusion, while the Indonesian Environment Fund and UNDP pioneered "deferred tree cutting loans" aligned with Islamic principles. The Maluku Conservation Center, financed through USD 2.7 million green sukuk, rehabilitated 955 birds, 323 reptiles, and 319 animals (Guilherme De Franco, 2025), demonstrating green sukuk's impact across energy, infrastructure, community development, and conservation sectors.

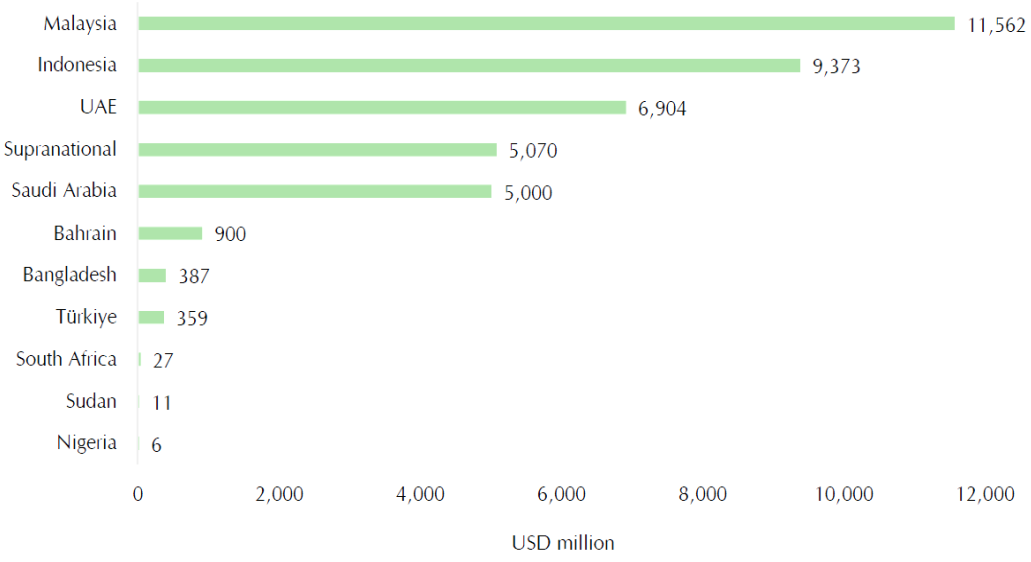
3.2 The Malaysian Model

Malaysia is a global leader in Islamic finance and particularly in integrating sustainable green Islamic finance into domestic projects, transformed into a global hub through its advanced Islamic financial system and political will supporting sustainability. Contributing factors include a supportive regulatory environment with

Development Financial Plans integrating sustainability, the Sustainable Finance Strategy (SFS) launched by Bank Negara Malaysia to guide the financial sector toward green projects (Bank Negara Malaysia, 2025), and the Sustainable Finance Taxonomy (SIT) classifying green investments to limit greenwashing. Malaysia also possesses advanced Islamic financial infrastructure including the Securities Commission Malaysia (SC), International Centre for Education in Islamic Finance (INCEIF), and Islamic Research and Training Institute (IRTI).

Malaysia employs innovative green Islamic financial instruments, particularly Green Sukuk, holding global leadership as the first to issue sovereign green sukuk in 2017, financing renewable energy, green buildings, sustainable transport, and waste/water recycling. By end-2023, green sukuk issued reached USD 11,562 million, with cumulative green and sustainable sukuk issuances between 2017-2023 ranking Malaysia first globally followed by Indonesia.

Figure (02): Cumulative Green and Sustainable Sukuk Issuances by Country during the Period: 2017-2023.



Source: IIFM Sukuk Report (2024, p. 132).

Malaysia employs innovative models including Waqf and green Waqf for community projects like public parks and water treatment, Waqf Sukuk combining sukuk and Waqf concepts for charitable green purposes, Green Murabahah and Ijarah for hybrid/electric vehicles and energy-efficient equipment, Green Islamic Investment Funds focused on clean technology and renewable energy, and Blended Finance attracting public sector and international financing.

Malaysia's diverse portfolio spans renewable energy, sustainable infrastructure, agriculture, and waste management, demonstrating effective deployment of Islamic financial instruments for environmental sustainability. The country targets 31% renewable energy in its energy mix by 2025, issuing USD 1.3 billion green sukuk in 2021 for the "Solar Plant" project with 500 MW capacity reducing carbon emissions by 260,000 tons annually (The Government of Malaysia SDG Framework, 2021). Commitment to sustainability is reinforced through the "Sustainable Development Plan 2030" incorporating 17 SDGs and 169 sub-targets, ratification of the Paris Agreement (2016), and Nationally Determined Contributions committing to 45% GHG emissions intensity reduction per GDP by 2030 (Ministry of Natural Resources, 2023).

Green buildings like Merdeka 118 tower incorporate sustainability standards, while Tabung Haji finances Green Building Index-certified projects through Musharakah for solar cooling and water recycling. Maybank Islamic finances sustainable agriculture via Murabahah and Istisna' for drip irrigation and organic fertilizers with forest protection conditions (Maybank Group, 2026). Bank Rakyat Islamic supports electric bus financing in Kuala Lumpur through Istisna' contracts for battery production (Bank Rakyat, 2021), and CIMB Islamic Bank finances waste-to-energy "Biogas" projects through Ijarah contracts converting palm oil waste to electricity. These examples demonstrate Malaysia's comprehensive integration of Islamic finance with green

development across multiple sectors, reflecting the versatility of Islamic financial instruments in supporting the low-carbon transition.

4. Conclusion

Islamic banking represents a vital instrument for supporting green development projects through Islamic financing formulas aligned with green development strategies. Key conclusions include: the necessity of enhancing awareness among customers and investors regarding combining Islamic ethical investment with sustainable investment while strengthening Islamic banks' capacity to assess technical risks; weak private sector participation in Indonesia limiting impact as most green sukuk are sovereign; Malaysia's continuous effort to unify "green" standards across markets while developing an active secondary market for green sukuk; Malaysia leading and shaping green Islamic finance to attract sustainable investments from Gulf countries, Southeast Asia, and Europe; and Malaysia's robust regulatory framework establishing a globally admired model based on Islamic principles and environmental protection.

Based on empirical evidence, H_1 (Islamic financing instruments—Mudarabah, Musharakah, Murabahah, and Ijarah—exhibit positive association with green project financing) is accepted. The literature establishes these as foundational contracts (Ahmed, 2016; El-Gamal, 2006; Hassan & Abdul Aziz Bello, 2014), inherently suited for green financing due to asset-backed nature, risk-sharing, and ethical foundations (Taghizadeh-Hesary et al., 2025; Yulita, 2025). Practical applications in Indonesia and Malaysia confirm their positive role (Bank Indonesia, 2025; Maybank Group, 2026; Bank Rakyat, 2021).

H_2 (green development strategies targeting energy transition and sustainable transportation positively moderate Islamic finance effectiveness) is rejected due to insufficient scope. The theoretical framework identifies six pathways: green energy, green investment, green cities, climate change adaptation, green lifestyle, and green technology (Al-Miqdadi & Al-Housh, 2016, pp. 106-107; Nassar et al., 2025). Empirical evidence shows green development encompasses

far more than energy and transport, with Indonesia financing 23 projects spanning multiple sectors (Guilherme De Franco, 2025) and Malaysia's portfolio extending to green buildings, organic agriculture, and biodiversity conservation (The Government of Malaysia SDG Framework, 2021; Ministry of Natural Resources, 2023).

H_3 (Asian countries deploying Islamic financing demonstrate positive developmental impacts and attained sustainability targets) is accepted. Indonesia mobilized IDR 80.3 trillion (USD 5.1 billion) by end-2022, financed 23 projects, launched Sustainable Finance Roadmap 2021-2025, and established G20 Global Blended Finance Alliance (Bank Indonesia, 2025; OECD, 2025), with impacts including hydroelectric plants powering 500,000 homes and Maluku Conservation Center rehabilitating over 1,500 animals (Guilherme De Franco, 2025; CIMB Niaga, 2025). Malaysia achieved global leadership in green sukuk with USD 11,562 million by end-2023 (IIFM, 2024), targets 31% renewable energy by 2025 and 45% GHG reduction by 2030 (Ministry of Natural Resources, 2023), with solar plants reducing emissions by 260,000 tons annually and certified green buildings (Maybank Group, 2026; The Government of Malaysia SDG Framework, 2021).

Recommendations include leveraging blockchain for transparency, increasing Zakat and Waqf integration for environmental projects, financing rural small-scale projects, defining unified global standards to prevent greenwashing, and establishing independent audit bodies for environmental and Sharia compliance.

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